CLAIMS

1. A chemical mechanical polishing liquid, comprising abrasive particles, polyacrylic acid, potassium carbonate, alkyl quaternary ammonium salt, polymerization inhibitor, water and pH regulator;

wherein, in mass percent, the abrasive particles have a content of 5wt% to 50wt%; the polyacrylic acid has a content of 0.01wt% to 1wt%; the potassium carbonate has a content of 0.1wt% to 5wt%; the alkyl quaternary ammonium salt has a content of 0.01wt% to 0.5wt%; and the polymerization inhibitor has a content of 0.1wt% to 5wt%;

the alkyl quaternary ammonium salt is $RR'(CH_3)_2N^+X^-$, wherein R is $-C_nH_{2n+1}$ and n = 8 to 18; R' is the same as R, or is $-CH_3$ or $-CH_2C_6H_5$; X^- is a halogen anion;

the polymerization inhibitor is selected from the group consisting of benzyl trimethyl ammonium chloride, benzyl trimethyl ammonium bromide, benzyl trimethyl ammonium hydroxide, benzyl triethyl ammonium chloride, benzyl triethyl ammonium bromide, benzyl triethyl ammonium hydroxide, phenyl trimethyl ammonium chloride, phenyl trimethyl ammonium bromide, phenyl trimethyl ammonium hydroxide, and a mixture thereof;

wherein the abrasive particles are SiO_2 and/or fumed SiO_2;

the polyacrylic acid has a number average molecular weight of 2,000 to 500,000; and

the polishing liquid has a pH of 9 to 12.

2. The chemical mechanical polishing liquid according to claim 1, wherein the abrasive particles have a particle diameter of 20 nm to 200 nm;

and/or, the pH regulator is an acid regulator, the acid regulator is selected from organic acid or inorganic acid, the inorganic acid is selected from the group consisting of hydrochloric acid, nitric acid, sulfuric acid, and a mixture thereof, and the organic acid is selected from the group consisting of succinic acid, malonic acid, tartaric acid, gluconic acid, and a mixture thereof;

and/or, the pH regulator is an alkali regulator, the alkali regulator is selected from inorganic alkali or organic alkali, the inorganic alkali is selected from the group consisting of potassium hydroxide, sodium hydroxide, and a mixture thereof, and the organic alkali is selected from the

group consisting of ethanolamine, ethylenediamine, diethylamine, and a mixture thereof.

3. The chemical mechanical polishing liquid according to claim 1, wherein the abrasive particles are SiO_2;

and/or, the abrasive particles have a particle diameter of 50 nm to 150 nm;

and/or, the polyacrylic acid has a number average molecular weight of 5,000 to 450,000;

and/or, the alkyl quaternary ammonium salt is selected from the group consisting of hexadecyl trimethyl ammonium salt, hexadecyl dimethyl benzyl ammonium salt, dodecyl trimethyl ammonium salt, dodecyl dimethyl benzyl ammonium salt, didodecyl dimethyl ammonium salt, octyltrimethyl ammonium salt, and a mixture thereof.

4. The chemical mechanical polishing liquid according to claim 1, wherein the polishing liquid comprises SiO_2 abrasive particles, polyacrylic acid, potassium carbonate, cetyltrimethyl ammonium chloride, benzyl trimethyl ammonium chloride, water and a pH regulator; or the polishing liquid comprises SiO_2 abrasive particles, polyacrylic acid, potassium carbonate, didodecyl dimethyl ammonium chloride, benzyl triethyl ammonium hydroxide, water and a pH regulator.

5. The chemical mechanical polishing liquid according to claim 1, wherein the polishing liquid further comprises a bactericide.

6. The chemical mechanical polishing liquid according to claim 1, wherein, in mass percent, the abrasive particles have a content of 10wt% to 30wt%,

the polyacrylic acid has a content of 0.1wt% to 0.5wt%;

the potassium carbonate has a content of 0.5wt% to 1.5wt%;

the alkyl quaternary ammonium salt has a content of 0.01wt% to 0.1wt%;

the polymerization inhibitor has a content of 0.5wt% to 1.5wt%;

and the polishing liquid has a pH of 10 to 11.

7. A method of chemical mechanical polishing, comprising:

diluting a polishing liquid, and then polishing a sample to be polished;

wherein the polishing liquid is the chemical mechanical polishing liquid according to any one of claims 1 to 6.

8. The method according to claim 7, wherein the sample to be polished is a wafer containing silicon dioxide, the polishing is performed for a time of 1 min to 3 min, and the diluted polishing liquid has a flow rate of 120 ml/min to 180 ml/min.