CLAIMS

1. A joining film for joining a semiconductor element and a substrate,

the joining film comprising an electroconductive joining layer having a reinforcing layer formed from a porous body or a reticulate body, the pores or meshes of the porous body or the reticulate body being filled with an electroconductive paste containing metal fine particles (P) containing copper fine particles or silver fine particles,

wherein the reinforcing layer has a thermal expansion coefficient smaller than that of the metal fine particles (P).

2. The joining film according to claim 1, further comprising a tack layer having tackiness and being laminated with the electroconductive joining layer.

3. The joining film according to claim 2, wherein the tack layer includes a substance that reduces the metal fine particles (P), and the tack layer is thermally decomposed by heating at the time of joining, the metal fine particles (P) of the electroconductive joining layer are sintered, and thereby the semiconductor element and the substrate are joined.

4. The joining film according to any one of claims 1 to 3, wherein the metal fine particles (P) have an average primary particle size of 10 to 500 nm, and the

electroconductive paste includes an organic solvent (S).

5. The joining film according to claim 4, wherein the electroconductive paste includes an organic binder (R).

6. The joining film according to claim 2 or 3, wherein the tack layer is formed from one kind or two or more kinds selected from polyglycerin, a glycerin fatty acid ester, a polyglycerin fatty acid ester, phosphines, phosphites, sulfides, disulfides, trisulfides, and sulfoxides.

7. The joining film according to any one of claims 1 to 6, wherein the reinforcing layer is formed from one kind or two or more kinds selected from a sheet obtained by forming carbon fibers formed into a mesh form, a stainless steel mesh, a tungsten mesh, and a nickel mesh.

8. The joining film according to claim 4 or 5, wherein the organic solvent (S) includes an organic solvent (SC) formed from an alcohol and/or a polyhydric alcohol, each having a boiling point at normal pressure of 100°C or higher and having one or two or more hydroxyl groups in the molecule.

9. The joining film according to claim 5, wherein the organic binder (R) is one kind or two or more kinds selected from a cellulose resin-based binder, an acetate resin-based binder, an acrylic resin-based binder, a

urethane resin-based binder, a polyvinylpyrrolidone resin-based binder, a polyamide resin-based binder, a butyral resin-based binder, and a terpene-based binder.

10. A tape for wafer processing comprising:

a self-adhesive film having a base material film and a self-adhesive layer provided on the base material film; and

the joining film according to any one of claims 1 to 9,

wherein the electroconductive joining layer of the joining film is provided on the self-adhesive layer.