DESCRIPTION

[Title of Invention]

METHOD FOR MANUFACTURING MAGNETIC-DISK SUBSTRATE, AND POLISHING PAD

[Technical Field]

[0001] The present invention relates to a method for manufacturing a magnetic-disk substrate and a polishing pad that is used in manufacturing a magnetic-disk substrate.

[Background Art]

[0002] Glass substrates have conventionally been used favorably in magnetic disks that are used as one type of information recording media. Nowadays, the density of magnetic recording has been increased to meet the demand for an increase in the storage capacity of hard disk drives. Following this, the magnetic recording information area has been made smaller by making the flying height of the magnetic head from the magnetic recording surface extremely low. In such a magnetic-disk glass substrate, in order to achieve a reduction in the flying height of a magnetic head required for high recording density hard disk drives, there is increasing demand for a reduction in surface unevenness of the substrate, especially, a reduction in microwaviness.

[0003] In contrast, a method for manufacturing a glass substrate for an information recording medium that can accurately control microwaviness of the surface and be used as a substrate for an information recording medium supporting high density recording is known (PLT1)

This manufacturing method is a method for manufacturing a glass substrate for an information recording medium including a polishing step of setting a glass substrate for an information recording medium between upper and lower surface plates to which polishing pads of a soft polisher are attached,

CLAIMS

1. A method for manufacturing a magnetic-disk substrate, comprising:

polishing both main surfaces of a substrate by sandwiching the substrate with a pair of polishing pads, supplying a slurry containing polishing abrasive particles between the polishing pads and the substrate, and sliding the polishing pads and the substrate relative to each other,

the polishing pads respectively having a resin foam layer having a plurality of openings in a surface, the resin foam layer being made of polyurethane foam, and

when information on a three-dimensional shape of a rectangular surface of 1600×1200 pixels, where one pixel is a rectangular surface of 0.37 μm×0.37 μm, is obtained as information on a three-dimensional shape of a surface of the polishing pads, from captured images of the surface of the polishing pads that are obtained with a rectangular region as a field of view of capturing, by a method of repeatedly performing image capture using a capturing means for as long as the images are in focus, with a focus point being lowered by 5 μm each time in a height direction from a location of the focus point at which a highest position of the surface of the polishing pads is in focus, and an arithmetic mean roughness Ra of the surface of the polishing pads is derived from the information on the three-dimensional shape, the Ra being 0.5 μm or less.

2. The method for manufacturing a magnetic-disk substrate according to claim 1, wherein an average value of opening diameters of the plurality of the openings is from 5 μm to 20μm.

3. The method for manufacturing a magnetic-disk substrate according to claim 1 or 2, wherein the resin foam layer has holes with a depth of 10 μm or more to 600 μm or less.

4. The method for manufacturing a magnetic-disk substrate according to any one of claims 1 to 3, wherein the polishing abrasive particles are colloidal silica having an average particle diameter from 5 nm or more to 50 nm or less.

5. A method for manufacturing a magnetic disk, in which at least a magnetic layer is formed on a main surface of a magnetic-disk substrate manufactured by the method for manufacturing a magnetic-disk substrate according to any one of claims 1 to 4.

6. A polishing pad to be used in a polishing process for polishing a surface of a substrate,

the polishing pad having a resin foam layer that has a plurality of openings in a surface, the resin foam layer being made of polyurethane foam, and

when information on a three-dimensional shape of a rectangular surface of 1600×1200 pixels, where one pixel is a rectangular surface of 0.37 μm×0.37 μm, is obtained as information on a three-dimensional shape of a surface of the polishing pad, from captured images that are obtained with a rectangular region of the surface of the polishing pad as a field of view of capturing, by a method of repeatedly performing image capture using a capturing means for as long as the images are in focus, with a focus point being lowered by 5 μm each time in a height direction from a location of the focus point at which a highest position of the surface of the polishing pad is in focus, and an arithmetic mean roughness Ra of the surface of the polishing pad is derived from the information on the three-dimensional shape, the Ra being 0.5 μm or less.

7. The polishing pad according to claim 6, wherein a tensile modulus of a resin material in the resin foam layer is 200 kgf/cm^2 or less.

8. The polishing pad according to claim 6 or 7, wherein an average value of opening diameters of the plurality of the openings is from 5 μm to 20μm.

9. The polishing pad according to any one of claims 6 to 8, wherein the resin foam layer has holes with a depth of 10 μm or more to 600 μm or less.

10. The polishing pad according to any one of claims 6 to 9, wherein the polishing pad is used in the polishing process for polishing a surface of a

substrate with a slurry containing polishing abrasive particles of colloidal silica.