

WHAT IS CLAIMED IS:

1. A wafer dividing method of dividing a wafer, which is accommodated in a frame having an opening accommodating the wafer through an adhesive tape and has starting points of division formed along a plurality of dividing lines, into individual chips and maintaining an interval between adjacent chips, the method comprising:

a mounting step of mounting the wafer accommodated in the frame through the adhesive tape on a dividing apparatus including

a wafer holding section having a holding surface sucking and holding the wafer through the adhesive tape,

a frame fixing section having a fixing surface fixing the frame on a same level as the holding surface, and

separating means relatively separating the wafer holding section and the frame fixing section from each other to expand the adhesive tape and dividing the wafer into individual chips;

an expanding step of expanding the adhesive tape by operating the separating means in a state in which no suction force of the wafer holding section is applied to the wafer mounted on the dividing apparatus to divide the

wafer into individual chips and to form an interval between adjacent chips;

a sucking and holding step of applying a suction force of the wafer holding section with the adhesive tape expanded to suck and hold the wafer through the adhesive tape; and

a shrinking step of bringing the wafer holding section and the frame fixing section relatively closer to each other until the holding surface and the fixing surface are on a same level and heating a slaked portion of the adhesive tape between the wafer and the annular frame to shrink,

wherein the shrinking step includes a leak preventing step of heating a slacked portion of the adhesive tape to shrink so as not to generate an air leakage on the holding surface on a way where the holding surface and the fixing surface are on the same level,

wherein the leak preventing step is performed when a value of a pressure meter disposed in the wafer holding section is changed by a predetermined value or more after the wafer is sucked and held by the wafer holding section via the adhesive tape.

2. A wafer dividing method of dividing a wafer,

which is accommodated in a frame having an opening accommodating the wafer through an adhesive tape and has starting points of division formed along a plurality of dividing lines, into individual chips and maintaining an interval between adjacent chips, the method comprising:

a mounting step of mounting the wafer accommodated in the frame through the adhesive tape on a dividing apparatus including

a wafer holding section having a holding surface sucking and holding the wafer through the adhesive tape,

a frame fixing section having a fixing surface fixing the frame on a same level as the holding surface, and

separating means relatively separating the wafer holding section and the frame fixing section from each other to expand the adhesive tape and dividing the wafer into individual chips;

an expanding step of expanding the adhesive tape by operating the separating means in a state in which no suction force of the wafer holding section is applied to the wafer mounted on the dividing apparatus to divide the wafer into individual chips and to form an interval between adjacent chips;

a sucking and holding step of applying a suction force of the wafer holding section with the adhesive tape expanded to suck and hold the wafer through the adhesive tape; and

a shrinking step of bringing the wafer holding section and the frame fixing section relatively closer to each other until the holding surface and the fixing surface are on a same level and heating a slacked portion of the adhesive tape between the wafer and the annular frame to shrink,

wherein the shrinking step includes a leak preventing step of heating a slacked portion of the adhesive tape to shrink so as not to generate an air leakage on the holding surface on a way where the holding surface and the fixing surface are on the same level,

wherein the leak prevention step is performed at a timing when the separation means is operated by a predetermined operation amount, the predetermined operation amount is an operation amount of the separation means when a value of a pressure meter disposed in the wafer holding section is changed by a predetermined value or more after the wafer is sucked and held by the wafer holding section via the adhesive tape.

3. The wafer dividing method according to claim 1 or 2,

wherein the leak preventing step is performed in a state in which approach between the holding surface and the fixing surface is stopped.

4. A wafer dividing apparatus dividing a wafer, which is accommodated in a frame having an opening accommodating the wafer through an adhesive tape and has starting points of division formed along a plurality of crossing dividing lines, into individual chips and maintaining an interval between adjacent chips, the wafer dividing apparatus comprising:

a wafer holding section having a holding surface sucking and holding the wafer through the adhesive tape;

a frame fixing section having a fixing surface fixing the frame on a same level as the holding surface;

separating means relatively separating the wafer holding section and the frame fixing section from each other to expand the adhesive tape and dividing the wafer into individual chips;

heating means heating a slacked portion of the adhesive tape between the wafer and the frame to shrink; and

controlling means,

wherein the controlling means performs

expanding control expanding the adhesive tape by operating the separating means in a state in which no suction force of the wafer holding section is applied to the wafer mounted on the wafer holding section to divide the wafer into individual chips and to form an interval between adjacent chips,

sucking and holding control applying a suction force of the wafer holding section with the adhesive tape expanded to suck and hold the wafer through the adhesive tape, and

shrinking control of bringing the wafer holding section and the frame fixing section relatively closer to each other until the holding surface and the fixing surface are on a same level and heating a slacked portion of the adhesive tape between the wafer and the frame to shrink,

wherein when a value of a pressure meter disposed in the wafer holding section is changed after the wafer is sucked and held by the wafer holding portion via the adhesive tape, the controlling means performs shrinking control of heating a slacked portion of the adhesive tape to shrink so as not to generate an air leakage on the

holding surface on a way where the holding surface and the fixing surface are on the same level.

5. A wafer dividing apparatus dividing a wafer, which is accommodated in a frame having an opening accommodating the wafer through an adhesive tape and has starting points of division formed along a plurality of crossing dividing lines, into individual chips and maintaining an interval between adjacent chips, the wafer dividing apparatus comprising:

a wafer holding section having a holding surface sucking and holding the wafer through the adhesive tape;

a frame fixing section having a fixing surface fixing the frame on a same level as the holding surface;

separating means relatively separating the wafer holding section and the frame fixing section from each other to expand the adhesive tape and dividing the wafer into individual chips;

heating means heating a slacked portion of the adhesive tape between the wafer and the frame to shrink; and

controlling means,

wherein the controlling means performs

expanding control expanding the adhesive tape

by operating the separating means in a state in which no suction force of the wafer holding section is applied to the wafer mounted on the wafer holding section to divide the wafer into individual chips and to form an interval between adjacent chips,

sucking and holding control applying a suction force of the wafer holding section with the adhesive tape expanded to suck and hold the wafer through the adhesive tape, and

shrinking control of bringing the wafer holding section and the frame fixing section relatively closer to each other until the holding surface and the fixing surface are on a same level and heating a slacked portion of the adhesive tape between the wafer and the frame to shrink,

the controlling means heats a slacked portion of the adhesive tape to shrink so as not to generate an air leakage on the holding surface on a way where the holding surface and the fixing surface are on the same level,

wherein an operation amount of the separation means when a value of a pressure meter provided on the wafer holding section changes by a predetermined value or more after the wafer is sucked and held by the wafer holding section via the adhesive tape is preset in the controlling

means, and the controlling means performs shrinking control of heating a slacked portion of the adhesive tape at the timing when the separation means operates by the operation amount to shrink so as not to generate the air leakage.

6. The wafer dividing apparatus according to claim 4 or 5,

wherein the controlling means causes the heating means to heat a slacked portion of the adhesive tape to shrink in a state in which approach between the holding surface and the fixing surface is stopped.