

## CLAIMS

1. A magnetic-disk glass substrate having a doughnut shape, the magnetic-disk glass substrate being applicable to a magnetic-disk drive device that operates at more than 10,000 rpm, the magnetic-disk glass substrate comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has a recessed portion, and the magnetic-disk glass substrate has a thickness so that no fluttering occurs when applied to the magnetic-disk drive device.
2. A magnetic-disk glass substrate having a doughnut shape comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has an arc-shaped recessed portion.
3. A magnetic-disk glass substrate having a doughnut shape, the magnetic-disk glass substrate being applicable to a magnetic-disk drive device that operates at more than 10,000 rpm, the magnetic-disk glass substrate comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has an arc-shaped recessed portion, and the magnetic-disk glass substrate has a thickness so that no fluttering occurs when applied to the magnetic-disk drive device.
4. The magnetic-disk glass substrate according to any one of claims 1 to 3,
  - wherein the side wall surface constituting the inner hole includes a surface orthogonal to the main surfaces.
5. The magnetic-disk glass substrate according to any one of claims 1 to 4, which has a thickness of 1.0 mm or more.

6. The magnetic-disk glass substrate according to any one of claims 1 to 5,  
wherein the side wall surface that constitutes the inner hole and includes the recessed portion has a length in a thickness direction of 0.7 mm or more.
7. The magnetic-disk glass substrate according to any one of claims 1 to 6,  
wherein the side wall surface constituting the inner hole has a length in a thickness direction excluding the recessed portion of 0.8 mm or less.
8. The magnetic-disk glass substrate according to any one of claims 1 to 7,  
wherein the surface of the recessed portion is polished so as to be a mirror surface.
9. The magnetic-disk glass substrate according to any one of claims 1 to 8,  
wherein a recession of the recessed portion has a maximum depth of 50  $\mu\text{m}$  or less.
10. The magnetic-disk glass substrate according to any one of claims 1 to 9,  
wherein the recessed portion is formed over the entire circumference of the side wall surface.
11. A magnetic disk having at least a magnetic layer formed on the magnetic-disk glass substrate according to any one of claims 1 to 10.
12. A magnetic-disk drive device comprising:  
the magnetic disk according to claim 11;  
a spindle for fixing the magnetic disk; and  
a magnetic head.

## CLAIMS

1. A magnetic-disk glass substrate having a doughnut shape, the magnetic-disk glass substrate being applicable to a magnetic-disk drive device that operates at more than 10,000 rpm, the magnetic-disk glass substrate comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has a recessed portion, and the magnetic-disk glass substrate has a thickness so that no fluttering occurs when applied to the magnetic-disk drive device.
2. A magnetic-disk glass substrate having a doughnut shape comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has an arc-shaped recessed portion, and a recession of the recessed portion has a maximum depth of 50  $\mu\text{m}$  or less.
3. A magnetic-disk glass substrate having a doughnut shape, the magnetic-disk glass substrate being applicable to a magnetic-disk drive device that operates at more than 10,000 rpm, the magnetic-disk glass substrate comprising:
  - a pair of main surfaces;
  - two side wall surfaces constituting an inner hole and a contour; and
  - chamfered surfaces between the main surfaces and the side wall surfaces,wherein the side wall surface constituting the inner hole has an arc-shaped recessed portion, and the magnetic-disk glass substrate has a thickness so that no fluttering occurs when applied to the magnetic-disk drive device.
4. The magnetic-disk glass substrate according to any one of claims 1 to 3,
  - wherein the side wall surface constituting the inner hole includes a surface orthogonal to the main surfaces.
5. The magnetic-disk glass substrate according to any one of claims 1 to 4, which has a thickness of 1.0 mm or more.

6. The magnetic-disk glass substrate according to any one of claims 1 to 5,  
wherein the side wall surface that constitutes the inner hole and includes the recessed portion has a length in a thickness direction of 0.7 mm or more.
7. The magnetic-disk glass substrate according to any one of claims 1 to 6,  
wherein the side wall surface constituting the inner hole has a length in a thickness direction excluding the recessed portion of 0.8 mm or less.
8. The magnetic-disk glass substrate according to any one of claims 1 to 7,  
wherein the surface of the recessed portion is polished so as to be a mirror surface.
9. The magnetic-disk glass substrate according to any one of claims 1, 3 to 8,  
wherein a recession of the recessed portion has a maximum depth of 50  $\mu\text{m}$  or less.
10. The magnetic-disk glass substrate according to any one of claims 1 to 9,  
wherein the recessed portion is formed over the entire circumference of the side wall surface.
11. A magnetic disk having at least a magnetic layer formed on the magnetic-disk glass substrate according to any one of claims 1 to 10.
12. A magnetic-disk drive device comprising:  
the magnetic disk according to claim 11;  
a spindle for fixing the magnetic disk; and  
a magnetic head.