

WHAT IS CLAIMED IS

5

1. A method of manufacturing a magnetic recording medium that includes a glass substrate, comprising:

generating at least one of a buckling deformation and
10 a bending deformation in the glass substrate,

wherein a glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more, and

wherein the glass forming the glass substrate further includes a B_2O_3 -content of 0.1 mol% or more and 15 mol% or
15 less, or one or less kind of alkali metal oxide with a content of 0 mol% or more and 25 mol% or less, or two or more kinds of alkali metal oxides with a content of more than 0 mol% and 20 mol% or less.

20

2. The method of manufacturing the magnetic recording medium as claimed in claim 1, further
25 comprising:

at least one of a magnetic layer deposition process to deposit a magnetic layer on the glass substrate, and a magnetic recording medium holding process to hold the magnetic recording medium within a cassette,

30 wherein at least one of the buckling deformation and the bending deformation is generated in the glass substrate during the at least one of the magnetic layer deposition process and the magnetic recording medium

holding process.

5

3. The method of manufacturing the magnetic recording medium as claimed in claim 1 or 2, wherein the glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more and 20 mol% or less.

10

4. The method of manufacturing the magnetic recording medium as claimed in any of claims 1 to 3, wherein the glass forming the glass substrate includes a SiO_2 -content of 55 mol% or more and 75 mol% or less, and an alkali earth metal oxide with a content of 0 mol% or more and 30 mol% or less.

20

5. A magnetic recording medium comprising:
25 a glass substrate; and
a magnetic layer arranged above the glass substrate and to which servo information is to be written,
wherein a glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more, and
30 wherein the glass forming the glass substrate further includes a B_2O_3 -content of 0.1 mol% or more and 15 mol% or less, or one or less kind of alkali metal oxide with a content of 0 mol% or more and 25 mol% or less, or two or

more kinds of alkali metal oxides with a content of more than 0 mol% and 20 mol% or less.

5

6. The magnetic recording medium as claimed in claim 5, wherein the glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more and 20 mol% or less.

10

7. The magnetic recording medium as claimed in claim 5 or 6, wherein the glass forming the glass substrate includes a SiO_2 -content of 55 mol% or more and 75 mol% or less, and an alkali earth metal oxide with a content of 0 mol% or more and 30 mol% or less.

20

8. A magnetic recording medium comprising:
a glass substrate; and
a magnetic layer arranged above the glass substrate and to which servo information is to be written,
wherein, in a case in which both end parts of the glass substrate along diametrically opposite directions are supported from a lower surface side of the glass substrate and a load is applied to a central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity A indicated by an absolute value of a

25

30

difference between a flatness after 5 hours elapses from a time when the applied load is removed and a flatness before the load is applied to the glass substrate, is 2.0 μm or less.

5

9. The magnetic recording medium as claimed in claim 8, wherein, in the case in which both end parts of the glass substrate along diametrically opposite directions are supported from the lower surface side of the glass substrate and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity B indicated by an absolute value of a difference between the flatness after 5 hours elapses from the time when the applied load is removed and a flatness after 48 hours elapses from the time when the applied load is removed, is 1.5 μm or less.

20

10. The magnetic recording medium as claimed in claim 8 or 9, wherein, in the case in which both end parts of the glass substrate along diametrically opposite directions are supported from the lower surface side of the glass substrate and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity C indicated by the flatness after 5 hours elapses from the time when the applied load is removed, is 2.5 μm or less.

30

WHAT IS CLAIMED IS

1. A method of manufacturing a magnetic recording medium that includes a magnetic layer deposited on a glass substrate, and to which servo information is to be written, comprising:

generating at least one of a buckling deformation and a bending deformation in the glass substrate,

in a case in which both end parts of the glass substrate along diametrically opposite directions are supported from a lower surface side of the glass substrate and a load is applied to a central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity A indicated by an absolute value of a difference between a flatness after 5 hours elapses from a time when the applied load is removed and a flatness before the load is applied to the glass substrate, is 2.0 μm or less,

wherein glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more, and

wherein the glass forming the glass substrate further includes a B_2O_3 -content of 0.1 mol% or more and 15 mol% or less, or one or less kind of alkali metal oxide with a content of 0 mol% or more and 25 mol% or less, or two or more kinds of alkali metal oxides with a content of more than 0 mol% and 20 mol% or less.

2. The method of manufacturing the magnetic recording medium as claimed in claim 1, wherein

in the case in which both the end parts of the glass substrate along the diametrically opposite directions are supported from the lower surface side of the glass substrate

and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity B indicated by an absolute value of a difference between the flatness after 5 hours elapses from the time when the applied load is removed and a flatness after 48 hours elapses from the time when the applied load is removed, is 1.5 μm or less.

3. The method of manufacturing the magnetic recording medium as claimed in claim 1 or 2, wherein

in the case in which both the end parts of the glass substrate along the diametrically opposite directions are supported from the lower surface side of the glass substrate and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity C indicated by the flatness after 5 hours elapses from the time when the applied load is removed, is 2.5 μm or less.

4. The method of manufacturing the magnetic recording medium as claimed in any of claims 1 to 3, further comprising:

at least one of a magnetic layer deposition process to deposit the magnetic layer on the glass substrate, and a magnetic recording medium holding process to hold the magnetic recording medium within a cassette,

wherein at least one of the buckling deformation and the bending deformation is generated in the glass substrate during the at least one of the magnetic layer deposition process and the magnetic recording medium holding process.

5. The method of manufacturing the magnetic recording medium as claimed in any of claims 1 to 4, wherein the glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more and 20 mol% or less.

6. The method of manufacturing the magnetic recording medium as claimed in any of claims 1 to 5, wherein the glass forming the glass substrate includes a SiO_2 -content of 55 mol% or more and 75 mol% or less, and an alkali earth metal oxide with a content of 0 mol% or more and 30 mol% or less.

7. A magnetic recording medium comprising:
a glass substrate; and
a magnetic layer arranged above the glass substrate and to which servo information is to be written,
in a case in which both end parts of the glass substrate along diametrically opposite directions are supported from a lower surface side of the glass substrate and a load is applied to a central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity A indicated by an absolute value of a difference between a flatness after 5 hours elapses from a time when the applied load is removed and a flatness before the load is applied to the glass substrate, is 2.0 μm or less,
wherein glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more, and
wherein the glass forming the glass substrate further includes a B_2O_3 -content of 0.1 mol% or more and 15 mol% or less, or one or less kind of alkali metal oxide with a content of 0 mol% or more and 25 mol% or less, or two or more kinds of

alkali metal oxides with a content of more than 0 mol% and 20 mol% or less.

8. The magnetic recording medium as claimed in claim 7, wherein

in the case in which both the end parts of the glass substrate along the diametrically opposite directions are supported from the lower surface side of the glass substrate and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity B indicated by an absolute value of a difference between the flatness after 5 hours elapses from the time when the applied load is removed and a flatness after 48 hours elapses from the time when the applied load is removed, is 1.5 μm or less.

9. The magnetic recording medium as claimed in claim 7 or 8, wherein

in the case in which both the end parts of the glass substrate along the diametrically opposite directions are supported from the lower surface side of the glass substrate and the load is applied to the central upper surface of the glass substrate for 48 hours, a pseudoelastic deformation quantity C indicated by the flatness after 5 hours elapses from the time when the applied load is removed, is 2.5 μm or less.

10. The magnetic recording medium as claimed in any of claims 7 to 9, wherein the glass forming the glass substrate includes an Al_2O_3 -content of 5 mol% or more and 20 mol% or less.

11. The magnetic recording medium as claimed in any of claims 7 to 10, wherein the glass forming the glass substrate includes a SiO_2 -content of 55 mol% or more and 75 mol% or less, and an alkali earth metal oxide with a content of 0 mol% or more and 30 mol% or less.