volumetric particle size distribution, which is measured by laser diffraction scattering method, are not contained. The pulverized non-crystalline silicon nitride powder was added to a crucible made of graphite, and the temperature was increased to 1100°C for 4 hours, from 1100 to 1250°C at60°C/hr, and to 1550°C for 4 hours. After keeping and calcining it at 1550°C for 1 hr followed by cooling, the calcined powder was taken out and subjected to brief pulverization by using a continuous vibration mill filled with metal balls coated with nylon to obtain silicon nitride powder having an average particle diameter along the short axis of 0.29 μm. Subsequently, after the brief pulverization, the silicon nitride powder having an average particle diameter along the short axis of 0.29 μm was densely laid in a dish-shaped alumina container to a thickness of 10 mm or so, and then subjected to oxidation calcination by keeping it for 4 hours in a batch type electric furnace at ~~1000~~1080°C under atmospheric air flow followed by cooling to obtain the silicon nitride powder (B) according to Examples 1 to 3, which has an average particle diameter along the short axis of 0.29 μm and oxygen content of 7.6% by weight. After calcination by keeping for 4 hours in a batch type electric furnace at 1080°C under atmospheric air flow, the powder exhibited slightly fused particles in a SEM image. However, when the SEM image (×10000 magnification) was enlarged by 400% to give a copy image, which was then used for measurement based on drawing a circle as described above, there was no change in the average

particle diameter along the short axis.

[0073]

Further, the silicon nitride powder (B) described in Example 4 was obtained by modifying the oxidation condition using a batch type electric furnace under atmospheric air flow, which has been used for producing the silicon nitride powder (B) of Examples 1 to 3. Specifically, the silicon nitride powder having an average particle diameter along the short axis of 0.29 μm was densely laid in a dish-shaped alumina container to a thickness of 10 mm or so in the same manner, and then subjected to oxidation calcination by keeping it for 4 hours in a batch type electric furnace at ~~1100~~1170°C under atmospheric air flow followed by cooling to obtain the silicon nitride powder (B) according to Example 4, which has an average particle diameter along the short axis of 0.29 μm and oxygen content of 15.2% by weight. After calcination by keeping for 4 hours in a batch type electric furnace at 1170°C under atmospheric air flow, the powder exhibited slightly fused particles in a SEM image. However, when the SEM image (×10000 magnification) was enlarged by 400% to give a copy image, which was then used for measurement based on drawing a circle as described above, there was no change in the average particle diameter along the short axis.

[0074]

Further, the silicon nitride powder (B) described in Examples 7 and 9 were obtained by modifying the oxidation condition using a batch type electric furnace under

atmospheric air flow, which has been used for producing the silicon nitride powder (B) of Examples 1 to 3. Specifically, the silicon nitride powder having an average particle diameter along the short axis of 0.29 μm was densely laid in a dish-shaped alumina container to a thickness of 10 mm or so in the same manner, and then subjected to oxidation calcination by keeping it for 4 hours in a batch type electric furnace at ~~1150~~1200°C under atmospheric air flow followed by cooling to obtain the silicon nitride powder (B) according to Example 7 and 9, which has an average particle diameter along the short axis of 0.29 μm and oxygen content of 18.1% by weight. After calcination by keeping for 4 hours in a batch type electric furnace at 1200°C under atmospheric air flow, the powder exhibited slightly fused particles in a SEM image. However, when the SEM image (×10000 magnification) was enlarged by 400% to give a copy image, which was then used for measurement based on drawing a circle as described above, there was no change in the average particle diameter along the short axis.

[0075]

Subsequently, the silicon nitride powder (B) described in Example 5 was prepared as follows. First, the silicon diimide powder was subjected to thermal decomposition at a heating temperature adjusted to 1050°C in an oxygen concentration in the gas introduced for thermal decomposition adjusted to 3 vol% to produce a non-crystalline silicon nitride powder. The obtained non-crystalline silicon nitride

powder was pulverized using a continuous vibration mill filled with metal balls coated with nylon to the extent that coarse agglomerate particles with particle diameter of 50 μm or more in terms of particle diameter according to the volumetric particle size distribution, which is measured by laser diffraction scattering method, are not contained. The pulverized non-crystalline silicon nitride powder was added to a crucible made of graphite, and the temperature was increased to 1100°C for 4 hours, from 1100 to 1250°C at 100 °C/hr, and to 1550°C for 4 hours. After keeping and calcining it at 1550°C for 1 hr followed by cooling, the powder was taken out and subjected to brief pulverization by using a continuous vibration mill filled with metal balls coated with nylon to obtain the silicon nitride powder (B) according to Example 5, which has an average particle diameter along the short axis of 0.18 μm and oxygen content of 1.4% by weight.

[0076]

Further, with regard to the silicon nitride powder (B) described in Example 6, the silicon nitride powder (B) described in Example 5 was used, i.e., it was densely laid in a dish-shaped alumina container to a thickness of 10 mm or so, and then subjected to oxidation calcination by keeping it for 4 hours in a batch type electric furnace at ~~1000~~1080°C under atmospheric air flow followed by cooling to obtain the silicon nitride powder (B), which has an average particle diameter along the short axis of 0.18 μm and oxygen content of 10.3% by weight. After calcination by keeping for 4 hours in a batch

type electric furnace at 1080°C under atmospheric air flow, the powder exhibited slightly fused particles in a SEM image. However, when the SEM image (×10000 magnification) was enlarged by 400% to give a copy image, which was then used for measurement based on drawing a circle as described above, there was no change in the average particle diameter along the short axis.

[0077]

Further, with regard to the silicon nitride powder (B) described in Example 8, the silicon nitride powder (B) described in Example 5 was used, i.e., it was densely laid in a dish-shaped alumina container to a thickness of 10 mm or so, and then subjected to oxidation calcination by keeping it for 4 hours in a batch type electric furnace at 975°C under atmospheric air flow followed by cooling to obtain the silicon nitride powder (B), which has an average particle diameter along the short axis of 0.18 μm and oxygen content of 5.5% by weight. After calcination by keeping for 4 hours in a batch type electric furnace at ~~950~~975°C under atmospheric air flow, the powder exhibited slightly fused particles in a SEM image. However, when the SEM image (×10000 magnification) was enlarged by 400% to give a copy image, which was then used for measurement based on drawing a circle as described above, there was no change in the average particle diameter along the short axis.

[0078]

10 g of mixed silicon nitride powder obtained by mixing