CLAIMS

[Claim 1]

A decomposing cleaning composition of an adhesive polymer comprising a quaternary alkylammonium fluoride or a hydrate of a quaternary alkylammonium fluoride, and an aprotic solvent, wherein the aprotic solvent comprises

(A) an N-substituted amide compound having no active hydrogen on a nitrogen atom, and

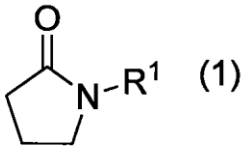
(B) at least one organic sulfur oxide selected from the group consisting of a sulfoxide compound and a sulfone compound,

the adhesive polymer is a polyorganosiloxane compound, and

the content of the (A) N-substituted amide compound is 30 to 99% by mass and the content of the (B) organic sulfur oxide is 1 to 70% by mass, with respect to 100% by mass of the aprotic solvent.

[Claim 2]

The decomposing cleaning composition according to claim 1, wherein the (A) N-substituted amide compound is a 2-pyrrolidone derivative compound represented by the formula (1):



(1)

wherein, in the formula (1), R^1 represents an alkyl group having 1 to 4 carbon atoms.

[Claim 3]

The decomposing cleaning composition according to claim 2, wherein the (A) N-substituted amide compound is a 2-pyrrolidone derivative compound wherein R^1 in the formula (1) is a methyl group or an ethyl group.

[Claim 4]

The decomposing cleaning composition according to any one of claims 1 to 3, wherein the sulfoxide compound is a cyclic sulfoxide compound having 4 to 6 carbon atoms, or an acyclic sulfoxide compound represented by the formula (2):

$R^2(SO)R^3$ (2),

wherein, in the formula (2), R^2 and R^3 each independently represent an alkyl group selected from the group consisting of a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, an isobutyl group, a sec-butyl group, and a t-butyl group.

[Claim 5]

The decomposing cleaning composition according to claim 4, wherein the sulfoxide compound is dimethyl sulfoxide.

[Claim 6]

The decomposing cleaning composition according to any one of claims 1 to 5, wherein the sulfone compound is a cyclic sulfone compound having 4 to 6 carbon atoms, or an acyclic sulfone compound represented by the formula (3):

$R^4(SO_2)R^5$ (3),

wherein, in the formula (3), R^4 and R^5 each independently represent a group selected from the group consisting of an alkyl group having 1 to 8 carbon atoms, a phenyl group, and a benzyl group.

[Claim 7]

The decomposing cleaning composition according to claim 6, wherein the sulfone compound is sulfolane or 3-methylsulfolane.

[Claim 8]

The decomposing cleaning composition according to any one of claims 1 to 7, wherein the content of the (A) N-substituted amide compound is 50 to 99% by mass and the content of the (B) organic sulfur oxide is 1 to 50% by mass, with respect to 100% by mass of the aprotic solvent.

[Claim 9]

The decomposing cleaning composition according to any one of claims 1 to 7, wherein the content of the (A) N-substituted amide compound is 70 to 98% by mass and the content of the (B) organic sulfur oxide is 2 to 30% by mass, with respect to 100% by mass of the aprotic solvent.

[Claim 10]

The decomposing cleaning composition according to any one of claims 1 to 9, wherein the content of the quaternary alkylammonium fluoride is 0.1 to 15% by mass.

[Claim 11]

The decomposing cleaning composition according to any one of claims 1 to 10, wherein the quaternary alkylammonium fluoride is a tetraalkylammonium fluoride

represented by $R^6R^7R^8R^9N^+F^-$, wherein R^6 to R^9 are each independently an alkyl group selected from the group consisting of a methyl group, an ethyl group, an n-propyl group, an isopropyl group, and an n-butyl group.

[Claim 12]

The decomposing cleaning composition according to any one of claims 1 to 11, wherein the adhesive polymer is used for temporary bonding between a device wafer and a support wafer.

[Claim 13]

A method for cleaning an adhesive polymer on a substrate by using the decomposing cleaning composition according to any one of claims 1 to 12, wherein the adhesive polymer is the polyorganosiloxane compound.

[Claim 14]

The method according to claim 13, comprising carrying out the cleaning with the substrate in contact with an acrylic pressure sensitive adhesive.

[Claim 15]

A method for producing a device wafer comprising cleaning an adhesive polymer on a front surface of the device wafer by using the decomposing cleaning composition according to any one of claims 1 to 12, wherein the adhesive polymer is the polyorganosiloxane compound.

[Claim 16]

The method according to claim 15, comprising carrying out the cleaning with the device wafer in contact with an acrylic pressure sensitive adhesive.