CLAIMS

[Claim 1]

A method for manufacturing a quartz member, comprising a step of spraying a carrier gas containing silica powder onto a surface of a target member through a burner,

wherein the step is performed in an oxyhydrogen flame atmosphere, and the temperature of the target member surface is 1401°C or higher and 2000°C or lower.

[Claim 2]

The method for manufacturing a quartz member according to claim 1, wherein the burner has a multi-layer structure.

[Claim 3]

The method for manufacturing a quartz member according to claim 2, wherein the multi-layer structure is a triple or more multi-layer structure.

[Claim 4]

The method for manufacturing a quartz member according to claim 1, wherein the burner has supply tubes for silica powder, oxygen gas, and hydrogen gas.

[Claim 5]

The method for manufacturing a quartz member according to claim 4, wherein the supply tubes of the burner are arranged such that the supply tube for silica powder, the supply tube for oxygen gas, and the supply tube

for hydrogen gas are positioned in this order in the radial direction from the center of the burner.

[Claim 6]

The method for manufacturing a quartz member according to claim 4, wherein the burner has a convergence point for the blowing flows of silica powder, oxygen gas, and hydrogen gas in front of the burner.

[Claim 7]

The method for manufacturing a quartz member according to claim 1, wherein the burner has a tapered section tapered from the body to the tip of the burner, and the burner is provided with oxygen gas nozzles arranged in the tapered section on a concentric circle.

[Claim 8]

The method for manufacturing a quartz member according to claim 7, wherein a plurality of oxygen gas nozzles are arranged on a concentric circle in the tapered section.

[Claim 9]

The method for manufacturing a quartz member according to claim 8, wherein the burner is structured so that part of hydrogen gas flows into gaps between the oxygen gas nozzles.

[Claim 10]

The method for manufacturing a quartz member according to claim 1, wherein the burner is a quartz

burner.

[Claim 11]

The method for manufacturing a quartz member according to claim 1, wherein the supply amount of silica powder is set to a set value selected from the range of 0.1 to 6 g/min per burner, and the amount of variation from the set value is ±3% or less with respect to the set value.

[Claim 12]

The method for manufacturing a quartz member according to claim 1, wherein an amount of metal impurities in the silica powder is 0.1 ppm or less.

[Claim 13]

The method for manufacturing a quartz member according to claim 1, further comprising a step of supplying the silica powder stored in a hopper to the burner through a suction line made of a tube, and a step of smoothing the surface of the silica powder in the hopper with a smoothing member.

[Claim 14]

The method for manufacturing a quartz member according to claim 1, wherein the quartz member is a quartz jig.

[Claim 15]

A method for spray coating a silica powder,

wherein the silica powder is sprayed with a carrier gas through a quartz burner having a multi-layer structure,

while being melted under the oxyhydrogen flame atmosphere onto a surface of a target member to form a coating.

[Claim 16]

The method for spray coating a silica powder according to claim 15, wherein the multi-layer structure is a multi-layer structure of three or more layers.

[Claim 17]

The method for spray coating a silica powder according to claim 15 or 16,

wherein the burner has a body including therein a silica powder supply tube, an oxygen gas supply tube, and a hydrogen gas supply tube in the radial direction from the center,

the burner has a tapered section from the body to the tip of the burner,

the tapered section is provided with a plurality of oxygen gas nozzles arranged in multiple concentric circles,

the burner has a structure in which part of the hydrogen gas flows into gaps between the oxygen gas nozzles, and

the burner has a convergence point of the blown flows of the silica powder, oxygen gas, and hydrogen gas located in front of the burner.

[Claim 18]

The method for spray coating silica powder according to any one of claims 15 to 17, wherein the supply amount of

silica powder is set to a set value selected from the range of 0.1 to 6 g/min per quartz burner, and the amount of variation from the set value is ±3% or less with respect to the set value.

[Claim 19]

The method for spray coating silica powder according to any one of claims 15 to 18, wherein the amount of metal impurities in the silica powder is 0.1 ppm or less.

[Claim 20]

The method for spray coating silica powder according to any one of claims 15 to 19, wherein the silica powder stored in a hopper is supplied to the burner through a suction line made of a tube, and the surface of the silica powder stored in the hopper is smoothed with a smoothing member.

[Claim 21]

The method for spray coating silica powder according to any one of claims 15 to 20, wherein the target member is a quartz jig used in a semiconductor manufacturing apparatus.