WHAT IS CLAIMED IS:

1. A laser processing method for applying a laser beam to an adhesive film applied to a reverse side of a workpiece, which has been divided into individual chips along a plurality of intersecting streets on a face side of the workpiece, with grooves formed in the workpiece between adjacent chips along the streets and the adhesive film disposed at the bottoms of the grooves, the method comprising:

a holding step of holding an adhesive film side of the workpiece on a holding table;

a groove width detecting step of detecting widths of the grooves between outer edges of the chips spaced in a Y-direction in the workpiece held in the holding step at predetermined chip intervals and detecting central coordinates of the widths of the grooves between the chips at said predetermined chip intervals;

a laser beam irradiation line calculating step of calculating a laser beam irradiation line along which the laser beam is to be applied to the adhesive film, based on the widths of the grooves and the central coordinates of the grooves detected in the groove width detecting step;

a misalignment level determining step of

determining misalignment levels of the laser beam irradiation line calculated in the laser beam irradiation line calculating step by comparing misalignments of the grooves based on the central coordinates of the grooves associated with the chips at said predetermined chip intervals in widthwise directions thereof; and

a laser processing step performed after the laser beam irradiation line calculating step and the misalignment level determining step, wherein the laser processing step includes applying the laser beam to the adhesive film at the bottoms of the grooves along the laser beam irradiation line calculated in the laser beam irradiation line calculating step, thereby separating the adhesive film along the laser beam irradiation line without contacting the chips;

wherein the laser processing step includes applying the laser beam to the adhesive film under processing conditions corresponding to the misalignment levels determined in the misalignment level determining step.

2. The laser processing method according to claim 1,

wherein the laser processing step includes a step of processing the adhesive film with the laser beam at processing feed rates corresponding to the misalignment

levels determined in the misalignment level determining step.

3. The laser processing method according to claim 1,

wherein a tape is stuck to a lower surface of the adhesive film on the reverse side of the workpiece; and

the laser processing step includes a step of applying the laser beam to the tape along the grooves beyond an outer peripheral edge of the workpiece, thereby forming processing marks on the tape, the processing marks having lengths corresponding to the misalignment levels.

4. The laser processing method according to claim 1,

further comprising changing a condition in the groove width detecting step and repeating the groove width detecting step when at least one of the misalignment levels is outside of a tolerance range.

5. The laser processing method according to claim 1,

wherein the misalignment level determining step includes determining a difference between coordinate values of the central coordinates of the widths of the grooves associated with the chips in said predetermined

chip intervals.

6. The laser processing method according to claim 1,

wherein the misalignment level determining step includes comparing the misalignment levels to predetermined misalignment levels stored in a data table.

7. The laser processing method according to claim 6,

wherein the misalignment levels in the data table are classified into the following categories: minute misalignment level, small misalignment level, medium misalignment level and large misalignment level.

8. The laser processing method according to claim 4,

wherein changing the condition in the groove width detecting step includes reducing the predetermined chip intervals and detecting central coordinates of the widths of the grooves.