Claims

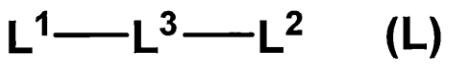
1. A method of removing an adhesive layer provided on a semiconductor substrate having metallic conductive materials by use of a remover composition, wherein

the adhesive layer is a film formed from an adhesive composition which contains an adhesive component (S), and the adhesive component (S) comprises a siloxane adhesive containing a polyorganosiloxane component (A) which is curable through hydrosilylation;

the remover composition contains a solvent but no salt; and

the solvent includes an organic solvent represented by formula (L):

[F1]



(L)

(wherein each of L^1 and L^2 represents a C2 to C5 alkyl group, and L^3 represents O or S) in an amount of 80 mass% or more.

2. A method according to claim 1, wherein the solvent includes the organic solvent represented by formula (L) in an amount of 85 mass% or more.

3. A method according to claim 2, wherein the solvent is formed of the organic solvent represented by formula (L).

4. A method according to any one of claims 1 to 3, wherein L^1 and L^2 are the same group.

5. A method according to claim 4, wherein the C2 to C5 alkyl group is an ethyl group, an n-propyl group, or an n-butyl group.

6. A method according to any one of claims 1 to 5, wherein the adhesive component (S) further comprises at least one species selected from among an acrylic resin adhesive, an epoxy resin adhesive, a polyamide adhesive, a polystyrene adhesive, a polyimide adhesive, and a phenolic resin adhesive.

7. A method according to any one of claims 1 to 6, wherein the polyorganosiloxane component (A) comprises a polysiloxane (A1) having one or more units selected from the group consisting of a siloxane unit represented by SiO_2 (unit Q), a siloxane unit represented by $R^1R^2R^3SiO_{1/2}$ (unit M), a siloxane unit represented by $R^4R^5SiO_{2/2}$ (unit D), and a siloxane unit represented by $R^6SiO_{3/2}$ (unit T), and a platinum group metal catalyst (A2), and each of R^1 to R^6 is a group or an atom bonded to a silicon atom and represents an alkyl group, an alkenyl group, or a hydrogen atom.

8. A method according to claim 7, wherein the polysiloxane (A1) comprises:

a polyorganosiloxane (a1) having one or more units selected from the group consisting of a siloxane unit represented by SiO_2 (unit Q'), a siloxane unit represented by $R^1'R^2'R^3'SiO_{1/2}$ (unit M'), a siloxane unit represented by $R^4'R^5'SiO_{2/2}$ (unit D'), and a siloxane unit represented by $R^6'SiO_{3/2}$ (unit T'), and at least one unit selected from the group consisting of unit M', unit D', and unit T'; and

a polyorganosiloxane (a2) having one or more units selected from the group consisting of and a siloxane unit represented by SiO_2 (unit Q''), a siloxane unit represented by $R^{1}''R^{2}''R^{3}''SiO_{1/2}$ (unit M''), a siloxane unit represented by $R^{4}''R^{5}''SiO_{2/2}$ (unit D''), and a siloxane unit represented by $R^{6}''SiO_{3/2}$ (unit T''), and at least one unit selected from the group consisting of unit M'', unit D'', and unit T'', and

each of R^{1}' to R^{6}' is a group bonded to a silicon atom and represents an alkyl group or an alkenyl group, and at least one of R^{1}' to R^{6}' is an alkenyl group, and

each of R^{1}'' to R^{6}'' is a group or an atom bonded to a silicon atom and represents an alkyl group or a hydrogen atom, and at least one of R^{1}'' to R^{6}'' is a hydrogen atom.

9. A processed semiconductor substrate production method comprising:

a first step of producing a laminate comprising a semiconductor substrate having metallic conductive materials, a support substrate, and an adhesive layer formed from an adhesive composition;

a second step of processing the semiconductor substrate of the produced laminate;

a third step of separating the semiconductor substrate and the adhesive layer from the support substrate; and

a fourth step of removing the adhesive layer on the semiconductor substrate by use of a remover composition, wherein

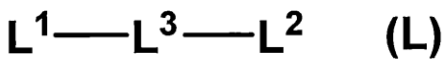
the adhesive layer is a film formed from an adhesive

composition which contains an adhesive component (S), and the adhesive component (S) comprises a siloxane adhesive containing a polyorganosiloxane component (A) which is curable through hydrosilylation;

the remover composition contains a solvent but no salt; and

the solvent includes an organic solvent represented by formula (L):

[F2]



(L)

(wherein each of L^1 and L^2 represents a C2 to C5 alkyl group, and L^3 represents O or S) in an amount of 80 mass% or more.

10. A processed semiconductor substrate production method according to claim 9, wherein the solvent includes the organic solvent represented by formula (L) in an amount of 85 mass% or more.

11. A processed semiconductor substrate production method according to claim 10, wherein the solvent is formed of the organic solvent represented by formula (L).

12. A processed semiconductor substrate production method according to any one of claims 9 to 11, wherein L^1 and L^2 are the same group.

13. A processed semiconductor substrate production method according to claim 12, wherein the C2 to C5 alkyl group is an ethyl group, an n-propyl group, or an n-butyl

group.

14. A processed semiconductor substrate production method according to any one of claims 9 to 13, wherein the adhesive component (S) further comprises at least one species selected from among, an acrylic resin adhesive, an epoxy resin adhesive, a polyamide adhesive, a polystyrene adhesive, a polyimide adhesive, and a phenolic resin adhesive.

15. A processed semiconductor substrate production method according to any one of claims 9 to 14, wherein the polyorganosiloxane component (A) comprises a polysiloxane (A1) having one or more units selected from the group consisting of a siloxane unit represented by SiO_2 (unit Q), a siloxane unit represented by $R^1R^2R^3SiO_{1/2}$ (unit M), a siloxane unit represented by $R^4R^5SiO_{2/2}$ (unit D), and a siloxane unit represented by $R^6SiO_{3/2}$ (unit T), and each of R^1 to R^6 is a group or an atom bonded to a silicon atom and represents an alkyl group, an alkenyl group, or a hydrogen atom.

16. A processed semiconductor substrate production method according to claim 15, wherein the polysiloxane (A1) comprises:

a polyorganosiloxane (a1) having one or more units selected from the group consisting of a siloxane unit represented by SiO_2 (unit Q'), a siloxane unit represented by $R^1'R^2'R^3'SiO_{1/2}$ (unit M'), a siloxane unit represented by $R^4'R^5'SiO_{2/2}$ (unit D'), and a siloxane unit represented by $R^6'SiO_{3/2}$ (unit T'), and at least one unit selected from the group consisting of unit M', unit D', and unit T'; and

a polyorganosiloxane (a2) having one or more units selected from the group consisting of and a siloxane unit represented by SiO_2 (unit Q''), a siloxane unit represented by $R^{1''}R^{2''}R^{3''}SiO_{1/2}$ (unit M''), a siloxane unit represented by $R^{4''}R^{5''}SiO_{2/2}$ (unit D''), and a siloxane unit represented by $R^{6''}SiO_{3/2}$ (unit T''), and at least one unit selected from the group consisting of unit M'', unit D'', and unit T'', and

each of $R^{1'}$ to $R^{6'}$ is a group bonded to a silicon atom and represents an alkyl group or an alkenyl group, and at least one of $R^{1'}$ to $R^{6'}$ is an alkenyl group, and a platinum group metal catalyst (A2), and

each of $R^{1''}$ to $R^{6''}$ is a group or an atom bonded to a silicon atom and represents an alkyl group or a hydrogen atom, and at least one of $R^{1''}$ to $R^{6''}$ is a hydrogen atom.