CLAIMS

1. A polishing composition characterized by comprising:

colloidal silica abrasive grains;

at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms;

at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts; and

water, wherein

the abrasive grains have an average primary particle diameter of 5 to 50 nm, ~~and~~

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

2. The polishing composition according to claim 1, wherein the basic compound is at least one type of compound selected from the group consisting of hydroxides of quaternary ammonium, carbonates of quaternary ammonium, bicarbonates of quaternary ammonium, hydroxides of alkali metals, carbonates of alkali metals, and bicarbonates of alkali metals.

3. The polishing composition according to claim 1 or 2, wherein the basic compound is at least one type of compound selected from the group consisting of tetramethylammonium hydroxide, tetramethylammonium carbonate, tetramethylammonium bicarbonate, potassium hydroxide, potassium carbonate, and potassium bicarbonate.

4. The polishing composition according to claim 1, wherein the basic compound is a quaternary ammonium salt.

5~~4~~. The polishing composition according to any one of claims 1 to 4~~3~~, wherein the abrasive grains have a cocoon shape or have a spherical shape with a plurality of protrusions on its surface.

6. The polishing composition according to any one of claims 1 to 5, wherein the alcohol compound is contained in the polishing composition in an amount of 0.30% by mass or less.

7~~5~~. The polishing composition according to any one of claims 1 to 6~~4~~, further comprising a chelating agent.

8~~6~~. A polishing composition kit comprising a first component and a second component that are mixed mutually to obtain a polishing composition, the kit being characterized in that

the first component contains colloidal silica abrasive grains, at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts, and water,

the second component contains at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms,

the abrasive grains have an average primary particle diameter of 5 to 50 nm, ~~and~~

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

9~~7~~. A method for polishing a semiconductor substrate surface using a polishing composition, wherein

the polishing composition contains:

colloidal silica abrasive grains;

at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms;

at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts; and

water,

the abrasive grains have an average primary particle diameter of 5 to 50 nm, ~~and~~

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

10~~8~~. The method according to claim 9~~7~~, wherein the polishing of the semiconductor substrate surface is performed using a polishing machine and while supplying the polishing composition to the substrate surface, and whereas the abrasive grains and the basic compound are supplied to the substrate surface continuously from a start of polishing of the substrate surface and thereafter, the alcohol compound is supplied to the substrate surface only after the start of polishing of the substrate surface.

11~~9~~. The method according to claim 9~~7~~ or 10~~8~~, wherein the polishing composition is put into cyclical use.

12~~10~~. The method according to claim 11~~9~~, wherein in putting the polishing composition into cyclical use, a reduced amount of at least any one of the abrasive grains, the alcohol compound, and the basic compound in the polishing composition is replenished.

CLAIMS

1. A polishing composition characterized by comprising:

colloidal silica abrasive grains;

at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms;

at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts; and

water, wherein

the abrasive grains have an average primary particle diameter of 5 to 50 nm,

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

2. The polishing composition according to claim 1, wherein the basic compound is at least one type of compound selected from the group consisting of hydroxides of quaternary ammonium, carbonates of quaternary ammonium, bicarbonates of quaternary ammonium, hydroxides of alkali metals, carbonates of alkali metals, and bicarbonates of alkali metals.

3. The polishing composition according to claim 1 or 2, wherein the basic compound is at least one type of compound selected from the group consisting of tetramethylammonium hydroxide, tetramethylammonium carbonate, tetramethylammonium bicarbonate, potassium hydroxide, potassium carbonate, and potassium bicarbonate.

4. The polishing composition according to claim 1, wherein the basic compound is a quaternary ammonium salt.

5. The polishing composition according to any one of claims 1 to 4, wherein the abrasive grains have a cocoon shape or have a spherical shape with a plurality of protrusions on its surface.

6. The polishing composition according to any one of claims 1 to 5, wherein the alcohol compound is contained in the polishing composition in an amount of 0.30% by mass or less.

7. The polishing composition according to any one of claims 1 to 6, further comprising a chelating agent.

8. A polishing composition kit comprising a first component and a second component that are mixed mutually to obtain a polishing composition, the kit being characterized in that

the first component contains colloidal silica abrasive grains, at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts, and water,

the second component contains at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms,

the abrasive grains have an average primary particle diameter of 5 to 50 nm,

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

9. A method for polishing a semiconductor substrate surface using a polishing composition, wherein

the polishing composition contains:

colloidal silica abrasive grains;

at least one type of alcohol compound selected from the group consisting of aliphatic alcohols with 2 to 6 carbon atoms and glycol ethers with 3 to 10 carbon atoms;

at least one type of basic compound selected from the group consisting of quaternary ammonium salts and alkali metal salts; and

water,

the abrasive grains have an average primary particle diameter of 5 to 50 nm,

the alcohol compound is contained in the polishing composition in an amount of 0.01 to 1% by mass, and

the polishing composition has a pH of 8.5 or more and 11.5 or less.

10. The method according to claim 9, wherein the polishing of the semiconductor substrate surface is performed using a polishing machine and while supplying the polishing composition to the substrate surface, and whereas the abrasive grains and the basic compound are supplied to the substrate surface continuously from a start of polishing of the substrate surface and thereafter, the alcohol compound is supplied to the substrate surface only after the start of polishing of the substrate surface.

11. The method according to claim 9 or 10, wherein the polishing composition is put into cyclical use.

12. The method according to claim 11, wherein in putting the polishing composition into cyclical use, a reduced amount of at least any one of the abrasive grains, the alcohol compound, and the basic compound in the polishing composition is replenished.