CLAIMS

1. A temporary protective film for producing a semiconductor device, the temporary protective film being used in a method for producing a semiconductor device having a semiconductor substrate and a semiconductor element mounted on the semiconductor substrate, to temporarily protect a surface of the semiconductor substrate that is opposite to a surface on which the semiconductor element is mounted during the method,

the temporary protective film comprising:

a support film; and

an adhesive layer provided on one surface or both surfaces of the support film, the adhesive layer comprising an acrylic rubber,

wherein a content of the acrylic rubber is 50% by mass or more,

wherein the adhesive layer further comprises a peelability imparting agent,

wherein a thickness of the adhesive layer is 8 μm or more and 100 μm or less,

wherein a thickness of the support film is 10 μm or more and 200 μm or less, and

wherein when the temporary protective film is attached to a copper alloy plate having a copper alloy surface at 25°C so that the adhesive layer is in contact with the copper alloy plate, and a laminate thus obtained is sequentially heated at 180°C for 60 minutes and at 200°C for 60 minutes, a 90-degree peeling strength of the temporary protective film against the copper alloy plate is 5 N/m or more at 25°C before heating the laminate and 150 N/m or less at 50°C after heating the

laminate.

2. The temporary protective film for producing a semiconductor device according to claim 1, wherein the acrylic rubber is a copolymer comprising: a (meth)acrylic acid alkyl ester unit; a (meth)acrylic acid unit and/or a 2-hydroxyethyl acrylate unit; and an acrylonitrile unit, and a total ratio of these monomer units is 90% by mass or more with respect to a total mass of the acrylic rubber.

3. The temporary protective film for producing a semiconductor device according to claim 1 or 2, wherein a glass transition temperature of the acrylic rubber is -50°C to 20°C.

4. The temporary protective film for producing a semiconductor device according to any one of claims 1 to 3, wherein a weight average molecular weight of the acrylic rubber is 150000 to 900000.

5. The temporary protective film for producing a semiconductor device according to any one of claims 1 to 4, wherein a content of the peelability imparting agent is 0.1 parts by mass or more and less than 50 parts by mass with respect to 100 parts by mass of the acrylic rubber.

6. The temporary protective film for producing a semiconductor device according to any one of claim 1 to 5, wherein the peelability imparting agent comprises an aliphatic epoxy compound having an aliphatic group and a glycidyl ether group bonded to the aliphatic group.

7. The temporary protective film for producing a semiconductor device according to any one of claims 1 to 6, further comprising a cover film covering a surface of the adhesive layer that is opposite to the support film.

8. A reel body comprising:

a reel having a tubular wind-up unit; and

the temporary protective film for producing a semiconductor device according to any one of claims 1 to 7, the temporary protective film being wound up around the wind-up unit.

9. A method for producing a semiconductor device, the method comprising, in the following order:

a step of attaching the temporary protective film for producing a semiconductor device according to any one of claims 1 to 7 to a semiconductor substrate in a direction in which the adhesive layer comes into contact with the semiconductor substrate;

a step of mounting a semiconductor element on a surface of the semiconductor substrate that is opposite to the temporary protective film;

a step of forming a sealing layer sealing the semiconductor element to obtain a sealing molded body having the semiconductor substrate, the semiconductor element, and the sealing layer; and

a step of peeling off the temporary protective film from the sealing molded body.