respect to a wafer is greater than or equal to 15 N/m, after the curing treatment is performed at 130°C for 1 hour. The adhesive layer satisfies such a condition, and thus, it is possible to sufficiently ensure cohesiveness with respect to the wafer.

[0011] The tape for semiconductor processing according to the present invention is used for temporarily fixing a substrate and a wafer in addition to the dicing die bonding tape. That is, in the manufacturing procedure of the semiconductor device, the tape for semiconductor processing according to the present invention can be used for temporarily fixing the substrate onto one surface of the adhesive layer, and for temporarily fixing the wafer onto the other surface of the adhesive layer, after the base material layer and the pressure-sensitive adhesive layer are peeled off. For example, as described above, in a case where the tape for semiconductor processing is used for temporary fixing, none of the base material layer, the pressure-sensitive adhesive layer, and the adhesive layer remain in a semiconductor device that is finally manufactured.

[0012] It is preferable that the adhesive layer contains a thermoplastic resin, a thermosetting resin, a curing accelerator, and a filler. In this case, it is preferable that when a content of the thermoplastic resin in the adhesive layer is set to 100 parts by mass, a content of the thermosetting resin in the adhesive layer is 1 part by mass to 40 parts by mass. In addition, it is preferable that when the content of the thermoplastic resin in the adhesive layer is set to 100 parts by mass, a content of the filler in the adhesive layer is 1 part by mass to 330 parts by mass.

The adhesive layer satisfying such a condition is capable of

[0076] As illustrated in FIG. 4(a), the tape 10 for semiconductor processing is pasted to the substrate S such that the adhesive layer 3 is in contact with the surface of the substrate S. At this time, the temperature may be approximately 50°C to 90°C. In such a temperature condition, the substrate S and the tape 10 for semiconductor processing are bonded to each other, and thus, it is possible to set a state in which an adhesive force between the adhesive layer 3 and the substrate S is greater than an adhesive force between the adhesive layer 3 and the pressure-sensitive adhesive layer 2.

That is, the substrate S is to control the adhesiveness of the adhesive layer 3 in a state where the adhesive layer 3 is bonded to the substrate S. Furthermore, the adhesive layer 3 in a state of being bonded to the substrate S is heated, and thus, the adhesiveness of the adhesive layer 3 is controlled, and the adhesive layer 3 has predetermined heat resistance.

[0077] The base material layer 1 and the pressure-sensitive adhesive layer 2 are peeled off from the state illustrated in FIG. 4(a), and thus, as illustrated in FIG. 4(b), a laminated body 20 including the substrate S and the adhesive layer 3 is obtained. Subsequently, the semiconductor wafer W is pasted to the adhesive layer 3 such that the surface Ws of the semiconductor wafer W is in contact with the adhesive layer 3. Furthermore, the surface of the semiconductor wafer W on a side opposite to the surface Ws is the circuit surface Wc. Accordingly, as illustrated in FIG. 4(c), a laminated body 30 is obtained in which the substrate S is bonded onto one surface F1 of the adhesive layer 3, and the semiconductor wafer W is bonded onto the other surface F2 of the

and a sample of which the value of the thermal elastic modulus was greater than or equal to 5 MPa was evaluated as "B".

[0090] (3) 90° Peeling Force of Adhesive Layer with respect to Wafer (Evaluation of Cohesive Force with respect to Wafer)

The sample after the curing that was used in the evaluation of the contractility described above was cut to have a width of 10 mm, and was set to a measurement sample. The measurement sample was pasted onto the surface of a silicon wafer. After that, a pressure-sensitive adhesive tape (an auxiliary tape) was pasted to the measurement sample, and the measurement sample was peeled off from the wafer at 50 mm/minute and an angle of 90°. In Table 1, a sample of which the value of the 90° peeling force was greater than or equal to 15 N/m was evaluated as "A", and a sample of which the value of the 90° peeling force was less than 15 N/m was evaluated as "B".

[0091] (4) Surface Roughness of Adhesive Layer after Being Peeled off

Surface roughness (Tp) of the adhesive layer after the evaluation of "Cohesive Force of Adhesive Layer with respect to Wafer" described above (after being peeled off) was measured by using a laser microscope (manufactured by KEYENCE CORPORATION). In Table 1, a sample of which the value of the surface roughness (Tp) was less than or equal to 30 was evaluated as "A", and a sample of which the value of the surface roughness was greater than 30 was evaluated as "B".

CLAIMS

1. A tape for semiconductor processing in which a base material layer, a pressure-sensitive adhesive layer, and an adhesive layer having thermosetting properties are laminated in this order,

wherein a contraction ratio of the adhesive layer is less than 2%, and a thermal elastic modulus of the adhesive layer is less than 5 MPa, after a curing treatment is performed at 130°C for 1 hour.

2. The tape for semiconductor processing according to claim 1,

wherein a peeling force of the adhesive layer with respect to a wafer is greater than or equal to 15 N/m, after the curing treatment is performed at 130°C for 1 hour.

3. The tape for semiconductor processing according to claim 1 or 2,

wherein in a manufacturing procedure of a semiconductor device, the tape for semiconductor processing is used

for temporarily fixing a substrate onto one surface of the adhesive layer, and

for temporarily fixing a wafer onto the other surface of the adhesive layer, after the base material layer and the pressure-sensitive adhesive layer are peeled off.

4. The tape for semiconductor processing according to any one of claims 1 to 3,

wherein none of the base material layer, the pressure-sensitive adhesive layer, and the adhesive layer remain in a semiconductor device that is finally manufactured.

5. The tape for semiconductor processing according to any one of claims 1 to 4,

wherein the adhesive layer contains a thermoplastic resin, a thermosetting resin, a curing accelerator, and a filler, and

when a content of the thermoplastic resin in the adhesive layer is set to 100 parts by mass, a content of the thermosetting resin in the adhesive layer is 1 part by mass to 40 parts by mass.

6. The tape for semiconductor processing according to claim 5,

wherein when the content of the thermoplastic resin in the adhesive layer is set to 100 parts by mass, a content of the filler in the adhesive layer is 1 part by mass to 330 parts by mass.

7. The tape for semiconductor processing according to any one of claims 1 to 6,

wherein the pressure-sensitive adhesive layer is formed of a non-UV type pressure-sensitive adhesive agent.