[CLAIMS]

[Claim 1]

A method of bonding metal members comprising:

a stacked body forming step of forming a stacked body by putting an insert material between a first metal member and a second metal member formed of carbide-containing Ni alloys or carbide-containing Fe alloys; and

a solid phase diffusion bonding step of performing solid phase diffusion bonding by solid-solving carbides in the insert material by heating and pressurizing the stacked body, thereby forming a metal member joint body having no carbides precipitated at a bonding interface of a bonding portion, wherein

the insert material contains Ni having a content higher than an Ni content of the first metal member and the second metal member when the first metal member and the second metal member are formed of the carbide-containing Ni alloys, or contains Fe or Ni having a content higher than an Fe content of the first metal member and the second metal member when the first metal member and the second metal member are formed of the carbide-containing Fe alloys.

[Claim 2]

The method of bonding metal members according to claim 1, wherein

the first metal member and the second metal member are formed of the carbide-containing Ni alloys, and

the insert material contains Ni having a content higher than the Ni content of the first metal member and the second metal member.

[Claim 3]

The method of bonding metal members according to claim 2, wherein

the insert material is formed of pure Ni.

[Claim 4]

The method of bonding metal members according to any one of claims 1 to 3, further comprising:

a heat treatment step in which the metal member joint body is heat-treated to grow crystal grains of a bonding portion between the first metal member and the second metal member across a bonding interface of the bonding portion.

[Claim 5]

A metal member joint body comprising:

a first metal member and a second metal member formed of carbide-containing Ni alloys or carbide-containing Fe alloys; and

a bonding portion provided between the first metal member and the second metal member and formed of a diffusion layer, wherein

the diffusion layer is formed by solid phase diffusion of an insert material which is put between the first metal member and the second metal member, and the insert material contains Ni having a content higher than an Ni content of the first metal member and the second metal member when the first metal member and the second metal member are formed of the carbide-containing Ni alloys, or contains Fe or Ni having a content higher than an Fe content of the first metal member and the second metal member when the first metal member and the second metal member are formed of the carbide-containing Fe alloys, and

a bonding interface of the bonding portion has carbides which are solid-solved, and no carbides precipitated therein.

[Claim 6]

The metal member joint body according to claim 5, wherein

the first metal member and the second metal member are formed of the carbide-containing Ni alloys.

[Claim 7]

The metal member joint body according to claim 5 or 6, wherein

crystal grains of the bonding portion are across the bonding interface.