CLAIMS

1. A manufacturing method for a semiconductor device having a dolmen structure including a substrate, a first chip disposed on the substrate, a plurality of support pieces disposed around the first chip, on the substrate, and a second chip supported by the plurality of support pieces and disposed to cover the first chip, the method comprising:

(A) preparing a laminate film including a base material film, an adhesive layer, and a support piece formation film, in this order;

(B) forming a plurality of support pieces on a surface of the adhesive layer by singulating the support piece formation film;

(C) picking up the support piece from the adhesive layer;

(D) disposing a first chip on a substrate;

(E) disposing the plurality of support pieces around the first chip, on the substrate;

(F) preparing a bonding adhesive piece-attached chip including a second chip, and a bonding adhesive piece provided on one surface of the second chip; and

(G) constructing a dolmen structure by disposing the bonding adhesive piece-attached chip on surfaces of the plurality of support pieces,

wherein the support piece formation film exhibits a shear viscosity at 120°C of 4000 Pa·s or more when the shear viscosity at 120°C is measured by the following method:

Method for measuring shear viscosity at 120°C: the support piece formation film having a thickness of 50 μm is cut to prepare four film pieces; the four film pieces are laminated on a hot plate at 60°C by using a rubber roll to prepare a specimen having a thickness of 200 μm; the

specimen is punched with a φ9 mm punch; and the shear viscosity of the punched specimen at 120°C is measured by using a shear viscosimeter (manufactured by TA Instruments Japan Inc., Product Name: ARES-G2) under conditions of a measurement frequency of 1 Hz, an axial force of 100 gf (0.98 N), a temperature increase rate of 5°C/minute, and a measurement temperature of 35 to 130°C.

2. The manufacturing method for a semiconductor device according to claim 1,

wherein the support piece formation film comprises a thermosetting resin layer, and

the method further comprises heating the support piece formation film or the support piece, before the (G) step.

3. A manufacturing method for a support piece used in a manufacturing process of a semiconductor device having a dolmen structure including a substrate, a first chip disposed on the substrate, a plurality of support pieces disposed around the first chip, on the substrate, and a second chip supported by the plurality of support pieces and disposed to cover the first chip, the method comprising:

(A) preparing a laminate film including a base material film, an adhesive layer, and a support piece formation film, in this order;

(B) forming a plurality of support pieces on a surface of the adhesive layer by singulating the support piece formation film; and

(C) picking up the support piece from the adhesive layer,

wherein the support piece formation film exhibits a shear viscosity at 120°C of 4000 Pa·s or more when the shear viscosity at 120°C is measured by the following method:

Method for measuring shear viscosity at 120°C: the support piece formation film having a thickness of 50 μm is cut to prepare four film pieces; the four film pieces are laminated on a hot plate at 60°C by using a rubber roll to prepare a specimen having a thickness of 200 μm; the specimen is punched with a φ9 mm punch; and the shear viscosity of the punched specimen at 120°C is measured by using a shear viscosimeter (manufactured by TA Instruments Japan Inc., Product Name: ARES-G2) under conditions of a measurement frequency of 1 Hz, an axial force of 100 gf (0.98 N), a temperature increase rate of 5°C/minute, and a measurement temperature of 35 to 130°C.

4. The manufacturing method for a support piece according to claim 3, wherein the support piece formation film comprises a thermosetting resin layer.

5. A support piece formation laminate film used in a manufacturing process of a semiconductor device having a dolmen structure including a substrate, a first chip disposed on the substrate, a plurality of support pieces disposed around the first chip, on the substrate, and a second chip supported by the plurality of support pieces and disposed to cover the first chip, the film comprising:

a base material film;

an adhesive layer; and

a support piece formation film, in this order,

wherein the support piece formation film exhibits a shear viscosity at 120°C of 4000 Pa·s or more when the shear viscosity at 120°C is measured by the following method:

Method for measuring shear viscosity at 120°C: the support piece

formation film having a thickness of 50 μm is cut to prepare four film pieces; the four film pieces are laminated on a hot plate at 60°C by using a rubber roll to prepare a specimen having a thickness of 200 μm; the specimen is punched with a φ9 mm punch; and the shear viscosity of the punched specimen at 120°C is measured by using a shear viscosimeter (manufactured by TA Instruments Japan Inc., Product Name: ARES-G2) under conditions of a measurement frequency of 1 Hz, an axial force of 100 gf (0.98 N), a temperature increase rate of 5°C/minute, and a measurement temperature of 35 to 130°C.

6. The support piece formation laminate film according to claim 5, wherein the support piece formation film comprises a thermosetting resin layer.