CLAIMS

[Claim 1] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, and a dispersion medium C,

wherein an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups, and

the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b).

[Claim 2] The copper fine particle dispersion according to claim 1, wherein the modified cellulose B comprises one or more types of modified cellulose fibers (I) selected from the group consisting of modified cellulose fibers (BI) having the modifying groups bound via ionic bonds to anionic groups of the anion-modified cellulose fibers and modified cellulose fibers (BII) having the modifying groups introduced by amidation of carboxy groups that are anionic groups of the anion-modified cellulose fibers.

[Claim 3] The copper fine particle dispersion according to claim 2, wherein a degree of crystallinity of the modified cellulose fibers (I) is 20% or more and 90% or less.

[Claim 4] The copper fine particle dispersion according to claim 2 or 3, wherein an average fiber diameter of the modified cellulose fibers (I) is 1 nm or more and 300 nm or less.

[Claim 5] The copper fine particle dispersion according to any one of claims 1 to 4, wherein a mass ratio [modified cellulose B/dispersion medium C] of the content of the modified cellulose B to a content of the dispersion medium C is 0.0001 or more and 0.1 or less.

[Claim 6] The copper fine particle dispersion according to any one of claims 1 to 5, wherein a mass ratio [modified cellulose B/copper nanoparticles A] of the content of the modified cellulose B to a content of the copper nanoparticles A is 0.00001 or more and 0.01 or less.

[Claim 7] The copper fine particle dispersion according to any one of claims 1 to 6, wherein the content of the modified cellulose B in the copper fine particle dispersion is 150 ppm by mass or more.

[Claim 8] The copper fine particle dispersion according to any one of claims 1 to 7, wherein a boiling point of the dispersion medium C at 1 atm is 180°C or more and 400°C or less.

[Claim 9] The copper fine particle dispersion according to any one of claims 1 to 8, wherein the content of the copper nanoparticles A in the copper fine particle dispersion is 30% by mass or more and 95% by mass or less.

[Claim 10] The copper fine particle dispersion according to any one of claims 1 to 9, further comprising copper microparticles,

wherein an average particle size of the copper microparticles is more than 0.35 μm and 10 μm or less.

[Claim 11] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, and a dispersion medium C,

wherein an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups,

the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b),

the modified cellulose B comprises one or more types of modified cellulose fibers (I) selected from the group consisting of modified cellulose fibers (BI) having the modifying groups bound via ionic bonds to anionic groups of the anion-modified cellulose fibers and modified cellulose fibers (BII) having the modifying groups introduced by amidation of carboxy groups that are anionic groups of the anion-modified cellulose fibers, and

a degree of crystallinity of the modified cellulose fibers (I) is 20% or more and 90% or less.

[Claim 12] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, and a dispersion medium C,

wherein an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups,

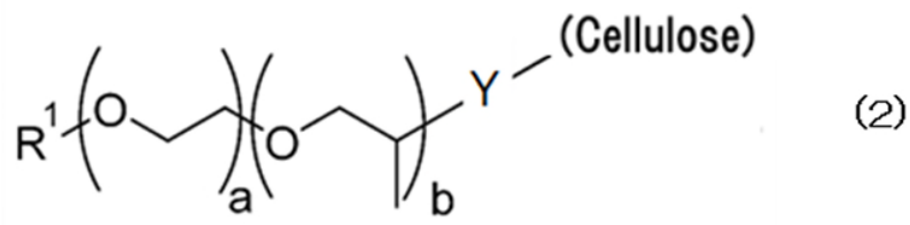
the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b),

the modified cellulose B comprises modified cellulose fibers (BI) having the modifying groups bound via ionic bonds to anionic groups of the anion-modified cellulose fibers, and the anion-modified cellulose fibers are modified cellulose fibers in which carbon atoms at C6 positions of glucose units in cellulose fibers constitute carboxy groups, and

a degree of crystallinity of the modified cellulose fibers (BI) is 20% or more and 90% or less.

[Claim 13] The copper fine particle dispersion according to claim 12, wherein the modified cellulose fibers (BI) have a structure represented by the following formula (2):

[Chemical Formula 1]



(2)

in the formula (2), Y represents an ionic bond, R^1 represents a hydrogen atom or a hydrocarbon group having 1 to 6 carbon atoms, ethylene oxide-derived units and propylene oxide-derived units are present in a random or block form, a represents a positive number

indicating an average number of moles of ethylene oxide added, and b represents a positive number indicating an average number of moles of propylene oxide added.

[Claim 14] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, and a dispersion medium C,

wherein an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups,

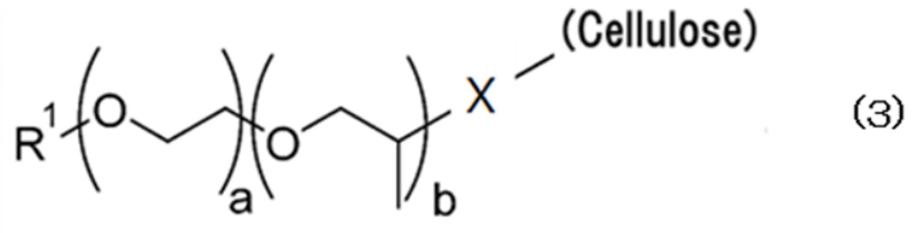
the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b),

the modified cellulose B comprises modified cellulose fibers (BII) having the modifying groups introduced by amidation of carboxy groups that are anionic groups of the anion-modified cellulose fibers, and the modified cellulose fibers (BII) are modified cellulose fibers in which carbon atoms at C6 positions of glucose units in the anion-modified cellulose fibers constitute amide bonds and the modifying groups are bound via the amide bonds, and

a degree of crystallinity of the modified cellulose fibers (BII) is 20% or more and 90% or less.

[Claim 15] The copper fine particle dispersion according to claim 14, wherein the modified cellulose fibers (BII) have a structure represented by the following formula (3):

[Chemical Formula 2]



(3)

in the formula (3), X represents an amide bond, R^1 represents a hydrogen atom or a hydrocarbon group having 1 to 6 carbon atoms, ethylene oxide-derived units and propylene oxide-derived units are present in a random or block form, a represents a positive number

indicating an average number of moles of ethylene oxide added, and b represents a positive number indicating an average number of moles of propylene oxide added.

[Claim 16] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, a dispersion medium C, and copper microparticles,

wherein an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups,

the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b),

the modified cellulose B comprises one or more types of modified cellulose fibers (I) selected from the group consisting of modified cellulose fibers (BI) having the modifying groups bound via ionic bonds to anionic groups of the anion-modified cellulose fibers and modified cellulose fibers (BII) having the modifying groups introduced by amidation of carboxy groups that are anionic groups of the anion-modified cellulose fibers,

a degree of crystallinity of the modified cellulose fibers (I) is 20% or more and 90% or less, and

an average particle size of the copper microparticles is more than 0.35 μm and 10 μm or less.

[Claim 17] A copper fine particle dispersion comprising copper nanoparticles A, modified cellulose B, a dispersion medium C, a dispersant D, and copper microparticles,

wherein the copper nanoparticles A are dispersed with the dispersant D,

an average particle size of the copper nanoparticles A is 50 nm or more and 350 nm or less,

a content of the modified cellulose B in the copper fine particle dispersion is 2,500 ppm by mass or less,

the modified cellulose B is in the form of anion-modified cellulose fibers with modifying groups,

the modifying groups comprise one or more selected from the group consisting of a hydrocarbon group (a) and a polymer group (b),

the modified cellulose B comprises one or more types of modified cellulose fibers (I) selected from the group consisting of modified cellulose fibers (BI) having the modifying groups bound via ionic bonds to anionic groups of the anion-modified cellulose fibers and modified cellulose fibers (BII) having the modifying groups introduced by amidation of carboxy groups that are anionic groups of the anion-modified cellulose fibers,

a degree of crystallinity of the modified cellulose fibers (I) is 20% or more and 90% or less, and

an average particle size of the copper microparticles is more than 0.35 μm and 10 μm or less.

[Claim 18] The copper fine particle dispersion according to any one of claims 1 to 17, used for bonding of multiple metal members.

[Claim 19] A method for producing a bonded body, comprising:

heating multiple metal members with the copper fine particle dispersion according to any one of claims 1 to 17 interposed between the adjacent metal members.

[Claim 20] Use of the copper fine particle dispersion according to any one of claims 1 to 17 as a bonding material paste.

[Claim 21] A method for forming a conductive member of an electronic device, comprising:

using the copper fine particle dispersion according to any one of claims 1 to 17 to form a conductive member.

[Claim 22] A method for bonding a semiconductor chip, comprising:

using the copper fine particle dispersion according to any one of claims 1 to 17 to bond a semiconductor chip.