

Claims

1. A wafer group constituted by a plurality of wafers obtained from the same ingot, with all wafers having an orientation flat (OF), wherein the wafer group is constituted by 70 or more wafers, and in the OF orientation accuracy of the wafer group represented by an angle, the OF orientation accuracy in each wafer is within $\pm 0.010^\circ$, and a standard deviation of the OF orientation accuracy of the wafer group is 0.0015 or less.

2. The wafer group according to claim 1, wherein for each wafer constituting the wafer group, a plot is formed in which the number of each wafer sequentially given from the side close to one end of the ingot is taken as X axis, and a concentration of a predetermined element in each wafer is taken as Y axis, and in this plot, the number of portions where continuity of the plot is lost, is a number equal to or less than 10% of a value obtained by adding the number of this portions to a total number of the wafers in the wafer group, and an increase/decrease value of the concentration of the predetermined element in a wafer of the next number is three times or less than the increase/decrease value assumed from the continuity of the plot, as compared with the wafer of an arbitrary number.

3. The wafer group according to claim 1 or 2, wherein the wafer is a semiconductor wafer having a cleavage property.

4. The wafer group according to any one of claims 1 to 3, wherein a plane constituting OF is any one of (011), (0-1-1), (0-11) and (01-1).

5. A wafer manufacturing device, with a wafer having two opposed lower and upper surfaces and an orientation flat (OF) formed by cleavage, comprising:

a stage which can be freely switched between fixing of the wafer and a release of a fixture from the lower surface, and which can be freely double-opened;

a scribe which puts scribe on the lower surface for cleaving the wafer, and which is disposed in a belt-like gap at a joint of the double-open stage, and movable along the gap;

a pressing part disposed above the stage and movable in a vertical direction; and

a door opening mechanism for double-opening the stage downward in conjunction with a downward movement of the pressing part, wherein the pressing part includes an indenter which has a long portion for pressing the upper surface of the wafer, and which is disposed above the gap and along the gap of the stage so as to be is freely swingable along the gap in a pendulum manner.

6. The wafer manufacturing device according to claim 5, wherein the pressing part further comprises the door opening mechanism, and the door opening mechanism is a protruding part protruding downward of the indenter, and is a protruding part that pushes and double-opens the stage by moving the pressing part downward.

7. The wafer manufacturing device according to claim 6, further comprising an adjuster that adjusts a vertical relative position between the indenter and the protruding part in the pressing part.

8. The wafer manufacturing device according to claim 6 or 7, wherein the stage is freely double-opened and closed according to a movement amount of the protruding part.

9. The wafer manufacturing device according to any one of claims 5 to 8, wherein the indenter is tilted so that one end of the long portion of the indenter is positioned lower than the end thereof in a stationary state.

10. A wafer manufacturing method, for a wafer having two opposed lower and upper surfaces and an orientation flat (OF) formed by cleavage, comprising the steps of:

putting a scribe on the lower surface for forming OF, at least as a part of a planned cleavage line, by a scriber disposed in a belt-like gap at a joint of the double-open stage which can be freely double-opened, with a lower surface side of the wafer fixed to the stage; and

double-opening the stage downward in conjunction with a downward movement of the pressing part by moving the pressing part including an indenter having a long portion, which is freely swingable along the gap in a pendulum manner, from an upper side to a lower side of the stage after release of a fixture of the wafer, and cleaving the wafer by pressing the planned cleavage line on the upper surface opposed to the scribe put on the lower surface, by the long portion of the indenter.

11. The wafer manufacturing method according to claim 10, wherein in the cleavage step, the stage is pushed and double-opened by a protruding part which is a part of the pressing part and protruding downward of the

indenter, by moving the pressing part from an upper side to a lower side of the stage.

12. The wafer manufacturing method according to claim 11, wherein the cleavage step comprises the steps of:

bringing the long portion of the indenter into contact with the upper surface;

pressing the planned cleavage line on the upper surface by the long portion of the indenter; and

pushing and double-opening the stage by the protruding part.

13. The wafer manufacturing method according to claim 11 or 12, comprising the steps of:

closing the double-opened stage by moving the protruding part upward after the cleavage step; and

performing the scribing step and the cleavage step to another wafer after the closing step.

14. The wafer manufacturing method according to any one of claims 11 to 13, further comprising the step of:

adjusting a vertical relative position between the indenter and the protruding part in the pressing part according to a thickness of the wafer, before the cleavage step.

15. The wafer manufacturing method according to any one of claims 10 to 14,

wherein in the scribing step, a scribe is put on a periphery of the

lower surface which is one end of the planned cleavage line, and the indenter is tilted so that one end of the long portion of the indenter is positioned lower than the other end thereof in a stationary state, and

in the cleavage step, a portion of the planned cleavage line on the upper surface opposed to the other end where the scribe is not put on the planned cleavage line on the lower surface, are first brought into contact with the indenter.

16. A wafer group constituted by a plurality of wafers, with all of them having an orientation flat (OF),

wherein the wafer group is constituted by 30 or more wafers, and

for each wafer constituting the wafer group, a plot is formed in which the number of each wafer sequentially given from the side close to one end of the ingot is taken as X axis, and a concentration of a predetermined element in each wafer is taken as Y axis, and in this plot, the number of portions where continuity of the plot is lost, is a number equal to or less than 10% of a value obtained by adding the number of this portions to a total number of the wafers in the wafer group, and an increase/decrease value of the concentration of the predetermined element in a wafer of the next number is three times or less than the increase/decrease value assumed from the continuity of the plot, as compared with the wafer of an arbitrary number, and

in an OF orientation accuracy of the wafer group represented by an angle, the OF orientation accuracy in each wafer is within $\pm 0.010^\circ$.