

CLAIMS

1. A bonding wire for a semiconductor device comprising:
a Cu alloy core material; and
5 a Pd coating layer formed on a surface of the Cu alloy core material, wherein
the bonding wire contains at least one or more elements selected from As, Te, Sn, Sb, Bi and Se,
a concentration of the elements in total is 0.1 to 100
10 ppm by mass relative to the entire wire, and
Sn $\leq$ 10 ppm by mass; Sb $\leq$ 10 ppm by mass; and Bi $\leq$ 1 ppm by mass.
2. The bonding wire for a semiconductor device according
15 to claim 1, wherein the concentration of the at least one or more elements selected from As, Te, Sn, Sb, Bi and Se in total is 1 to 100 ppm by mass relative to the entire wire.
3. The bonding wire for a semiconductor device according
20 to claim 1 or 2, wherein a thickness of the Pd coating layer is 0.015 to 0.150 μm .
4. The bonding wire for a semiconductor device according
to any one of claims 1 to 3, further comprising an alloy
25 skin layer containing Au and Pd on the Pd coating layer.
5. The bonding wire for a semiconductor device according
to claim 4, wherein a thickness of the alloy skin layer containing Au and Pd is 0.0005 to 0.050 μm .
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6. The bonding wire for a semiconductor device according
to any one of claims 1 to 5, wherein

the bonding wire further contains at least one or more elements selected from Ni, Zn, Rh, In, Ir, Pt, Ga and Ge, and

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

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

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

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

15 the bonding wire further contains at least one or more elements selected from B, P, Mg, Ca and La, and a concentration of each of the elements is 1 to 100 ppm by mass relative to the entire wire.

20 9. The bonding wire for a semiconductor device according to any one of claims 1 to 8, wherein, in a measurement result when measuring crystal orientations on a surface of the bonding wire, a crystal orientation $\langle 111 \rangle$ angled at 15 degrees or less to a longitudinal direction of the bonding
25 wire has a proportion of 30 to 100% in terms of areal percentage.

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

CLAIMS

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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

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the bonding wire contains at least one or more
elements selected from As and Te, and

a concentration of the elements in total is 0.1 ppm by
mass or more and 100 ppm by mass or less relative to the
entire wire.

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2. The bonding wire for a semiconductor device according
to claim 1, wherein the concentration of the at least one
or more elements selected from As and Te in total is 1 ppm
by mass or more and 100 ppm by mass or less relative to the
entire wire.

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

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4. The bonding wire for a semiconductor device according
to any one of claims 1 to 3, further comprising an alloy
skin layer containing Au and Pd on the Pd coating layer.

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

less.

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

5 the bonding wire further contains at least one or more elements selected from Ni, Zn, Rh, In, Ir, Pt, Ga and Ge, and

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

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

the Cu alloy core material contains Pd, and
15 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.

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

20 the bonding wire further contains at least one or more elements selected from B, P, Mg, Ca and La, and
a concentration of each of the elements is 1 ppm by mass or more and 100 ppm by mass or less relative to the entire wire.

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

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