CLAIMS

[Claim 1]

Spherical crystalline silica particles containing silica, alkali metal or alkaline earth metal, and aluminum characterized in that:

the content of a crystal phase is 90 % by mass or more with respect to the total mass of the particles, and the content of a quartz crystal is 70 % by mass or more with respect to the total mass of the particles;

the spherical crystalline silica particles contain 0.4 to 5% by mass of the alkali metal in terms of oxide thereof with respect to the total mass of the particles;

the spherical crystalline silica particles contain 1 to 5% by mass of the alkaline earth metal in terms of oxide thereof with respect to the total mass of the particles; and

the spherical crystalline silica particles contain 50 to 5000 ppm of the aluminum in terms of metallic aluminum with respect to the total mass of the particles.

[Claim 2]

Spherical crystalline silica particles containing silica, Li or Ca and aluminum characterized in that:

the content of a crystal phase is 90 % by mass or more with respect to the total mass of the particles, and the content of a quartz crystal is 70 % by mass or more with respect to the total mass of the particles;

the spherical crystalline silica particles contain 0.4 to 5% by mass of the Li in terms of oxide thereof with respect to the total mass of the particles;

the spherical crystalline silica particles contain 1 to 5% by mass of the Ca in

terms of oxide thereof with respect to the total mass of the particles; and

the spherical crystalline silica particles contain 50 to 5000 ppm of the aluminum in terms of metallic aluminum with respect to the total mass of the particles.

[Claim 3]

The spherical crystalline silica particles according to Claim 2, characterized in that:

the spherical crystalline silica particles contain silica, Li and aluminum; and

the spherical crystalline silica particles contain 4 to 5% by mass of the Li with respect to the total mass of the particles.

[Claim 4]

The spherical crystalline silica particles according to Claim 2, characterized in that:

the spherical crystalline silica particles contain silica, Ca and aluminum; and

the spherical crystalline silica particles contain 1 to 5% by mass of the Ca with respect to the total mass of the particles.

[Claim 5]

The spherical crystalline silica particles according to any one of Claims 1 to 4, characterized in that their average particle diameter (D50) is from 1 to 100 μm.

[Claim 6]

The spherical crystalline silica particles according to any one of Claims 1 to 5, characterized in that their average circularity is 0.88 or more.

[Claim 7]

A method for producing spherical crystalline silica particles, characterized in that it comprises steps of:

mixing amorphous spherical silica particles containing 50 to 5000 ppm of aluminum in terms of metallic aluminum with an alkali metal compound in a proportion of the alkali metal in an amount of 0.4 to 5 % by mass in terms of oxide thereof, based on the total mass of the mass of the amorphous spherical silica particles and the mass of the alkali metal in terms of oxide thereof,

heat treating the mixed spherical silica particles at 800 to 1300 °C, and

cooling the heat treated spherical silica particles,

wherein the cooled spherical silica particles contain 90 % by mass or more of a crystal phase, and the content of a quartz crystal is 70 % by mass or more with respect to the total mass of the particles.

[Claim 8]

The method for producing spherical crystalline silica particles according to Claim 7, characterized in that the alkali metal compound is Li_2CO_3.

[Claim 9]

A method for producing spherical crystalline silica particles, characterized in that it comprises steps of:

mixing amorphous spherical silica particles containing 50 to 5000 ppm of aluminum in terms of metallic aluminum with an alkaline earth metal compound in a proportion of the alkaline earth metal in an amount of 1 to 5 % by mass in terms of oxide thereof, based on the total mass of the mass of the amorphous spherical silica particles and the mass of the alkaline earth metal in terms of oxide thereof,

heat treating the mixed spherical silica particles at 800 to 1300 °C, and

cooling the heat treated spherical silica particles,

wherein the cooled spherical silica particles contain 90 % by mass or more of a crystal phase, and the content of a quartz crystal is 70 % by mass or more with respect to the total mass of the particles.

[Claim 10]

The method for producing spherical crystalline silica particles according to Claim 9, characterized in that the alkaline earth metal compound is $CaCO_3$ or $Ca(OH)_2$.

[Claim 11]

The method for producing spherical crystalline silica particles according to any one of Claims 7 to 10, characterized in that the spherical crystalline silica particles are produced so that their average particle diameter (D50) is from 1 to 100 μm.

[Claim 12]

The method for producing spherical crystalline silica particles according to any one of Claims 7 to 11, wherein the spherical crystalline silica particles are produced so that their average circularity is 0.88 or more.

[Claim 13]

A mixture in which the spherical crystalline silica particles according to claim 1 or 2 is mixed with a resin.

[Claim 14]

A filler for a semiconductor sealing material comprising the mixture according to claim 13.