[CLAIMS]

[Claim 1]

A quartz glass crucible comprising:

a cylindrical side wall portion;

a bottom portion;

a corner portion connecting the side wall portion and the bottom portion to each other;

a transparent layer made of quartz glass that does not contain bubbles; and

a bubble layer formed outside the transparent layer and made of quartz glass containing a large number of bubbles; and

a semi-molten layer formed outside the bubble layer and made of raw material silica powder solidified in an incompletely melted state,

wherein a ratio of an infrared transmissivity of the corner portion at a maximum thickness position of the corner portion to an infrared transmissivity of the side wall portion is 0.3 or more and 0.99 or less, and

an absolute value of a rate of change in infrared transmissivity in a height direction along a wall surface of the crucible from a center of the bottom portion toward an upper end of the side wall portion is 3 %/cm or less, and

the infrared transmissivity is a value measured in a state where the semi-molten layer is removed.

[Claim 2]

The quartz glass crucible according to claim 1,

wherein the infrared transmissivity of the corner portion at the maximum thickness position is 25% or more and 51% or less.

[Claim 3]

The quartz glass crucible according to claim 1 or 2,

wherein an absolute value of a rate of change in thickness of the bubble layer in the height direction along the wall surface of the crucible from the center of the bottom portion toward the upper end of the side wall portion is 2.5 mm/cm or less.

[Claim 4]

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

wherein an aperture of the crucible is 32 inches,

a maximum thickness of the corner portion is 19 mm or more and 30 mm or less, and

a thickness of the bubble layer at the maximum thickness position of the corner portion is 18 mm or more and 29 mm or less.

[Claim 5]

The quartz glass crucible according to any one of claims 1 to 4,

wherein a bubble content of the bubble layer at the maximum thickness position of the corner portion is more than 0.1 vol% and 5 vol% or less.

[Claim 6]

~~The quartz glass crucible according to any one of claims 1 to 5, further comprising:~~

~~a semi-molten layer formed outside the bubble layer and made of raw material silica powder solidified in an incompletely melted state,~~

~~wherein the infrared transmissivity is a value measured in a state where the semi-molten layer is removed.~~

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

a thickness of the bubble layer in the cylindrical side wall portion is larger tha n that of the transparent layer in the cylindrical side wall portion, and

a thickness of the bubble layer in the corner portion is larger than that of the t ransparent layer in the cylindrical side wall portion.

[Claim 7]

A quartz glass crucible comprising:

a cylindrical side wall portion;

a bottom portion;

a corner portion connecting the side wall portion and the bottom portion to each other;

a transparent layer made of quartz glass that does not contain bubbles; and

a bubble layer made of quartz glass containing a large number of bubbles and formed outside the transparent layer.; and

a semi-molten layer formed outside the bubble layer and made of raw material silica powder solidified in an incompletely melted state,

wherein a ratio of an infrared transmissivity of the corner portion at a maximum thickness position of the corner portion to an infrared transmissivity of the side wall portion is 0.3 or more and 0.99 or less, and

an absolute value of a rate of change in thickness of the bubble layer in a height directi on along a wall surface of the crucible from a center of the bottom portion toward an u pper end of the side wall portion is 2.5 mm/cm or less, and

the infrared transmissivity is a value measured in a state where the semi-molten layer is removed.

[Claim 8]

The quartz glass crucible according to claim 7,

wherein an aperture of the crucible is 32 inches,

a maximum thickness of the corner portion is 19 mm or more and 30 mm or less, and

a thickness of the bubble layer at the maximum thickness position of the corner portion is 18 mm or more and 29 mm or less.

[Claim 9]

The quartz glass crucible according to claim 7 or 8,

wherein a bubble content of the bubble layer at the maximum thickness position of the corner portion is more than 0.1 vol% and 5 vol% or less.

[Claim 10]

The quartz glass crucible according to any one of claims 7 to 9,

wherein the infrared transmissivity of the corner portion at the maximum thickness position is 25% or more and 51% or less.

[Claim 11]

~~The quartz glass crucible according to any one of claims 7 to 10, further comprising:~~

~~a semi-molten layer formed outside the bubble layer and made of raw material silica powder solidified in an incompletely melted state,~~

~~wherein the infrared transmissivity is a value measured in a state where the semi-molten layer is removed.~~

The quartz glass crucible according to any one of claims 7 to 10, wherein

a thickness of the bubble layer in the cylindrical side wall portion is larger than that of the transparent layer in the cylindrical side wall portion, and

a thickness of the bubble layer in the corner portion is larger than that of the t ransparent layer in the cylindrical side wall portion.