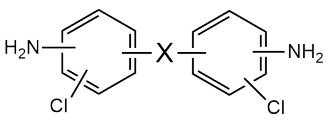
CLAIMS

1. A polishing pad, comprising a polishing layer, wherein the polishing layer comprises a polyurethane obtained by reacting a multifunctional isocyanate, a polyol composition, and a polyamine composition, wherein the polyamine composition comprises one or more of diamines and/or triamines and/or polyamines with more than 3 aminos, an average molecular weight of the polyamine composition is between 200 and 400, and an average functionality of the polyamine composition is greater than 2 and not higher than 2.20, and wherein proportions of the diamines and the triamines relative to a total amount of the polyamine composition are 77%-96% : 3%-12%, respectively, in the polyamine composition.

2. A polishing pad, comprising a polishing layer, wherein the polishing layer comprises a polyurethane obtained by reacting a multifunctional isocyanate, a polyol composition, and a polyamine composition, wherein the polyamine composition comprises one or more of diamines and/or triamines and/or polyamines with more than 3 aminos, an average molecular weight of the polyamine composition is between 200 and 400, and an average functionality of the polyamine composition is greater than 2 and not higher than 2.20, and wherein proportions of the diamines and tetraamines relative to a total amount of the polyamine composition are 77%-96% : 0.1%-10%, respectively, in the polyamine composition.

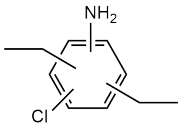
3. The polishing pad of claim 1, wherein the polyamines with more than 3 aminos comprise tetraamines, wherein a proportion of the tetraamines relative to the total amount of the polyamine composition is between 0.1% and 10%.

4. The polishing pad of any one of claims 1 to 3, wherein the diamines and/or triamines and/or polyamines with more than 3 aminos comprise a compound represented by Structural Formula 1:

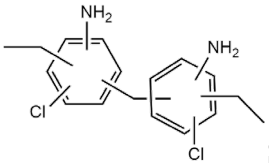


Structural Formula 1

in the Structural Formula 1, X represents a carbon atom or one or a combination of more of structural units represented by Structural Formula 2 or Structural Formula 3:



Structural Formula 2



Structural Formula 3.

5. The polishing pad of any one of claims 1 to 3, wherein the polyamine composition comprises free chloride ions in a content of less than 900 ppm.

6. The polishing pad of any one of claims 1 to 3, wherein a total average functionality of the polyol composition and the polyamine composition is not higher than 2.2.

7. The polishing pad of claim 6, wherein the multifunctional isocyanate comprises one or a combination of more of aromatic isocyanates or aliphatic isocyanates, wherein the aromatic isocyanates comprise one or a combination of more of 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, 2,2'-diphenylmethane diisocyanate, 2,4'-diphenylmethane diisocyanate, 4,4'-diphenylmethane diisocyanate, 1,5-naphthalene diisocyanate, p-phenylene diisocyanate, m-phenylene diisocyanate, p-xylylene diisocyanate, or m-xylylene diisocyanate, and the aliphatic isocyanates comprise one or a combination of more of ethylene diisocyanate, 2,2,4-trimethylhexamethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,4-cyclohexane diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, isophorone diisocyanate, or norbornane diisocyanate.

8. The polishing pad of claim 6, wherein the polyol composition comprises one or a combination of more of polytetramethylene ether glycol, polyethylene glycol, polypropylene glycol, ethylene glycol, 1,3-butanediol, 1,4-butanediol, diethylene glycol, neopentyl glycol, 2-methyl-1,3-propanediol, hexanediol, 3-methyl-1,5-pentanediol, or 1,4-cyclohexanedimethanol.

9. The polishing pad of any one of claims 1 to 3, wherein the polishing layer has a density between 0.4 g/cm^3 and 1.1 g/cm^3 and a Shore hardness between 15D and 85D.

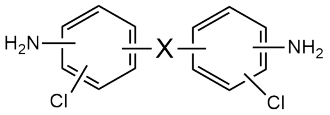
10. The polishing pad of any one of claims 1 to 3, wherein the polishing pad comprises a cushion layer, an adhesive layer, and a back adhesive layer, and the polishing pad is arranged to be the polishing layer, the adhesive layer, the cushion layer, and the back adhesive layer in sequence from top to bottom, wherein the adhesive layer is used for bonding the polishing layer to the cushion layer, the back adhesive layer is used for bonding the polishing pad to the polishing table, and the back adhesive layer further comprises a release paper or a release film.

11. A polyamine composition, comprising one or more of diamines and/or triamines and/or polyamines with more than 3 aminos, wherein an average molecular weight of the polyamine composition is between 200 and 400, an average functionality of the polyamine composition is greater than 2 and not higher than 2.20, and wherein proportions of the diamines and the triamines relative to a total amount of the polyamine composition is 77%-96% : 3%-12%, respectively, in the polyamine composition.

12. A polyamine composition, comprising one or more of diamines and/or triamines and/or polyamines with more than 3 aminos, wherein an average molecular weight of the polyamine composition is between 200 and 400, an average functionality of the polyamine composition is greater than 2 and not higher than 2.20, and proportions of the diamines and tetraamines relative to a total amount of the polyamine composition is 77%-96% : 0.1%-10%, respectively, in the polyamine composition.

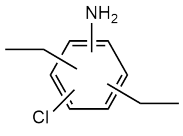
13. The polyamine composition of claim 11, wherein the polyamines with more than 3 aminos comprise tetraamines, wherein a proportion of the tetraamines relative to the total amount of the polyamine composition is between 0.1% and 10%.

14. The polyamine composition of any one of claims 11 to 13, wherein the diamines and/or triamines and/or polyamines with more than 3 aminos comprise a compound represented by Structural Formula 1:

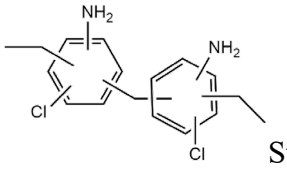


Structural Formula 1

in the Structural Formula 1, X represents a carbon atom or one or a combination of more of structural units represented by Structural Formula 2 or Structural Formula 3:



Structural Formula 2



Structural Formula 3.

15. The polyamine composition of any one of claims 11 to 13, wherein the polyamine composition comprises free chloride ions in a content of less than 900 ppm.

16. A polishing layer, obtained by reacting the polyamine composition of any one of claims 11 to 13 with a multifunctional isocyanate and a polyol composition.

17. A polishing pad, comprising a polishing layer, wherein the polishing layer comprises a polyurethane obtained by reacting a multifunctional isocyanate, a polyol composition, and a polyamine composition, and wherein in a liquid chromatogram obtained by a liquid chromatography analysis of the polyamine composition under following conditions, a ratio of a peak area with a retention time of 7.0-7.8 min to a peak area with a retention time of 10-11 min is between 5 and 30:

liquid chromatography analysis conditions:

test sample: to 0.0204 g of the polyamine composition, methanol is added until a total mass of 20.0026 g is obtained; to 0.2 ml of a solution obtained thereby, methanol is added until a total volume of 2 ml is obtained, such that a 100 ppm solution is obtained by mixing; to 0.2 ml of the 100 ppm solution, methanol is added until a total volume of 2 ml is obtained, such that a 10 ppm solution is obtained by mixing;

chromatography column: ZORBAX Eclipse XDB-C18, 4.6*250 mm, 5-Micron, made by Aglient;

column temperature: 40 °C;

mobile phase: A (0.1% formic acid aqueous solution) : B(methanol)=20 : 80;

flow rate: 0.5 ml/min;

detector: a UV detector with a wavelength of 254 nm;

sample injection volume: 10 μl.

18. A polishing pad, comprising a polishing layer, wherein the polishing layer comprises a polyurethane obtained by reacting a multifunctional isocyanate, a polyol composition, and a polyamine composition, wherein in a liquid chromatogram obtained by a liquid chromatography analysis of the polyamine composition under following conditions, a ratio of a peak area with a retention time of 7.0-7.8 min to a peak area with a retention time of 14.2-16 min is between 10 and 400:

liquid chromatography analysis conditions:

test sample: to 0.0204 g of the polyamine composition, methanol is added until a total mass of 20.0026 g is obtained; to 0.2 ml of a solution obtained thereby, methanol is added until a total volume of 2 ml is obtained, such that a 100 ppm solution is obtained by mixing; to 0.2 ml of the 100 ppm solution, methanol is added until a total volume of 2 ml is obtained, such that a 10 ppm solution is obtained by mixing;

chromatography column: ZORBAX Eclipse XDB-C18, 4.6*250 mm, 5-Micron, made by Aglient;

column temperature: 40 °C;

mobile phase: A (0.1% formic acid aqueous solution) : B(methanol)=20 : 80;

flow rate: 0.5 ml/min;

detector: a UV detector with a wavelength of 254 nm;

sample injection volume: 10 μl.

19. A polishing pad, comprising a polishing layer, wherein the polishing layer comprises a polyurethane obtained by reacting a multifunctional isocyanate, a polyol composition, and a polyamine composition, wherein in a liquid chromatogram obtained by a liquid chromatography analysis of the polyamine composition under following conditions, a ratio of a peak area with a retention time of 7.0-7.8 min, to a peak area with a retention time of 10-11 min and to a peak area with a retention time of 14.2-16 min is 360-450 : 15-45 : 1-40;

liquid chromatography analysis conditions:

test sample: to 0.0204 g of the polyamine composition, methanol is added until a total mass of 20.0026 g is obtained; to 0.2 ml of a solution obtained thereby, methanol is added until a total volume of 2 ml is obtained, such that a 100 ppm solution is obtained by mixing; to 0.2 ml of the 100 ppm solution, methanol is added until a total volume of 2 ml is obtained, such that a 10 ppm solution is obtained by mixing;

chromatography column: ZORBAX Eclipse XDB-C18, 4.6*250 mm, 5-Micron, made by Aglient;

column temperature: 40 °C;

mobile phase: A (0.1% formic acid aqueous solution) : B(methanol)=20 : 80;

flow rate: 0.5 ml/min;

detector: a UV detector with a wavelength of 254 nm;

sample injection volume: 10 μl.