CLAIMS

[Claim 1]

A cobalt-based alloy powder, comprising:

0.08 mass % or more and 0.25 mass % or less of carbon;

0.1 mass % or less of boron;

10 mass % or more and 30 mass % or less of chromium;

5 mass % or less of iron; and

30 mass % or less of nickel,

comprising the iron and the nickel to be in a total amount of 30 mass % or less,

comprising at least one selected from the group of tungsten and molybdenum to be in a total amount of 5 mass % or more and 12 mass % or less,

comprising at least one selected from the group of titanium, zirconium, niobium, and tantalum to be in a total amount of 0.5 mass % or more and 2 mass % or less,

comprising:

0.5 mass % or less of silicon;

0.5 mass % or less of manganese; and

0.003 mass % or more and 0.04 mass % or less of nitrogen; and comprising cobalt and impurities as the balance of the powder, the impurities including 0.5 mass % or less of aluminum and 0.04 mass % or less of oxygen, and

crystal grains comprised in the cobalt-based alloy

powder having segregated cells, and the segregated cells having an average size of 0.15 μm or more and 4 μm or less.

[Claim 2]

The cobalt-based alloy powder according to claim 1, having a particle size of 5 μm or more and 85 μm or less.

[Claim 3]

The cobalt-based alloy powder according to claim 1, having a particle size of 5 to 150 μm.

[Claim 4]

The cobalt-based alloy powder according to any one of claims 1 to 3,

wherein when the powder comprises the titanium, the titanium is in an amount of 0.01 mass % or more and 1 mass % or less,

when the powder comprises the zirconium, the zirconium is in an amount of 0.05 mass % or more and 1.5 mass % or less,

when the powder comprises the niobium, the niobium is in an amount of 0.02 mass % or more and 1 mass % or less, and

when the powder comprises the tantalum, the tantalum is in an amount of 0.05 mass % or more and 1.5 mass % or less.

[Claim 5]

A cobalt-based alloy sintered body, comprising:

0.08 mass % or more and 0.25 mass % or less of carbon;

0.1 mass % or less of boron;

10 mass % or more and 30 mass % or less of chromium;

5 mass % or less of iron; and

30 mass % or less of nickel,

comprising the iron and the nickel to be in a total amount of 30 mass % or less,

comprising at least one selected from the group of tungsten and molybdenum to be in a total amount of 5 mass % or more and 12 mass % or less,

comprising at least one selected from the group of titanium, zirconium, niobium, and tantalum to be in a total amount of 0.5 mass % or more and 2 mass % or less,

comprising:

0.5 mass % or less of silicon;

0.5 mass % or less of manganese; and

0.003 mass % or more and 0.04 mass % or less of nitrogen; and comprising cobalt and impurities as the balance of the sintered body, the impurities including 0.5 mass % or less of aluminum and 0.04 mass % or less of oxygen, and

crystal grains comprised in the cobalt-based alloy sintered body having segregated cells, and the segregated cells having an average size of 0.15 μm or more and 4 μm or less.

[Claim 6]

The cobalt-based alloy sintered body according to claim 5,

wherein when the sintered body comprises the titanium, the titanium is in an amount of 0.01 mass % or more and 1 mass % or less,

when the sintered body comprises the zirconium, the zirconium is in an amount of 0.05 mass % or more and 1.5 mass % or less,

when the sintered body comprises the niobium, the niobium is in an amount of 0.02 mass % or more and 1 mass % or less, and

when the sintered body comprises the tantalum, the tantalum is in an amount of 0.05 mass % or more and 1.5 mass % or less.

[Claim 7]

The cobalt-based alloy sintered body according to claim 5, wherein a carbide is precipitated in the segregated cell.

[Claim 8]

A method for producing a cobalt-based alloy sintered body, comprising:

a raw-material mixing and melting step of mixing raw materials of a cobalt-based alloy powder having a predetermined chemical composition with each other, and

melting the raw materials to produce a molten metal;

a molten-metal-pulverizing step of producing a quenched and solidified alloy powder from the molten metal; and

a sintering step of sintering the quenched and solidified alloy powder,

the cobalt-based alloy powder comprising:

0.08 mass % or more and 0.25 mass % or less of carbon;

0.1 mass % or less of boron;

10 mass % or more and 30 mass % or less of chromium;

5 mass % or less of iron; and

30 mass % or less of nickel,

comprising the iron and the nickel to be in a total amount of 30 mass % or less,

comprising at least one selected from the group of tungsten and molybdenum to be in a total amount of 5 mass % or more and 12 mass % or less,

comprising at least one selected from the group of titanium, zirconium, niobium, and tantalum to be in a total amount of 0.5 mass % or more and 2 mass % or less,

comprising:

0.5 mass % or less of silicon;

0.5 mass % or less of manganese; and

0.003 mass % or more and 0.04 mass % or less of

nitrogen, and comprising cobalt and impurities as the balance of the powder, the impurities including 0.5 mass % or less of aluminum and 0.04 mass % or less of oxygen, and crystal grains comprised in the cobalt-based alloy powder having segregated cells, and the segregated cells having an average size of 0.15 μm or more and 4 μm or less.

[Claim 9]

The method for producing a cobalt-based alloy sintered body according to claim 8, wherein in the molten-metal-pulverizing step, the quenched and solidified alloy powder is produced by gas atomizing or plasma atomizing.

[Claim 10]

The method for producing a cobalt-based alloy sintered body according to claim 8 or 9, wherein the raw materials of the cobalt-based alloy sintered body comprises the cobalt-based alloy powder in an amount of 75 mass % or more.