

An examination of laser glass separation in the plane
parallel to its surface

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The paper examines the mode of separation of glass cover articles that allows to obtain thin plane-parallel plates. The experimental examinations were carried out by the authors on a laboratory model. In the process of prototyping: a gas CO_2 -laser with the average output power of 35 W that works in continuous conditions, coordinate table with program control and a mechano-optical device of an energy channel of radiation were used.

Parallel laser thermosplitting during experimental examinations was carried out by means of irradiation of the workpiece by an elliptic laser bundle whose small axis is turned in parallel with the direction of travel of the laser beam with regard to the glass plate.

To find out the mechanism of formation of a split that is parallel with the surface the information about the distribution of temperature stresses formed in the glass when it is heated by a laser bundle is necessary. This problem was solved by means of a finite-element method implemented in the university version of the ANSYS program.

The results obtained can be used in the electronic industry for optimization of the process of obtaining thin plane-parallel plates.