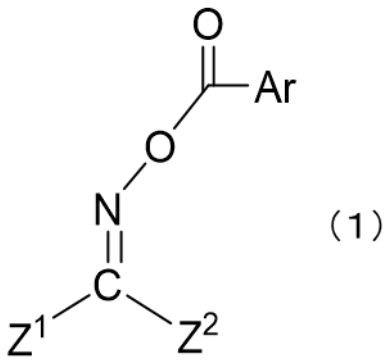
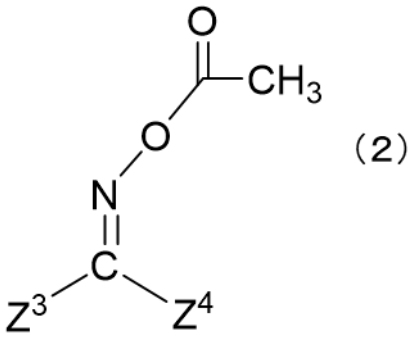
CLAIMS

1. A laminate comprising:
a metal wire (M1) with a thickness of 0.1 to 5 μm,
a relief pattern of an organic insulating film (P1) with a thickness of 0.5 to 4 μm, and
a metal wire (M2) with a thickness of 0.1 to 5 μm
which are disposed in this order on a piezoelectric substrate,
wherein the organic insulating film (P1) includes a cured product obtainable by curing a photosensitive resin composition containing an alkali soluble resin (A), an oxime based photopolymerization initiator (B), and a radical polymerizable compound (C),
the oxime based photopolymerization initiator (B) accounting for 1 to 20 parts by mass relative to 100 parts by mass of the alkali soluble resin (A),
the oxime based photopolymerization initiator (B) containing a compound as represented by the formula (1) and a compound as represented by the formula (2),
the ratio in mass between the compound represented by the formula (1) and the compound represented by the formula (2) being 1:1 to 20:1, and
the ion elution quantity from the organic insulating film (P1) being 2,000 ppm or less as determined by the ion elution quantity measurement method described below:
(ion elution quantity measurement method)
the organic film is immersed in pure water with a mass ten times that of the film and then subjected to hot water extraction at 121°C for 20 hours, followed by collecting the supernatant of the extract to provide a test liquid, and the test liquid and standard solutions of the target ions are introduced into an ion chromatograph, and the concentrations of the formate ion, acetate ion, propionate ion, and sulfate ion in the test liquid are measured by the working curve based measurement method and converted to the mass of eluted ions relative to the mass of the organic film to determine the ion elution quantity:
[Chemical compound 1]



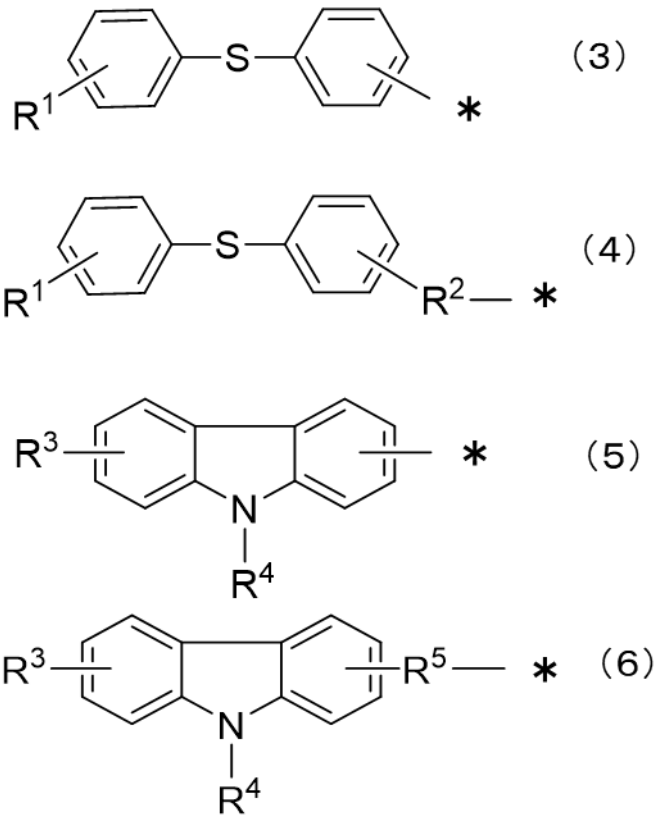

(1)




(2)

wherein in the formula (1), Ar is an aryl group having 6 to 20 carbon atoms, $Z^1$ an organic group as represented by any of formulas (3) to (6), and $Z^2$ a hydrogen atom or a monovalent organic group having 1 to 20 carbon atoms, and in the formula (2), $Z^3$ is an organic group as represented by any of the formulas (3) to (6), and $Z^4$ is a hydrogen atom or a monovalent organic group having 1 to 20 carbon atoms,

[Chemical compound 2]



(3)

(4)

(5)

(6)

wherein in the formulas (3) to (6), $R^1$ and $R^3$ each denote a hydrogen atom or a monovalent organic group having 1 to 20 carbon atoms; $R^2$ and $R^5$ each denote a divalent organic group having 1 to 20 carbon atoms; and $R^4$ denotes a monovalent organic group having 1 to 20 carbon atoms.

3. The laminate according to either claim 1 or 2, wherein the test liquid of the organic insulating film (P1) prepared above in the procedure for ion elution quantity measurement method has a conductivity of 500 μS/cm or less.

4. The laminate according to either claim 1 or 2, wherein the plane where the piezoelectric substrate is in contact with the metal wire (M1) makes an angle of 20° to 60° with the plane where the relief pattern of the organic insulating film (P1) is in contact with the metal wire (M2).

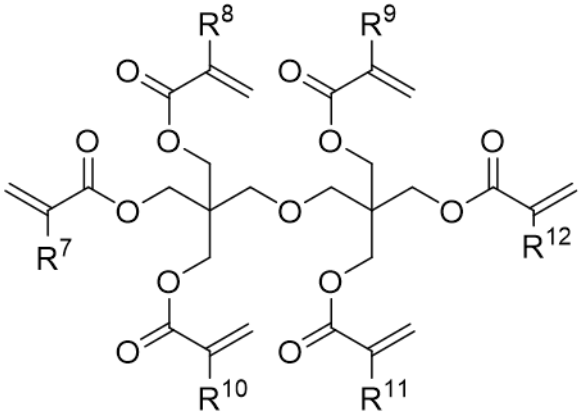
5. The laminate according to either claim 1 or 2, wherein the alkali soluble resin (A) comprises at least one selected from the group consisting of polyimide, polybenzoxazole, polyamide, precursors thereof, and copolymers thereof.

6. The laminate according to claim 1, wherein the ratio in mass between the compound

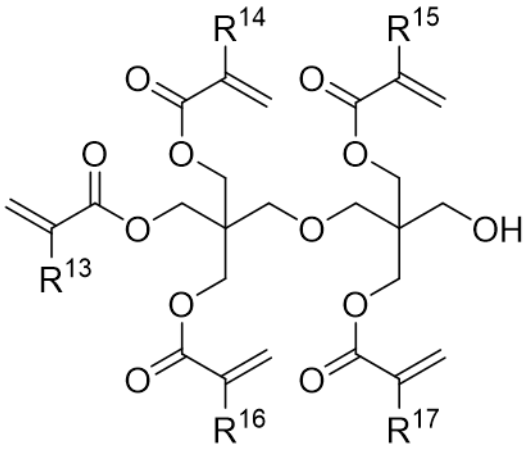
represented by the formula (1) and the compound represented by the formula (2) is 4:1 to 20:1.

7. The laminate according to claim 1, wherein the radical polymerizable compound (C) further comprises a compound as represented by the formula (7) and a compound as represented by the formula (8), the ratio in mass between the compound represented by the formula (7) and the compound represented by the formula (8) being 1:9 to 5:5:

[Chemical compound 3]



(7)



(8)

wherein in the formulas (7) and (8), $R^7$ to $R^{17}$ are each independently a hydrogen atom or a methyl group.

8. The laminate according to either claim 1 or 2, wherein the photosensitive resin composition comprises a thermally crosslinkable compound (D), the thermally crosslinkable compound (D) comprising a polyfunctional epoxy group-containing compound (D-1) and a polyfunctional alkoxymethyl group-containing compound (D-2), the polyfunctional epoxy group-containing compound (D-1) accounting for 5 to 30 parts by mass relative to 100 parts by mass of the alkali soluble resin (A), and the polyfunctional alkoxymethyl group-containing

compound (D-2) accounting for 1 to 10 parts by mass relative thereto.

9. A method for manufacturing a laminate comprising the following steps in that order:
a step (1) for forming a metal wire (M1) on a piezoelectric substrate,
a step (2) for applying a photosensitive resin composition over the piezoelectric substrate and the metal wire (M1) and drying it by heating at 80°C to 130°C to form a photosensitive resin film on the substrate,
a step (3) for exposing the photosensitive resin film to light through a mask to an exposure dose of 150 to 2,000 mJ/cm$^2$,
a step (4) for heating the light-exposed photosensitive resin film at 80°C to 130°C,
a step (5) for removing the unexposed region with an alkaline aqueous solution to develop the photosensitive resin film,
a step (6) for heat-treating the developed photosensitive resin film at 200°C to 280 to form a relief pattern of an organic insulating film (P1), and
a step (7) for forming a metal wire (M2) on the piezoelectric substrate and the organic insulating film (P1).

10. The method for manufacturing a laminate according to claim 9, wherein the thickness of the light-exposed region of the photosensitive resin film after developing for 80 seconds and that after developing for 140 seconds in the step (5) differ by 0.20 μm or less.

11. The method for manufacturing a laminate according to either claim 9 or 10, further comprising a step (5-1) between the step (5) and the step (6) for heating the developed photosensitive resin film from a temperature of 100°C or less to a temperature of 150°C to 200°C at a heating rate of 10°C/min or more.

12. The method for manufacturing a laminate according to either claim 9 or 10, further comprising a step (5-2) between the step (5) and the step (6) for exposing the developed photosensitive resin film to light to an exposure dose of 1,000 to 3,000 mJ/ cm$^2$.

13. A hollow structure comprising the laminate according to either claim 1 or 2, a hollow structure support member (P2), and a hollow structure roof member (P3).

14. The hollow structure according to claim 13, wherein the hollow structure support member (P2) and the hollow structure roof member (P3) are organic films each containing at least one alkali soluble resin (A) selected from the group consisting of polyimide, polybenzoxazole, polyamide, precursors thereof, and copolymers thereof.

15. The hollow structure according to claim 13, wherein the total ion elution quantity of the organic insulating film (P1) with a thickness of 0.5 to 4 μm, the hollow structure support member (P2), and the hollow structure roof member (P3) is 2,000 ppm or less, wherein the organic insulating film (P1) with a thickness of 0.5 to 4 μm, the hollow structure support member (P2), and the hollow structure roof member (P3) are examined separately by the ion elution quantity measurement method.

16. An electronic component comprising the hollow structure according to claim 13.