Claims

1. An adhesive composition for use in debonding with light irradiation,

which composition can achieve debonding through irradiation with light, wherein

the adhesive composition comprises an adhesive component and carbon black, and the adhesive component contains a component (A) which is cured through hydrosilylation;

wherein

the component (A) which is cured through hydrosilylation 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) (wherein 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) and a platinum group metal catalyst (A2); and

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' (wherein 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 polyorganosiloxane (a2) 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'' (wherein 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); and

the adhesive composition for use in debonding with light irradiation has a carbon black content of 5 to 50 mass% with respect to the amount of the adhesive component.

2. An adhesive composition for use in debonding with light irradiation according to claim 1, which further comprises a component (B) containing at least one species selected from the group consisting of a component containing an epoxy-modified polyorganosiloxane, a component containing a methyl-group-containing polyorganosiloxane, and a component a phenyl-group-containing polyorganosiloxane.

3. An adhesive composition for use in debonding with light irradiation according to any one of claim 1 or 2, which contains a solvent.

4. An adhesive composition for use in debonding with light irradiation according to claim 3, which has a solvent content of 10 to 90 mass% with respect to the entire amount of the adhesive composition.

5. An adhesive composition for use in debonding with light irradiation according to any one of claims 1 to 4, which contains a component containing at least one species selected from the group consisting of a component containing an epoxy-modified polyorganosiloxane, a component containing a methyl-group-containing polyorganosiloxane, and a component a phenyl-group-containing polyorganosiloxane.

6. A laminate comprising a first substrate formed of a semiconductor-forming substrate, a second substrate formed of a support substrate which allows passage of laser light, and an adhesive layer, wherein

the adhesive layer is a cured film formed from an adhesive composition for use in debonding with light irradiation as recited in any one of claims 1 to 5.

7. A method for producing a laminate, the method comprising

a first step of applying an adhesive composition for use in debonding with light irradiation as recited in any one of claims 1 to 5 onto a surface of a first or second substrate, to thereby form an adhesive coating layer; and

a second step including adhering the first substrate to the second substrate by the mediation of the adhesive coating layer; applying a load to the first substrate and the second

substrate in a thickness direction, to thereby closely bind the first substrate, the adhesive coating layer, and the second substrate, while at least one of a heat treatment and a reduced pressure treatment is performed; and then performing a post-heat treatment.

8. A debonding method comprising irradiating a laminate produced through a laminate production method as recited in claim 7 with laser light from the second substrate side of the laminate, to thereby debond the second substrate.

9. A debonding method according to claim 8, wherein the laser light has a wavelength of 190 nm to 600 nm.