Claims

[Claim 1]

A kit used for chemical mechanical polishing of a processing object and cleaning of the processing object that has been subjected to the chemical mechanical polishing, the kit comprising:

a polishing fluid; and

a washing liquid,

the polishing fluid including abrasive grains and a nonionic surfactant, the polishing fluid having a pH of 7.0 or more,

the washing liquid including at least one first compound selected from the group consisting of xanthine, a xanthine derivative, adenine, and an adenine derivative and at least one second compound other than the first compound, the second compound being selected from the group consisting of a secondary amine compound, a tertiary amine compound, and a quaternary ammonium compound.

[Claim 2]

The kit according to claim 1, wherein the washing liquid has a pH of 10.0 to 14.0.

[Claim 3]

The kit according to claim 1 or 2, wherein the washing liquid includes two or more second compounds.

[Claim 4]

The kit according to claim 3, wherein at least one of the two or more second compounds is a tertiary amine compound.

[Claim 5]

The kit according to any one of claims 1 to 4, wherein the washing liquid includes three or more second compounds.

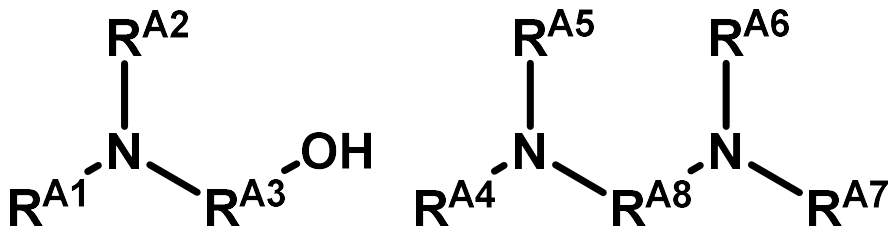
[Claim 6]

The kit according to claim 5, wherein at least one of the three or more second compounds is a tertiary amine.

[Claim 7]

The kit according to any one of claims 1 to 6, wherein at least one of the second compound is a compound selected from the group consisting of a compound represented by Formula (A1) and a compound represented by Formula (A2),

[Chem. 1]



(A1) (A2)

wherein, in Formula (A1),

R^{A1} and R^{A2} each independently represent a hydrogen atom or an unsubstituted or substituted alkyl group having 1 to 3 carbon atoms, where at least one of R^{A1} or R^{A2} represents an unsubstituted or substituted alkyl group having 1 to 3 carbon atoms,

R^{A3} represents an unsubstituted or substituted alkylene group having 1 to 4 carbon atoms, and

two of R^{A1} to R^{A3} may be bonded to each other with a single bond or a divalent linking group interposed therebetween to form a ring, and

wherein, in Formula (A2),

R^{A4} to R^{A7} each independently represent a hydrogen atom or a unsubstituted or substituted alkyl group having 1 to 3 carbon atoms, where at least one of R^{A4} to R^{A7} represents an unsubstituted or substituted alkyl group,

two of R^{A4} to R^{A7} may be bonded to each other with a single bond or a divalent linking group interposed therebetween to form a ring, and

R^{A8} represents an unsubstituted or substituted alkylene group having 1 to 6 carbon atoms which may have a linking group represented by $-NR^{Ax}-$ or -O-, where R^{Ax} represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms.

[Claim 8]

The kit according to claim 7,

wherein the washing liquid includes two or more second compounds, and

at least two of the two or more second compounds are compounds selected from the group consisting of the compound represented by Formula (A1) and the compound represented by Formula (A2).

[Claim 9]

The kit according to any one of claims 1 to 8,

wherein a content of the first compound is 0.10% to 10.0% by mass of a total solid content in the washing liquid.

[Claim 10]

The kit according to any one of claims 1 to 9,

wherein a content of the second compound is 75.0% by mass or more of a total solid content in the washing liquid.

[Claim 11]

The kit according to any one of claims 1 to 10,

wherein a mass ratio of a content of the second compound to a content of the first compound is 10.00 to 1000.00.

[Claim 12]

The kit according to any one of claims 1 to 11,

wherein the pH of the polishing fluid is 8.5 to 11.0.

[Claim 13]

The kit according to any one of claims 1 to 12,

wherein at least one of the polishing fluid or the washing liquid further includes an organic acid.

[Claim 14]

The kit according to claim 13,

wherein the organic acid includes at least one organic acid selected from the group consisting of a polyvalent carboxylic acid and a polyvalent phosphonic acid.

[Claim 15]

The kit according to any one of claims 1 to 14,

wherein the polishing fluid further includes an alcohol.

[Claim 16]

The kit according to claim 15,

wherein a content of the alcohol is 0.1 to 1000 ppm by mass of a total mass of the polishing fluid.

[Claim 17]

The kit according to claim 15 or 16,

wherein the alcohol is an alcohol selected from the group consisting of methanol, ethanol, 1-propanol, and isopropanol.

[Claim 18]

The kit according to any one of claims 1 to 17,

wherein the nonionic surfactant is an alcohol alkoxylate.

[Claim 19]

The kit according to any one of claims 1 to 18,

wherein a ratio of a content of the nonionic surfactant relative to a total mass of the polishing fluid to a content of the second compound relative to a total mass of the washing liquid is 0.0035 to 3.5.

[Claim 20]

The kit according to any one of claims 1 to 19,

wherein the processing object includes copper.

[Claim 21]

A method for producing a semiconductor device in which the kit according to any one of claims 1 to 20 is used, the method comprising:

a step 1 of subjecting a processing object to chemical mechanical polishing using the polishing fluid, and

a step 2 of, subsequent to the step 1, cleaning the processing object that has been subjected to the chemical mechanical polishing using the washing liquid.

[Claim 22]

The method according to claim 21, further comprising:

a step 1a, after step 1 and prior to step 2, of pad washing the processing object subjected to chemical mechanical polishing using the washing liquid as a composition for pad washing.