

CLAIMS

1. A glass substrate provided with a reinforced layer on a surface of a glass material with use of a chemical reinforcing treatment solution, the reinforced layer including a potassium ion exchange layer and a compressive stress layer, wherein
the glass material contains lithium; and
a thickness of the compressive stress layer is 35 times or more and 100 times or less of a thickness of the potassium ion exchange layer.
2. The glass substrate according to Claim 1, wherein
the thickness of the potassium ion exchange layer is from 2 to 3 μm .
3. The glass substrate according to Claim 1 or 2, wherein
the glass material contains Li_2O in a content of from 2 to 10 % by mass with respect to a total content of glass components.
4. The glass substrate according to any one of Claims 1 to 3, wherein
an ion exchange rate of potassium at a depth from an outer surface of the reinforced layer by 1 μm is from 20 to 40 % by mass.
5. The glass substrate according to any one of Claims 1 to 4, wherein
a compressive stress value is from 50 to 200 MPa.
6. The glass substrate according to any one of Claims 1 to 5, wherein
the glass substrate is used for a hard disk drive configured such that a size of a platter is set to 2.5 inches, and a storage capacity per side of a disk is set to 250 GB.
7. A method for producing a glass substrate according to Claim 1 provided with a chemical reinforcing step of chemically reinforcing the glass substrate by contacting the glass substrate with a chemical reinforcing treatment solution to exchange alkali metal ions on a surface of the glass substrate for alkali metal ions having an ionic radius larger than an ionic radius of the alkali metal ions contained in the chemical reinforcing treatment solution, wherein
the chemical reinforcing step includes a chemical reinforcing treatment solution immersion step of immersing the glass substrate in the chemical reinforcing treatment solution at

450 to 550 °C for 15 to 30 minutes,

the glass substrate contains Li, and

the chemical reinforcing treatment solution contains potassium salt and sodium salt at a mass ratio of from 8:2 to 9.5:0.5.

8. The method for producing a glass substrate according to Claim 7, wherein the potassium salt is KNO_3 , and the sodium salt is NaNO_3 .

9. The method for producing a glass substrate according to Claim 7 or 8, wherein the chemical reinforcing step further includes:

a pre-processing step of holding the glass substrate at 450 to 550 °C for 15 to 30 minutes prior to the chemical reinforcing treatment solution immersion step; and

a post-processing step of holding the immersed glass substrate at 450 to 550 °C for 15 to 30 minutes after the chemical reinforcing treatment solution immersion step.

10. An information recording medium, comprising:
the glass substrate of any one of Claims 1 to 6; and
a recording layer formed on at least one surface of the glass substrate.

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the glass material contains lithium; and
a thickness of the compressive stress layer is 35 times or more and 100 times or less of a thickness of the potassium ion exchange layer.
2. The glass substrate according to Claim 1, wherein
the thickness of the potassium ion exchange layer is from 2 to 3 μm .
3. The glass substrate according to Claim 1 or 2, wherein
the glass material contains Li_2O in a content of from 2 to 10 % by mass with respect to a total content of glass components.
4. The glass substrate according to any one of Claims 1 to 3, wherein
an ion exchange rate of potassium at a depth from an outer surface of the reinforced layer by 1 μm is from 20 to 40 % by mass.
5. The glass substrate according to any one of Claims 1 to 4, wherein
a compressive stress value is from 150 to 200 MPa.
6. The glass substrate according to any one of Claims 1 to 5, wherein
the glass substrate is used for a hard disk drive configured such that a size of a platter is set to 2.5 inches, and a storage capacity per side of a disk is set to 250 GB.
7. A method for producing a glass substrate according to Claim 1 provided with a chemical reinforcing step of chemically reinforcing the glass substrate by contacting the glass substrate with a chemical reinforcing treatment solution to exchange alkali metal ions on a surface of the glass substrate for alkali metal ions having an ionic radius larger than an ionic radius of the alkali metal ions contained in the chemical reinforcing treatment solution, wherein
the chemical reinforcing step includes a chemical reinforcing treatment solution immersion step of immersing the glass substrate in the chemical reinforcing treatment solution at

450 to 550 °C for 15 to 30 minutes,

the glass substrate contains Li, and

the chemical reinforcing treatment solution contains potassium salt and sodium salt at a mass ratio of from 8:2 to 9.5:0.5.

8. The method for producing a glass substrate according to Claim 7, wherein the potassium salt is KNO_3 , and the sodium salt is NaNO_3 .

9. The method for producing a glass substrate according to Claim 7 or 8, wherein the chemical reinforcing step further includes:

a pre-processing step of holding the glass substrate at 450 to 550 °C for 15 to 30 minutes prior to the chemical reinforcing treatment solution immersion step; and

a post-processing step of holding the immersed glass substrate at 450 to 550 °C for 15 to 30 minutes after the chemical reinforcing treatment solution immersion step.

10. An information recording medium, comprising:
the glass substrate of any one of Claims 1 to 6; and
a recording layer formed on at least one surface of the glass substrate.