CLAIMS

[Claim 1] A bonding composition comprising copper powder, a liquid medium, and a reducing agent, wherein:

the reducing agent contains at least one selected from the group consisting of bis(2-hydroxyethyl)iminotris(hydroxymethyl)methane, 2-amino-2-(hydroxymethyl)-1,3-propanediol, and 1,3-bis(tris(hydroxymethyl)methylamino)propane;

the liquid medium comprises a polyol having a boiling point below 300°C;

the liquid medium is capable of dissolving the reducing agent at 25°C;

the reducing agent has a melting point that is equal to or below the sintering temperature of the copper powder; and

the bonding composition contains from 0.1 parts to 10 parts by mass of the reducing agent with respect to 100 parts by mass of the copper powder.

[Claim 2] The bonding composition according to claim 1, wherein the bonding composition has a viscosity of from 10 Pa·s to 200 Pa·s at a shear rate of 10 s^{-1} at 25°C.

[Claim 3] The bonding composition according to claim 1 or 2, comprising the bonding composition contains from 10 parts to 40 parts by mass of the liquid medium with respect to 100 parts by mass of the copper powder.

[Claim 4] A method for producing a conductor bonding structure, the method comprising:

applying the bonding composition according to any one of claims 1 to 3 onto a surface of a first conductor to form a coating film;

drying the coating film to remove at least a portion of the liquid medium and thereby obtain a dried coating film;

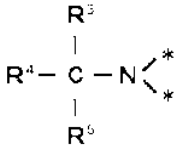
applying a second conductor onto the dried coating film to interpose the dried coating film between the first conductor and the second conductor; and

heating the dried coating film, to sinter the copper powder contained in the dried coating film and thereby bond the first conductor and the second conductor.

[Claim 5] A conductor bonding structure in which two conductors are electrically connected by a joint portion, wherein:

the joint portion comprises a sintered body of copper particles; and

a moiety (3) shown below is formed in the joint portion:



(3)

wherein:

R^3 to R^5 represent a hydrocarbon group having 1 carbon atom and containing a hydroxyl group; and

* represents a bonding hand with copper.

[Claim 6] A method for bonding conductors, the method comprising:

applying the bonding composition according to any one of claims 1 to 3 onto a surface of a first conductor to form a coating film;

drying the coating film to obtain a dried coating film;

applying a second conductor onto the dried coating film to interpose the dried coating film between the first conductor and the second conductor; and

sintering the copper powder contained in the dried coating film under pressure, thereby to bond the first conductor and the second conductor.

[Claim 7] The method according to claim 6, wherein the coating film is dried such that a content of the liquid medium has been reduced to 9 mass% or less with respect to the total mass of the coating film.

[Claim 8] The method according to claim 6 or 7, using the bonding composition having a viscosity of from 10 Pa·s to 200 Pa·s at a shear rate of 10 s^{-1} at 25°C.

[Claim 9] The method according to any one of claims 6 to 8, using the bonding composition containing from 0.1 parts to 10 parts by mass of the reducing agent with respect to 100 parts by mass of the copper powder.

[Claim 10] The bonding composition according to any one of claims 1 to 3 for bonding a first conductor and a second conductor under pressure.