CLAIMS

1. A manufacturing method of a glass substrate for a magnetic disk having a cleaning step of the glass substrate wherein the cleaning step comprises a treatment of contacting the glass substrate with a cleaning liquid containing oxalic acid and divalent iron ions and having a pH of not less than 2 and not more than 4.

2. The manufacturing method of a glass substrate for a magnetic disk according to claim 1, wherein the concentration of oxalic acid in the cleaning liquid is not less than 0.2wt% and not more than 3.0wt%.

3. The manufacturing method of a glass substrate for a magnetic disk according to claims 1 or 2, wherein the cleaning liquid is prepared by adding a material which can supply divalent iron ions.

4. The manufacturing method of a glass substrate for a magnetic disk according to claim 3, wherein the material which can supply divalent iron ions is at least one selected from a group consisting of ammonium iron (II) sulfate, iron (II) sulfate and iron (II) oxalate.

5. The manufacturing method of a glass substrate for a magnetic disk according to claim 4, wherein the concentration of ammonium iron (II) sulfate, iron (II) sulfate or iron oxalate (II) in the cleaning liquid is not less than 0.015wt% and not more than 0.3wt%.

6. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 5, wherein the cleaning liquid further contains ascorbic acid or a thioglycollic acid-based compound.

7. The manufacturing method of a glass substrate for a magnetic disk according to claim 6, wherein the concentration of ascorbic acid or a thioglycollic acid-based compound in the cleaning liquid is not less than 0.2wt% and not more than 0.5wt%.

8. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 7, wherein the cleaning liquid further contains an alkaline aqueous solution.

9. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 8, wherein iron oxides on the glass substrate are removed

by contacting the glass substrate with the cleaning liquid.

10. A manufacturing method of a glass substrate for a magnetic disk comprising a polishing step of polishing the main surfaces of the glass substrate with a polishing apparatus having polishing surface plates containing iron; and a cleaning step of cleaning the glass substrate after the polishing step wherein the cleaning step is carried out by performing cleaning with a cleaning liquid containing an oxalate ion and divalent iron ions under acidic condition.

11. A manufacturing method of a glass substrate for a magnetic disk comprising a cleaning step of the glass substrate wherein the cleaning step is carried out by performing cleaning with a cleaning liquid containing an oxalate ion and divalent iron ions under acidic condition so as to dissolve iron-based contaminating substances present on the glass substrate.

12. A manufacturing method of a glass substrate for a magnetic disk comprising a cleaning step of the glass substrate wherein the cleaning step is carried out by performing cleaning the glass substrate with a cleaning

liquid converting iron-based contaminating substances present on the glass substrate to divalent iron ions.

13. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 12, wherein the surface roughness of the glass substrate before the cleaning step is not more than 0.2 nm.

14. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 12, wherein the surface roughness of the glass substrate after the cleaning step is not more than 0.2 nm.

15. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 14, wherein the polishing step polishes the glass substrate with silica abrasive grains having an average particle size of not more than 30 nm.

16. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 15, wherein the pH of the cleaning liquid is set to not less than 1.8 and not more than 4.2.

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1. A manufacturing method of a glass substrate for a magnetic disk having a cleaning step of the glass substrate wherein the cleaning step comprises a treatment of contacting the glass substrate with a cleaning liquid containing oxalic acid and divalent iron ions and having a pH of not less than 2 and not more than 4.

2. The manufacturing method of a glass substrate for a magnetic disk according to claim 1, wherein the concentration of oxalic acid in the cleaning liquid is not less than 0.2wt% and not more than 3.0wt%.

3. The manufacturing method of a glass substrate for a magnetic disk according to claims 1 or 2, wherein the cleaning liquid is prepared by adding a material which can supply divalent iron ions.

4. The manufacturing method of a glass substrate for a magnetic disk according to claim 3, wherein the material which can supply divalent iron ions is at least one selected from a group consisting of ammonium iron (II) sulfate, iron (II) sulfate and iron (II) oxalate.

5. The manufacturing method of a glass substrate for a magnetic disk according to claim 4, wherein the concentration of ammonium iron (II) sulfate, iron (II) sulfate or iron oxalate (II) in the cleaning liquid is not less than 0.015wt% and not more than 0.3wt%.

6. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 5, wherein the cleaning liquid further contains ascorbic acid or a thioglycollic acid-based compound.

7. The manufacturing method of a glass substrate for a magnetic disk according to claim 6, wherein the concentration of ascorbic acid or a thioglycollic acid-based compound in the cleaning liquid is not less than 0.2wt% and not more than 0.5wt%.

8. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 7, wherein the cleaning liquid further contains an alkaline aqueous solution.

9. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 1 to 8, wherein iron oxides on the glass substrate are removed

by contacting the glass substrate with the cleaning liquid.

10. A manufacturing method of a glass substrate for a magnetic disk comprising a polishing step of polishing the main surfaces of the glass substrate with a polishing apparatus having polishing surface plates containing iron; and a cleaning step of cleaning the glass substrate after the polishing step wherein the cleaning step is carried out by performing cleaning with a cleaning liquid containing an oxalate ion and divalent iron ions under acidic condition.

11. A manufacturing method of a glass substrate for a magnetic disk comprising a cleaning step of the glass substrate wherein the cleaning step is carried out by performing cleaning with a cleaning liquid containing an oxalate ion and divalent iron ions under acidic condition so as to dissolve iron-based contaminating substances present on the glass substrate.

12. A manufacturing method of a glass substrate for a magnetic disk comprising a cleaning step of the glass substrate wherein the cleaning step is carried out by performing cleaning the glass substrate with a cleaning liquid containing divalent iron ions and converting iron-based

contaminating substances present on the glass substrate to divalent iron ions.

13. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 12, wherein the surface roughness of the glass substrate before the cleaning step is not more than 0.2 nm.

14. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 12, wherein the surface roughness of the glass substrate after the cleaning step is not more than 0.2 nm.

15. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 14, wherein the polishing step polishes the glass substrate with silica abrasive grains having an average particle size of not more than 30 nm.

16. The manufacturing method of a glass substrate for a magnetic disk according to any one of claims 10 to 15, wherein the pH of the cleaning liquid is set to not less than 1.8 and not more than 4.2.