

CLAIMS

1. A magnetic-disk glass substrate in which an average value of squares of inclinations is 0.0025 or less and a frequency at which squares of inclinations are 0.004 or more is 15% or less, in a case where the average value of the squares of the inclinations (which is a square of the root-mean-square inclination Sdq calculated in accordance with the following Equation 1,

wherein A represents an area of a region to be measured) and the squares of the inclinations (which represents a square of the inclination dq calculated in accordance with the following Equation 2) are calculated based on heights (Z) at intervals of 9.76 nm with respect to each of two directions (x , y) orthogonal to each other, each of the heights being obtained by measuring with respect to a measurement region of 1 μm square of the main surface of the magnetic-disk glass substrate with using AFM, and

wherein an RMS (Rq) value is 0.5 nm or less, the RMS (Rq) value being calculated as roughness in a wavelength bandwidth of 100 to 500 μm in the main surface of the magnetic-disk glass substrate.

$$Sdq = \sqrt{\frac{1}{A} \iint_A \left[\left(\frac{\partial Z(x, y)}{\partial x} \right)^2 + \left(\frac{\partial Z(x, y)}{\partial y} \right)^2 \right] dx dy} \quad (\text{Equation 1})$$

$$dq = \sqrt{\left[\left(\frac{\partial Z(x, y)}{\partial x} \right)^2 + \left(\frac{\partial Z(x, y)}{\partial y} \right)^2 \right]} \quad (\text{Equation 2})$$

2. The magnetic-disk glass substrate according to claim 1,
wherein the glass substrate is made of amorphous glass.
3. The magnetic-disk glass substrate according to claim 1 or 2,
wherein the glass substrate is used for a magnetic disk at a recording density of 2000 kbp or greater.
4. The magnetic-disk glass substrate according to any one of claims 1 to 3,
wherein an arithmetic average roughness Ra of the main surface is 0.15 nm or less.

5. The magnetic-disk glass substrate according to any one of claims 1 to 4,
wherein the glass substrate is made of glass having a glass-transition temperature of 650°C or more.
6. The magnetic-disk glass substrate according to any one of claims 1 to 5,
wherein the glass substrate is to be used in a magnetic disk for energy-assisted magnetic recording.
7. The magnetic-disk glass substrate according to any one of claims 1 to 6,
wherein the frequency at which squares of inclinations are 0.004 or more is 10% or less.
8. The magnetic-disk glass substrate according to any one of claims 1 to 7,
wherein the glass substrate has a compressive stress layer on a surface layer of the glass substrate.
9. A magnetic disk having at least a magnetic recording layer formed on the surface of the magnetic-disk glass substrate according to any one of claims 1 to 8.