CLAIMS

[Claim 1]

A product formed of a cobalt based alloy, the cobalt based alloy having a chemical composition comprising:

0.08 to 0.25 mass % of carbon;

0.1 mass % or less of boron;

10 to 30 mass % of chromium;

5 mass % or less of iron, 30 mass % or less of nickel, the total amount of the iron and the nickel being 30 mass % or less;

tungsten and/or molybdenum, the total amount of the tungsten and the molybdenum being 5 to 12 mass %;

0.5 mass % or less of silicon;

0.5 mass % or less of manganese;

0.003 to 0.04 mass % of nitrogen;

0.5 to 2 mass % of an M component being a transition metal other than tungsten and molybdenum and having an atomic radius of more than 130 pm; and

the balance being cobalt and impurities, the impurities including 0.5 mass % or less of aluminum, and 0.04 mass % or less of oxygen,

wherein the product is a polycrystalline body of matrix phase crystal grains, and

wherein in the matrix phase crystal grains of the polycrystalline body, segregation cells with an average size of 0.13 to 2 μm are formed, in which the M component is segregated in boundary regions of the segregation cells.

[Claim 2]

The product according to claim 1,

wherein the M component is a component being capable of generating an MC type carbide phase of a simple cubic crystal system, and

wherein grains of the MC type carbide phase are precipitated on the boundary

regions of the segregation cells.

[Claim 3]

The product according to claim 1 or 2, wherein

the M component of the chemical composition is at least one of titanium, zirconium, hafnium, vanadium, niobium and tantalum.

[Claim 4]

The product according to claim 3, wherein:

in the case that the chemical composition includes the titanium as the M component, content of the titanium is 0.01 to 0.5 mass %;

in the case that the chemical composition includes the zirconium as the M component, content of the zirconium is 0.05 to 1.5 mass %;

in the case that the chemical composition includes the hafnium as the M component, content of the hafnium is 0.01 to 0.5 mass %;

in the case that the chemical composition includes the vanadium as the M component, content of the vanadium is 0.01 to 0.5 mass %;

in the case that the chemical composition includes the niobium as the M component, content of the niobium is 0.02 to 1 mass %; and

in the case that the chemical composition includes the tantalum as the M component, content of the tantalum is 0.05 to 1.5 mass %.

[Claim 5]

The product according to claim 3 or 4, wherein

the zirconium is an essential component as the M component of the chemical composition.

[Claim 6]

The product according to any one of claims 1 to 5, wherein

the product exhibits a creep rupture time of 1,500 hours or more by a creep test under conditions of a temperature of 850°C and a stress of 180 MPa.

[Claim 7]

The product according to any one of claims 1 to 6, wherein

the product is a high temperature member.

[Claim 8]

The product according to claim 7, wherein

the high temperature member is a turbine stator blade, a turbine rotor blade, a turbine combustor nozzle, or a heat exchanger.