

WHAT IS CLAIMED IS:

1. A wafer processing method of processing a wafer in which each of devices having a plurality of bumps is formed in each of regions of a front surface partitioned by a plurality of division lines formed in an intersecting manner, the wafer processing method comprising:

a first alignment step of detecting an alignment mark by imaging the surface side of the wafer with visible light by a camera provided in the image pickup unit and imaging with visible light, and detecting the division line to be cut based on the alignment mark;

a first cut groove forming step of forming first cut grooves each having a depth corresponding to a finished thickness of each of device chips by a first cutting blade having a first thickness along the division lines from a front surface side of the wafer after the first alignment step is performed;

a sealing step of sealing the front surface of the wafer including the first cut grooves with a sealing material, after the first cut groove forming step is performed;

a grinding step of grinding the wafer from a back surface side of the wafer to the finished thickness of

each of the device chips to expose the sealing material in the first cut grooves, after the sealing step is performed;

a second alignment step of capturing the front surface side of the wafer through the sealing material from the front surface side of the wafer by the infrared imaging element provided in the imaging unit, detecting an alignment mark, and detecting the division line to be cut based on the alignment mark, after the grinding step is performed; and

a dividing step of cutting the sealing material in the first cut grooves by a second cutting blade having a second thickness smaller than the first thickness of the first cutting blade along the division lines from the front surface side of the wafer, and dividing the wafer into individual device chips each of which has its front surface and four side surfaces surrounded by the sealing material, after the second alignment step is performed,

wherein, in the sealing step, the front surface of the wafer is sealed with the sealing material having such a transmitting property that infrared rays to be received by the infrared imaging element pass through the sealing material.

2. The wafer processing method according to claim 1, wherein the infrared imaging element includes an InGaAs imaging element.

3. The wafer processing method according to claim 1 or 2, wherein the sealing material contains carbon black; and

the content of the carbon black is 0.1% by mass or more and 0.2% by mass or less.