CLAIMS

1. A bonding wire for a semiconductor device, comprising:

a Cu alloy core material; and

a Pd coating layer formed on a surface of the Cu alloy core material, wherein

the bonding wire contains one or more elements selected from Ga and Ge, and

a concentration of the elements in total relative to the entire wire is 0.011 to 1.5% by mass.

2. The bonding wire for a semiconductor device according to claim 1, wherein a thickness of the Pd coating layer is 0.015 to 0.150 μm.

3. The bonding wire for a semiconductor device according to claim 1 or 2, further comprising an alloy skin layer containing Au and Pd on the Pd coating layer.

4. The bonding wire for a semiconductor device according to claim 3, wherein a thickness of the alloy skin layer containing Au and Pd is 0.0005 to 0.050 μm.

5. The bonding wire for a semiconductor device according to any one of claims 1 to 4, wherein

the bonding wire further contains one or more elements selected from Ni, Ir, and Pt, and

a concentration of each of the elements relative to the entire wire is 0.011 to 1.2% by mass.

6. The bonding wire for a semiconductor device according to any one of claims 1 to 5, wherein

the Cu alloy core material contains Pd, and

a concentration of Pd contained in the Cu alloy core material is 0.05 to 1.2% by mass.

7. The bonding wire for a semiconductor device according to any one of claims 1 to 6, wherein

the bonding wire further contains at least one element selected from B, P, and Mg, and

a concentration of each of the elements relative to the entire wire is 1 to 100 ppm by mass.

8. The bonding wire for a semiconductor device according to any one of claims 1 to 7, in a measurement result when measuring crystal orientations on a surface of the bonding wire, a crystal orientation <111> angled at 15 degrees or less to a longitudinal direction has a proportion of 30 to 100% in terms of areal percentage among crystal orientations in the longitudinal direction of the bonding wire.

9. The bonding wire for a semiconductor device according to any one of claims 1 to 8, wherein Cu is present in an outermost surface of the bonding wire.

CLAIMS

1. A bonding wire for a semiconductor device, comprising:

a Cu alloy core material; and

a Pd coating layer formed on a surface of the Cu alloy core material, wherein

the bonding wire contains Ga, and

a concentration of Ga relative to the entire wire is 0.025% by mass or more and 1.5% by mass or less.

2. The bonding wire for a semiconductor device according to claim 1, wherein a thickness of the Pd coating layer is 0.015 μm or more and 0.150 μm or less.

3. The bonding wire for a semiconductor device according to claim 1 or 2, further comprising an alloy skin layer containing Au and Pd on the Pd coating layer.

4. The bonding wire for a semiconductor device according to claim 3, wherein a thickness of the alloy skin layer containing Au and Pd is 0.0005 μm or more and 0.050 μm or less.

5. The bonding wire for a semiconductor device according to any one of claims 1 to 4, wherein

the bonding wire further contains one or more elements selected from Ni, Ir, and Pt, and

a concentration of each of the elements relative to the entire wire is 0.011% by mass or more and 1.2% by mass

or less.

6. The bonding wire for a semiconductor device according to any one of claims 1 to 5, wherein

the Cu alloy core material contains Pd, and

a concentration of Pd contained in the Cu alloy core material is 0.05% by mass or more and 1.2% by mass or less.

7. The bonding wire for a semiconductor device according to any one of claims 1 to 6, wherein

the bonding wire further contains at least one element selected from B, P, and Mg, and

a concentration of each of the elements relative to the entire wire is 1 ppm by mass or more and 100 ppm by mass or less.

8. The bonding wire for a semiconductor device according to any one of claims 1 to 7, in a measurement result when measuring crystal orientations on a surface of the bonding wire, a crystal orientation <111> angled at 15 degrees or less to a longitudinal direction has a proportion of 30% or more and 100% or less among crystal orientations in the longitudinal direction of the bonding wire.

9. The bonding wire for a semiconductor device according to any one of claims 1 to 8, wherein Cu is present in an outermost surface of the bonding wire.