Claims

1. A powder material comprising a dendritic structure and ceramics particles, wherein the dendritic structure and the ceramics particles exist together and the dendritic structure has a cemented carbide composition or a cermet composition, the cemented carbide composition or the cermet composition containing at least 5 at% or more of at least one of a Group 4 transition metal, a Group 5 transition metal, a Group 6 transition metal, Si and Al, and at least one of oxygen, carbon and nitrogen.

~~2. The powder material according to claim 1, wherein the powder material includes a dendritic structure and ceramics particles.~~

~~3~~2. The powder material according to claim ~~2~~1, wherein the ceramics particles have a polygonal shape.

~~4. The powder material according to any one of claims 1 to 3, wherein the cemented carbide composition or the cermet composition contains at least 5 at% or more of at least one of a Group 4 transition metal, a Group 5 transition metal, a Group 6 transition metal, Si, and Al, and at least one of oxygen, carbon, and nitrogen.~~

~~5~~3. The powder material according to ~~any one of claims 1 to 4~~claim 1 or claim 2, wherein the cemented carbide composition or the cermet composition includes at least one of W, Ti, and Si and carbon, the balance being at least one selected from Fe, Cr, Ni, and Co.

~~6~~4. The powder material according to any one of claims 1, 2 or 3, comprising an uppermost surface having a film including 50 at% or more of carbon.

~~7~~5. The powder material according to claim ~~6~~4, wherein the film includes a layered crystal structure along a tangential direction to a surface.

~~8~~6. The powder material according to claim ~~6 4~~ or claim ~~7~~5, wherein the film covers the dendritic structure.

~~9~~7. The powder material according to any one of claims 1 to ~~8~~6, wherein the powder material has a particle size of 10 μm or more and 200 μm or less, and a flowability of not more than 25 sec/50 g in accordance with JIS Z 2502.

~~10~~8. An additive manufacturing powder material comprising the powder material according to any one of claims 1 to ~~9~~7.

~~11~~9. A method of manufacturing the powder material according to any one of claims 1 to ~~9~~7,

the method comprising:

a raw material mixing step of obtaining a mixture by wet-mixing, as raw materials, ceramics fine particles having a particle size at D50, D50 being the median particle size at 50% integrated value, of 0.1 μm or more and 1,0 μm or less, metal or alloy fine particles having a particle size at D50 of 5.0 μm to 30 μm, and wax;

a granulation step of producing mixture particles by granulation by atomizing and drying the mixture;

a sintering step of debinding a powder of the mixture particles and then sintering the powder at a sintering temperature higher than or equal to 1000°C;

and

a high-temperature processing step of causing all or some of the mixture particle powder solidified in the sintering step to be instantaneously melted and solidified by thermal plasma-droplet-refining, wherein an output of the plasma-droplet-refining is 25kW or more and 35kW or less.