CLAIMS

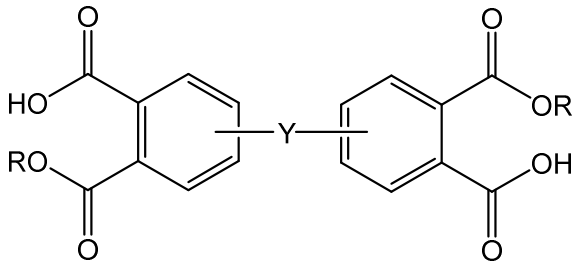
Claim 1. A composition for forming a film for a semiconductor, comprising:

an aliphatic diamine (A) that includes at least one of a primary amino group or a secondary amino group, and a main chain including a carbon atom, wherein, in the aliphatic diamine (A), a total number of primary amino groups and secondary amino groups is 2 or greater, a number of carbon atoms of the main chain is from 2 to 180, and the aliphatic diamine (A) has a weight average molecular weight of from 130 to 2000; and

a cross-linking agent (D) that includes three or more -C(=O)OX groups in a molecule thereof (X representing a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms), wherein from one to six of the three or more -C(=O)OX groups are -C(=O)OH groups, and the cross-linking agent (D) has a weight average molecular weight of from 200 to 2000,

wherein the aliphatic diamine (A) comprises a primary amino group at both ends of the main chain thereof, and the main chain has a structure in which a carbon chain or part of a carbon chain has been replaced by an atom or group selected from the group consisting of an oxygen atom, a sulfur atom, a carbonyl group, a secondary amino group, a tertiary amino group, an amido group, and an ester group,

wherein the cross-linking agent (D) is a half-esterified compound represented by Formula (D-2), and



(D-2)

wherein, in Formula (D-2), Y is O, and R is an alkyl group having from 1 to 6 carbon atoms.

Claim 2. The composition for forming a film for a semiconductor according to claim 1, further comprising a silane compound (B) that includes at least one of a primary amino group or a secondary amino group, and one or more silicon atoms, wherein, in the silane compound (B), the one or more silicon atoms and one or more non-polar groups, if any, bonded to the one or more silicon atoms satisfy a relationship, (non-polar groups)/Si < 1.8, as a molar ratio.

Claim 3. The composition for forming a film for a semiconductor according to claim 2, wherein a weight average molecular weight of the silane compound (B) is from 130 to 10000.

Claim 4. The composition for forming a film for a semiconductor according to any one of claims 1 to 3, further comprising a siloxane compound (C) that is linear and includes at least one of a primary amino group or a secondary amino group, silicon atoms, and non-polar groups bonded to the silicon atoms, wherein, in the siloxane compound (C), a total number of primary amino groups and secondary amino groups is 2 or greater, and the silicon atoms and the non-polar groups bonded to the silicon atoms satisfy a relationship, (non-polar groups)/Si $\geq$ 1.8, as a molar ratio.

Claim 5. The composition for forming a film for a semiconductor according to claim 4, wherein a weight average molecular weight of the siloxane compound (C) is from 200 to 2000.

Claim 6. The composition for forming a film for a semiconductor according to any one of claims 1 to 5, wherein the aliphatic diamine (A) does not include a cyclic structure.

Claim 7. The composition for forming a film for a semiconductor according to any one of claims 1 to 6, wherein amino group-containing components / cross-linking agent (D), is greater than or equal to 0.1 and less than or equal to 10 as a molar ratio.

Claim 8. The composition for forming a film for a semiconductor according to any one of claims 1 to 7, wherein COOX / amino groups, which is a ratio of a number of -C(=O)OX groups in molecules of the cross-linking agent (D) to a total number of amino groups of molecules of components having an amino group contained in the composition for forming a film for a semiconductor, is greater than or equal to 0.1 and less than or equal to 5.0.

Claim 9. The composition for forming a film for a semiconductor according to any one of claims 1 to 8, wherein at least one X in the three or more -C(=O)OX groups in the cross-linking agent (D) is an alkyl group having from 1 to 6 carbon atoms.

Claim 10. The composition for forming a film for a semiconductor according to any one of claims 1 to 9, wherein both ends of the main chain of the aliphatic diamine (A) are each independently a primary amino group or a secondary amino group.

Claim 11. A laminated body, comprising a joining layer formed from the composition for forming a film for a semiconductor according to any one of claims 1 to 10, and a substrate, which are layered one on the other.

Claim 12. A substrate laminated body, comprising a first substrate, a joining layer formed from the composition for forming a film for a semiconductor according to any one of claims 1 to 10, and a second substrate, which are layered in this order.

Claim 13. A substrate laminated body, comprising:

a first stacked-layer region including a first substrate, a joining layer formed from the composition for forming a film for a semiconductor according to any one of claims 1 to 10, and a second substrate, which are layered in this order; and

a second stacked-layer region including a first substrate, an electrode, and a second substrate, which are layered in this order,

wherein at least one of the first stacked-layer region and at least one of the second stacked-layer region are arranged in a plane direction that is orthogonal to a layer-stacking direction.

Claim 14. The substrate laminated body according to claim 13, wherein two or more sets each consisting of the first stacked-layer region are stacked in the layer-stacking direction, and two or more sets each consisting of the second stacked-layer region are stacked in the layer-stacking direction.

Claim 15. The substrate laminated body according to any one of claims 12 to 14, wherein at least one of the first substrate or the second substrate is a semiconductor substrate that includes at least one element selected from the group consisting of Si, Ga, Ge, and As.