CLAIMS

1. A hollow structure in which

an organic film (I) having a film thickness of 5 to 30 μm as a hollow structure support material; and

an organic film (II) having a film thickness of 5 to 30 μm as a hollow structure roof material are layered in this order from an upper surface of a substrate having a metal wiring,

wherein

when the organic film (I) and the organic film (II) are independently evaluated by the following ion elution amount evaluation method, a total of the ion elution amount of the organic film (I) and the ion elution amount of the organic film (II) is 4,000 ppm or less:

ion elution amount evaluation method wherein

an organic film is placed in pure water having a mass of 10 times that of the organic film, and is extracted in hot water for 10 to 20 hours at 100 to 121°C, after which the supernatant of the liquid extract is used as a sample solution, the sample solution and a target ion standard solution are introduced into an ion chromatography device, the concentrations of formate ions, acetate ions, propionate ions, and sulfate ions in the sample solution are determined by a calibration curve method, and a value

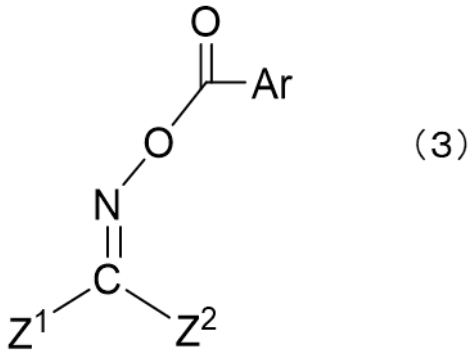
obtained by converting the total concentrations into the mass of eluted ions relative to the mass of the organic film is used as the ion elution amount, wherein the organic film (I) contains a cured product obtained by curing a negative photosensitive resin composition containing

at least one alkali-soluble resin (A) selected from the group consisting of polyimide, polybenzoxazole, polyamide, any of precursors thereof, and copolymers thereof,

a thermally crosslinkable compound (C),

an oxime-based photopolymerization initiator (D), and a polymerizable compound (E), wherein the oxime-based photopolymerization initiator (D) contains a compound represented by the formula (3)

[Chem. 2]



(3)

the formula (3) shown above wherein Ar represents an aryl group, Z^1 represents an organic group having 6 to 20 carbon atoms, and Z^2 represents a hydrogen atom or an organic group having 1 to 20 carbon atoms, wherein

the thermally crosslinkable compound (C) contains a polyfunctional epoxy group-containing compound (C-1) and a polyfunctional alkoxymethyl group-containing compound (C-2), and the content of the polyfunctional epoxy group-containing compound (C-1) is 5 to 30 parts by mass and the content of the polyfunctional alkoxymethyl group-containing compound (C-2) is 1 to 10 parts by mass based on 100 parts by mass of the alkali-soluble resin (A), and wherein

the content of the oxime-based photopolymerization initiator (D) is 1 to 20 parts by mass based on 100 parts by mass of the alkali-soluble resin (A), and the compound represented by formula (3) is contained in an amount of 70 to 100 mass% based on 100 mass% of the total amount of the oxime-based photopolymerization initiator (D).

2. The hollow structure according to claim 1, wherein an ion elution amount when the organic film (I) is evaluated by the ion elution amount evaluation method is 2,000 ppm or less.

3. The hollow structure according to claim 1 or 2, wherein an ion elution amount when the organic film (II) is evaluated by the ion elution amount evaluation method is 2,000 ppm or less.

4. The hollow structure according to any one of claims 1 to 3, wherein the conductivity of a sample solution of the organic film (I) obtained by the ion elution amount evaluation method is 500 μS/cm or less.

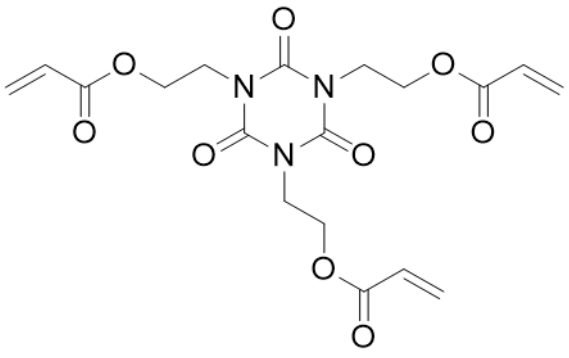
5. The hollow structure according to any one of claims 1 to 4, wherein the conductivity of a sample solution of the organic film (II) obtained by the ion elution amount evaluation method is 500 μS/cm or less.

6. The hollow structure according to any one of claims 1 to 5,

wherein the polymerizable compound (E) contains a compound represented by formula (4), and

55 to 90 mass% of the compound represented by the formula (4) is contained based on 100 mass% of the total amount of the polymerizable compound (E).

[Chem. 3]



(4)

7. The hollow structure according to any one of claims 1 to 6, wherein the organic film (I) contains 30 to 80 mass% of inorganic particles in 100 mass% of the organic film (I), and the organic film (II) contains 0 to 80 mass% of inorganic particles in 100 mass% of the organic film (II), or the organic film (II) contains 30 to 80 mass% of inorganic particles in 100 mass% of the organic film (II), and the organic film (I) contains 0 to 80 mass% of inorganic particles in 100 mass% of the organic film (I).

8. The hollow structure according to claim 7, wherein the inorganic particles are glass particles having a refractive index of 1.55 to 1.75.

9. The hollow structure according to any one claims 1 to 8, wherein in a cross section perpendicular to the upper surface of the substrate and the wall surface of the organic film (I), when a length of a ground contact surface between the organic film (I) and the substrate is set as x and a length of a ground contact surface between the organic film (I) and the organic film (II) is set as y, $1 \geq y/x \geq 0.6$ is satisfied.

10. An electronic component comprising the hollow

structure according to any one of claims 1 to 9.

11. A negative photosensitive resin composition comprising:

at least one alkali-soluble resin (A) selected from the group consisting of polyimide, polybenzoxazole, polyamide, any of precursors thereof, and copolymers thereof;

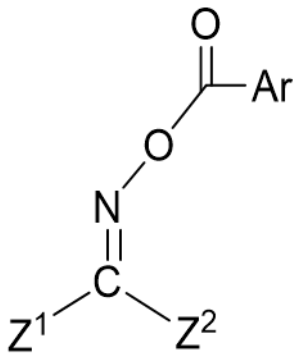
a thermally crosslinkable compound (C);

an oxime-based photopolymerization initiator (D); and

a polymerizable compound (E),

wherein the content of the oxime-based photopolymerization initiator (D) is 1 to 20 parts by mass based on 100 parts by mass of the alkali-soluble resin (A), and the compound represented by formula (3) is contained in an amount of 70 to 100 mass% based on 100 mass% of the total amount of the oxime-based photopolymerization initiator (D),

[Chem. 4]



(3)

the formula (3) shown above wherein Ar represents an aryl group, Z^1 represents an organic group having 6 to 20 carbon atoms, and Z^2 represents a hydrogen atom or an organic group having 1 to 20 carbon atoms, wherein

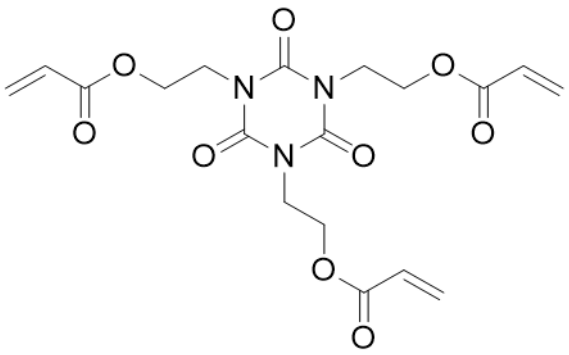
the thermally crosslinkable compound (C) contains a polyfunctional epoxy group-containing compound (C-1) and a polyfunctional alkoxymethyl group-containing compound (C-2), and the content of the polyfunctional epoxy group-containing compound (C-1) is 5 to 30 parts by mass and the content of the polyfunctional alkoxymethyl group-containing compound (C-2) is 1 to 10 parts by mass based on 100 parts by mass of the alkali-soluble resin (A).

12. The negative photosensitive resin composition according to claim 11,

wherein, the polymerizable compound (E) contains a compound represented by formula (4), and

55 to 90 mass% of the compound represented by the formula (4) is contained based on 100 mass% of the total amount of the polymerizable compound (E).

[Chem. 5]



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