[Title of Document] Claims

[Claim 1]

A palladium (Pd)-coated copper wire for ball bonding,

wherein the palladium (Pd)-coated copper wire for ball bonding has a diameter of 10 to 25 μm, a palladium (Pd) drawn layer is formed on a core formed of a copper alloy in which a purity of pure copper (Cu) or copper (Cu) is 98% by mass or more and the palladium (Pd) drawn layer is a palladium (Pd) layer which contains sulfur (S), phosphorus (P), boron (B) or carbon (C).

[Claim 2]

A palladium (Pd)-coated copper wire for ball bonding,

wherein the palladium (Pd)-coated copper wire for ball bonding has a diameter of 10 to 25 μm, a palladium (Pd) drawn layer and a gold (Au) ultra-thin drawn layer are formed on a core formed of a copper alloy in which a purity of pure copper (Cu) or copper (Cu) is 98% by mass or more and the palladium (Pd) drawn layer is a palladium (Pd) layer which contains sulfur (S), phosphorus (P), boron (B) or carbon (C).

[Claim 3]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein the copper alloy contains 0.1 to 1.5% by mass of platinum (Pt) or nickel (Ni).

[Claim 4]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein the palladium (Pd) drawn layer has a theoretical film thickness which is 30 nanometers (nm) or more and 300 nanometers (nm) or less.

[Claim 5]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein the palladium (Pd) drawn layer is an eutectoid of sulfur (S) or phosphorus (P).

[Claim 6]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein a total of 30 to 700 mass ppm (0.2 to 800 mass ppm in a case where only phosphorus (P) is contained) of at least one type or two types or more of sulfur (S), phosphorus (P), boron (B) and carbon (C) is contained in the palladium (Pd) drawn layer.

[Claim 7]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein 30 to 300 mass ppm of sulfur (S) is contained in the palladium (Pd) drawn layer.

[Claim 8]

The palladium (Pd)-coated copper wire for ball bonding according to claim 1 or 2,

wherein on a front surface side of the palladium (Pd) drawn layer, the sulfur (S) is concentrated, and on a side of the core, the sulfur (S) is equal or less than a detection limit.

[Claim 9]

The palladium (Pd)-coated copper wire for ball bonding according to claim 2,

wherein a film thickness of the sulfur (S) in a direction of depth thereof is greater than a film thickness of the gold (Au) ultra-thin drawn layer in a direction of depth thereof.

[Claim 10]

The palladium (Pd)-coated copper wire for ball bonding according to claim 2,

wherein the gold (Au) ultra-thin drawn layer has a theoretical film thickness which is 3 nanometers (nm) or less.