CLAIMS

1. A polishing liquid for chemical mechanical polishing comprising cerium oxide particles, an organic acid A, a polymer compound B having a carboxyl acid group or a carboxylate group, and water,

wherein the organic acid A has at least one group selected from the group consisting of -COOM group, -Ph-OM group, $-SO_3M$ group and $-PO_3M_2$ group (where, M is at least one selected from the group of H, NH_4, Na and K, and Ph represents a phenyl group which may have a substituent),

pKa of the organic acid A is less than 9,

a content of the organic acid A is 0.001 to 1 mass% with respect to the total mass of the polishing liquid,

a content of the polymer compound B is 0.01 to 0.50 mass% with respect to the total mass of the polishing liquid, and

pH is in the range of 4.0 to 7.0.

2. The polishing liquid according to claim 1, wherein the polishing liquid is stored as two liquid-type polishing liquid which consists of a first liquid comprising the cerium oxide particles and the water, and a second liquid comprising the organic acid A, the polymer compound B and the water.

3. The polishing liquid according to claim 2, wherein the first liquid further comprises a dispersant.

4. A substrate polishing method for polishing a polishing target film formed on a surface of a substrate by using the polishing liquid according to any one of claims 1 to 3.

CLAIMS

1. A polishing liquid for chemical mechanical polishing comprising cerium oxide partioles, p-toluenesulfonic acid, a water-soluble organic polymer having a carboxyl acid group or a carboxylate group, and water,

a content of the p-toluenesulfonic acid is 0.001 to 1 mass% with respect to the total mass of the polishing liquid, and

a content of the water-soluble organic polymer is 0.01 to 0.50 mass% with respect to the total mass of the polishing liquid, and

pH is in the range of 4.0 to 7.0.

2. The polishing liquid according to claim 1, wherein the polishing liquid is stored as two liquid-type polishing liquid which consists of a first liquid comprising the cerium oxide particles and the water, and a second liquid comprising the p-toluenesulfonic acid, the water-soluble organic polymer and the water.

3. The polishing liquid according to claim 2, wherein the first liquid further comprises a dispersant.

4. The polishing liquid according to any one of claims 1 to 3, wherein the content of the p-toluenesulfonic acid is 0.005 to 0.1 mass% with respect to the total mass of the polishing liquid.

5. The polishing liquid according to any one of the claims of 1 to 3, wherein the water-soluble organic polymer is selected from the group consisting of polyaspartic acid, polyglutamic acid, polylysine, polymalic acid, polyamic acid, polyamic acid ammonium salt, polyamide acid sodium salt, and polyglyoxylic acid; a homopolymer of monomers having a carboxylic acid group selected from the group consisting of acrylic acid, methacrylic acid and maleic acid; a homopolymer in which a carboxylic acid moiety of the homopolymer is ammonium salt; a copolymer of monomers having a carboxylate group and an alkyl ester of a carboxylic acid; and a polymer in which the carboxylic acid moiety of poly(meth)acrylic acid is substituted with ammonium carboxylate group.

6. The polishing liquid according to any one of claims 1 to 3, wherein the content of the water-soluble organic polymer is 0.02 to 0.40 mass% with respect to the total mass of the polishing liquid.

7. The polishing liquid according to any one of claims 1 to 3, wherein the pH is in the range of 4.0 to 6.0.

8. The polishing liquid according to claim 7, wherein the pH is in the range of 4.0 to 5.5.

9. A substrate polishing method for polishing a polishing target film formed on a surface of a substrate by using the polishing liquid according to any one of claims 1 to 3.