Claims

[Claim 1]

A polishing pad, which comprises a polishing layer comprising a polyurethane-based resin,

wherein the polyurethane-based resin is one obtained by curing a urethane-based prepolymer;

the urethane-based prepolymer comprises a diisocyanate, a polyol, and a multifunctional low-molecular-weight compound as polymerization units,

the multifunctional low-molecular-weight compound has a molecular weight of 500 or less,

the multifunctional low-molecular-weight compound comprises 3 to 10 functional groups at terminal, and the functional group is at least one selected from the group consisting of a hydroxyl group, an amine group, and an epoxy group, and

the polishing layer has a swelling ratio of 100% to 250% in dimethyl sulfoxide based on the volume or weight of the polishing layer.

[Claim 2]

The polishing pad of claim 1, wherein the polyurethane-based resin comprises the multifunctional low-molecular-weight compound reacted with the diisocyanate; and the polymerization chains crosslinked by the multifunctional low-molecular-weight compound.

[Claim 3]

The polishing pad of claim 1, wherein the multifunctional low-molecular-weight compound comprises at least one selected from the group consisting of glycerin, trimethylolpropane, ethylenediamine, diethanolamine, diethylenetriamine, triethylenetetraamine, and dihydrogen monoxide.

[Claim 4]

The polishing pad of claim 1, wherein

the urethane-based prepolymer comprises the multifunctional low-molecular-weight compound in an amount of 0.1% to 5% by weight based on the weight of the urethane-based prepolymer.

[Claim 5]

The polishing pad of claim 4, wherein the urethane-based prepolymer comprises an unreacted diisocyanate in an amount of 0.1% by weight to 5% by weight based on the total weight of the diisocyanate.

[Claim 6]

The polishing pad of claim 1, wherein the polishing layer has, in dimethyl sulfoxide, a swelling ratio of 100% to 200% based on the volume of the polishing layer and a swelling ratio of 150% to 250% based on the weight of the polishing layer.

[Claim 7]

A process for preparing a polishing pad, which comprises:

reacting a diisocyanate, a polyol, and a multifunctional low-molecular-weight compound to prepare a urethane-based prepolymer; and

mixing the urethane-based prepolymer with a curing agent and a foaming agent and curing the mixture to prepare a polishing layer,

wherein the multifunctional low-molecular-weight compound has a molecular weight of 500 or less, the multifunctional low-molecular-weight compound comprises 3 to 10 functional groups at terminal, and the functional group is at least one selected from the group consisting of a hydroxyl group, an amine group, and an epoxy group, and

the polishing layer has a swelling ratio of 100% to 250% in dimethyl sulfoxide based on the volume or weight of the polishing layer.

[Claim 8]

The process for preparing a polishing pad of claim 7, wherein the step of preparing the urethane-based prepolymer comprises a first reaction step of reacting the diisocyanate and the polyol; and a second reaction step of reacting the product of the first reaction with the multifunctional low-molecular-weight compound, wherein the content of an unreacted diisocyanate in the product of the second reaction is less than the content of an unreacted diisocyanate in the product of the first reaction.

[Claim 9]

A process for preparing a semiconductor device, which comprises:

polishing the surface of a semiconductor substrate using a polishing pad,

wherein the polishing pad comprises a polishing layer comprising a polyurethane-based resin, wherein the polyurethane-based resin is one obtained by curing a urethane-based prepolymer;

the urethane-based prepolymer comprises a diisocyanate, a polyol, and a multifunctional low-molecular-weight compound as polymerization units,

the multifunctional low-molecular-weight compound has a molecular weight of 500 or less, the multifunctional low-molecular-weight compound comprises 3 to 10 functional groups at terminal, and the functional group is at least one selected from the group consisting of a hydroxyl group, an amine group, and an epoxy group, and

the polishing layer has a swelling ratio of 100% to 250% in dimethyl sulfoxide based on the volume or weight of the polishing layer.