CLAIMS

1. A bonding material comprising: a copper foil; and a sinterable bonding film formed on one surface of the copper foil,

wherein the bonding film contains a copper powder and a solid reducing agent, and

the bonding material is used for bonding to a bonding target having, on its surface, at least one metal selected from the group consisting of gold, silver, copper, nickel, and aluminum,

wherein a thickness of the copper foil is from 0.5 μm to 200 μm, and

wherein the solid reducing agent is at least one of bis(2-hydroxyethyl)iminotris(hydroxymethyl)methane, 2-amino-2-(hydroxymethyl)-1,3-propanediol, and 1,3-bis(tris(hydroxymethyl)methylamino)propane.

2. A bonding material that is used to form a wire bonding structure, the bonding material comprising a copper foil and a sinterable bonding film formed on one surface of the copper foil,

wherein the bonding film contains a copper powder and a solid reducing agent.

3. The bonding material according to claim 1 or 2,

wherein the bonding film contains the solid reducing agent in an amount of 0.1 parts by mass to 10 parts by mass with respect to 100 parts by mass of the copper powder.

4. The bonding material according to any one of claims 1 to 3,

wherein the copper powder contains spherical metal particles containing copper, and

a volume-based cumulative particle size D_{SEM50} at a cumulative volume of 50 vol% as measured using a scanning electron microscope of the metal particles is from 30

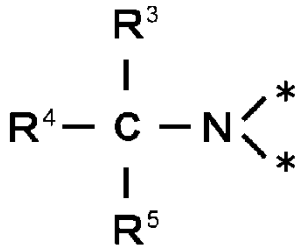
nm to 200 nm.

5. The bonding material according to any one of claims 1 to 4,
wherein the solid reducing agent is an amino alcohol compound.

6. A bonded structure in which a bonding target having, on its surface, at least one metal selected from the group consisting of gold, silver, copper, nickel, and aluminum and a copper foil are electrically connected to each other via a bonding layer formed of a sintered structure of a copper powder,

wherein a structure (3) below is formed in the bonding layer:

[Chem.1]



(3)

where R^3 to R^5 each independently represent a hydrogen atom, a hydroxyl group, a hydrocarbon group having 1 to 10 carbon atoms, or a hydrocarbon group having 1 to 10 carbon atoms and having a hydroxyl group, and * represents a copper-binding site,

wherein a thickness of the copper foil is from 0.5 μm to 200 μm, and

wherein by performing TOF-SIMS on a cross section of the bonding layer, a fragment of molecular weight 152 is observed in the TOF-SIMS mass spectrum on the cathode side.

7. The bonded structure according to claim 6,
wherein the bonding layer has a thickness of 0.1μm to 950 μm.