Claims

1. An electrically conductive adhesive film comprising:

a metal particle (P);

a resin (M); and

an organophosphorus compound (A) represented by the general formula (1) below,

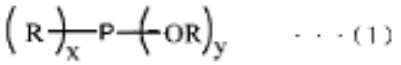
wherein the resin (M) comprises a thermosetting resin (M1),

the metal particle (P) has an average particle size (d50) of 20 μm or less,

the metal particle (P) comprises 10 % by mass or more of a first metal particle (P1) having a fractal dimension of 1.1 or more when viewed in a projection drawing in a primary particle state, and

the thermosetting resin (M1) comprises a maleic acid imide compound including two or more units of an imide group in a single molecule:

[Chemical formula 1]



in the general formula (1), each R independently represents an organic group, R may be the same or different with each other, both x and y are an integer from 0 to 3, and sum (x + y) of x and y is 3.

2. The electrically conductive adhesive film according to claim 1, wherein the first metal particle (P1) is a dendritic metal powder.

3. The electrically conductive adhesive film according to claim 1 or 2, wherein the organophosphorus compound (A) is at least one compound selected from alkyl phosphine, aryl phosphine and organic phosphorous acid ester.

4. The electrically conductive adhesive film according to any one of claims 1 to 3, wherein, in the general formula (1), each R independently includes, in its moiety, one or more group selected from a vinyl group, an acrylic group, a methacrylic group, a maleic acid ester group, a maleic acid amide group, a maleic acid imide group, a primary amino group, a secondary amino group, a thiol group, a hydrosilyl group, a hydroboron group, a phenolic hydroxyl group and an epoxy group.

5. The electrically conductive adhesive film according to any one of claims 1 to 4, wherein the metal particle (P) further comprises a second metal particle (P2) made of a spherical metal powder.

6. The electrically conductive adhesive film according to claim 5, wherein the second metal particle (P2) has an average particle size (d50) of less than 7 μm.

7. The electrically conductive adhesive film according to claim 5 or 6, wherein the second metal particle (P2) comprises a metal particle made of tin or a tin-containing alloy.

8. The electrically conductive adhesive film according to any one of claims 1 to 7, wherein a loss tangent (tan δ) defined by a ratio (G''/G') of a loss elastic modulus (G'') to a storage elastic modulus (G') at 60°C and 1 Hz in a B-stage state is 1.4 or higher.

9. The electrically conductive adhesive film according to any one of claims 1 to 8, wherein the maleic acid imide compound comprises a backbone derived from an aliphatic amine having a carbon atom number of 10 or more.

10. The electrically conductive adhesive film according to any one of claims 1 to 9, wherein the thermosetting resin (M1) further comprises a phenol novolac resin.

11. A dicing-die bonding film, comprising the electrically conductive adhesive film according to any one of claims 1 to 10 adhered to a dicing tape.