CLAIMS

1. A substrate for a magnetic disk, the substrate comprising:

a substrate main body having two main surfaces; and

a film that is provided on the main surfaces and is made of a metal material having a loss factor of 0.01 or more,

wherein the substrate for a magnetic disk including the film has a thickness T of 0.700 mm or less,

a total thickness D [mm] of the film provided on the main surfaces and the thickness T [mm] of the substrate for a magnetic disk including the film satisfy Equation (1) below,

$$D \geq 0.0082/T - 0.0015 \cdots\cdots (1),$$

the film is provided to cover all surfaces of the substrate,

a film thickness of the film provided on an edge surface of the substrate is larger than a film thickness of the film provided on the main surfaces, and

the film is provided such that the film thickness on the edge surface is 110% or more of the film thickness on the main surfaces.

2. A substrate for a magnetic disk, the substrate comprising:

a substrate main body having two main surfaces; and

a film that is provided on the main surfaces and is made of a metal material having a loss factor of 0.01 or more,

wherein the substrate for a magnetic disk including the film has a thickness T of 0.700 mm or less,

a total thickness D [mm] of the film provided on the main surfaces and the thickness T [mm] of the substrate for a magnetic disk including the film satisfy Equation (1) below,

$$D \geq 0.0082/T - 0.0015 \cdots\cdots (1),$$

the film is formed on the main surfaces and an outer circumferential edge surface of the substrate main body, and

the outer circumferential edge surface of the substrate main body forming an interface with the film has a surface roughness maximum height Rz of 0.5 μm or more.

3. A substrate for a magnetic disk, the substrate comprising:

a substrate main body having two main surfaces; and

a film that is provided on the main surfaces and is made of a metal material having a loss factor of 0.01 or more,

wherein the substrate for a magnetic disk including the film has a thickness T of 0.700 mm or less,

a total thickness D [mm] of the film provided on the main surfaces and the thickness T [mm] of the substrate for a magnetic disk including the film satisfy Equation (1) below,

$D \geq 0.0082/T - 0.0015$ ····· (1),

the film is formed on the main surfaces and an outer circumferential edge surface of the substrate main body, and

a surface roughness maximum height Rz of the film formed on the outer circumferential edge surface of the substrate for a magnetic disk is smaller than a surface roughness maximum height Rz of the substrate main body at the outer circumferential edge surface of the substrate main body.

4. The substrate for a magnetic disk according to claim 1,

wherein the film is formed on the main surfaces and an outer circumferential edge surface of the substrate main body, and

a surface roughness maximum height Rz of the film formed on the outer circumferential edge surface of the substrate for a magnetic disk is smaller than a surface roughness maximum height Rz of the substrate main body at the outer circumferential edge surface of the substrate main body.

5. The substrate for a magnetic disk according to claim 3,

wherein the film is formed on the main surfaces and an outer circumferential edge surface of the substrate main body, and

the outer circumferential edge surface of the substrate main body forming an interface with the film has a surface roughness maximum height Rz of 0.5 μm or more.

6. The substrate for a magnetic disk according to claim 2 or 5,

wherein the film is provided to cover all surfaces of the substrate,

a film thickness of the film provided on an edge surface of the substrate is larger than a film thickness of the film provided on the main surfaces, and

the film is provided such that the film thickness on the edge surface is 110% or more of the film thickness on the main surfaces.

7. The substrate for a magnetic disk according to any one of claims 1 to 6,

wherein the thickness D [mm] of the film and the thickness T [mm] of the substrate including the film satisfy Equation (2) below,

$D \geq 0.0094/T$ ····· (2).

8. The substrate for a magnetic disk according to any one of claims 1 to 7,

wherein the substrate for a magnetic disk has a disk shape having an outer diameter of 90 mm or more,

the substrate for a magnetic disk including the film has a thickness T of 0.700 mm or less, and

the film is provided such that, when an impact is applied under conditions of 120 [G] and 2 [msec] in a normal direction of the main surfaces in a state in which an inner circumferential portion of the substrate is fixed, the number of times an amount of shift caused by vibration of an outer circumferential edge portion of the substrate in a thickness direction of the substrate is 0.2 mm or more is four or less.

9. The substrate for a magnetic disk according to any one of claims 1 to 8, wherein the substrate has a thickness T of 0.640 mm or less.

10. The substrate for a magnetic disk according to any one of claims 1 to 9, wherein the substrate has a thickness T of 0.520 mm or less.

11. The substrate for a magnetic disk according to any one of claims 1 to 10, wherein the film has a Vickers hardness Hv of 100 [kgf/mm^2] or more.

12. The substrate for a magnetic disk according to any one of claims 1 to 11, wherein the metal material of the film includes an Ni−P alloy.

13. A magnetic disk,

wherein a surface of the substrate for a magnetic disk according to any one of claims 1 to 12 has at least a magnetic film.