SCOPE OF THE CLAIMS:

[Claim 1]

A quartz glass crucible comprising:

a crucible base body consisting of silica glass and having a cylindrical sidewall, a bottom provided below the sidewall, and a corner provided between the sidewall and the bottom; and

a coating film containing a crystallization accelerator and formed on an inner surface of at least the bottom of the crucible base body,

wherein the coating film at least on the bottom of the crucible base body has a peel strength of 0.3 kN/m or more.

[Claim 2]

The quartz glass crucible according to claim 1,

wherein a concentration of the crystallization accelerator formed at the bottom is 2.5×10^{15} atoms/cm^2 or less, and

the coating film has a peel strength of 0.6 kN/m or more.

[Claim 3]

The quartz glass crucible according to claim 1,

wherein a concentration of the crystallization accelerator formed at the bottom is higher than 2.5×10^{15} atoms/cm^2.

[Claim 4]

The quartz glass crucible according to any one of claims 1 to 3,

wherein the coating film formed at the bottom has a circular region in plain view, and a diameter of the circular region is from 0.25 times to 1 time the outer diameter of the crucible.

[Claim 5]

The quartz glass crucible according to claim 4,

wherein the coating film formed at the bottom and within a range of 0.5 times or less an outer diameter of the crucible base body from a center of the bottom has a peel strength of 0.9 kN/m or more.

[Claim 6]

The quartz glass crucible according to any one of claims 1 to 5,

wherein the crystallization accelerator is a water-soluble compound of an element (Mg, Ca, Sr, or Ba) in the group 2a, which has no carbon atoms in a molecule.

[Claim 7]

The quartz glass crucible according to any one of claims 1 to 6,

wherein the coating film has a thickness of 0.1 μm or more and 50 μm or less.

[Claim 8]

The quartz glass crucible according to any one of claims 1 to 7,

wherein the coating film has a surface roughness (Ra) of 0.1 μm or more and 0.25 μm or less.

[Claim 9]

The quartz glass crucible according to any one of claims 1 to 8,

wherein an average carbon concentration in the coating film and the crucible base body within a range of 0 μm or more and 300 μm or less in depth from the inner surface thereof is 1.0×10^{12} atoms/cc or more and 3.0×10^{19} atoms/cc or less.

[Claim 10]

The quartz glass crucible according to any one of claims 1 to 9,

wherein an average carbon concentration in the coating film is 3.0×10^{18} atoms/cc or less.

[Claim 11]

A manufacturing method of a quartz glass crucible, comprising:

a step of producing a crucible base body consisting of silica glass and having a cylindrical sidewall, a bottom provided below the sidewall, and a corner provided between the sidewall and the bottom; and

a step of spraying a coating liquid containing a crystallization accelerator on an inner surface of at least the bottom of the crucible base body to form a coating film of the crystallization accelerator, the coating film having a peel strength of 0.3 kN/m or more,

wherein the step of spraying the coating liquid includes spraying the coating liquid with an average droplet diameter of 5 μm or more and 1,000 μm or less using a two-fluid nozzle that mixes gas and liquid at a spray tip and sprays the mixture.

[Claim 12]

The manufacturing method of a quartz glass crucible according to claim 11,

wherein a maximum thickness of the coating film formed by one applying is set to 0.5 μm or less, and the coating film is formed into multiple layers by alternately repeating drying of the coating film and reapplying.

[Claim 13]

The manufacturing method of a quartz glass crucible according to claim 11 or 12,

wherein a spray amount of the coating liquid is 300 mL/min or less.

[Claim 14]

The manufacturing method of a quartz glass crucible according to any one of claims 11 to 13,

wherein the crystallization accelerator is a water-soluble compound of an element (Mg, Ca, Sr, or Ba) in the group 2a, which has no carbon atoms in a molecule.

[Claim 15]

The manufacturing method of a quartz glass crucible according to any one of claims 11 to 14,

wherein the spraying of the coating liquid is performed while heating the crucible base body at a temperature of 60°C or more and 500°C or less.

[Claim 16]

The manufacturing method of a quartz glass crucible according to any one of claims 11 to 15,

wherein the spraying of the coating liquid is performed while heating the crucible base body such that a difference between a boiling point of a solvent in the coating liquid and a temperature of the crucible base body is −40.0°C or more and 100°C or less.

[Claim 17]

The manufacturing method of a quartz glass crucible according to any one of claims 11 to 16,

wherein the spraying of the coating liquid is performed while heating the crucible base body at a temperature of 100°C or more and 180°C or less.

[Claim 18]

The manufacturing method of a quartz glass crucible according to any one of claims 11 to 17,

wherein the spraying of the coating liquid is performed while heating the crucible base body under a low vacuum of 1×10^2 Pa or more and 1×10^5 Pa or less.

[Claim 19]

A manufacturing method of a silicon single crystal, comprising pulling up a silicon single crystal by the CZ method using the quartz glass crucible according to any

one of claims 1 to 10.