

WAYS OF INCREASE OF EFFICIENCY OF THE USE OF WOOD OF OAK ARE IN PRODUCTION OF SAWN TIMBER

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Formulation of a scientific problem. Minor forest resources reserves in Ukraine, and it is ripe and overripe forests, as well as low productivity of young trees and medieval forests, which occupy 70 - 80% of all forest areas, make it difficult to ensure the quality sawn wood processing enterprises with raw materials. Therefore, an urgent task of the woodworking industry is a more efficient use of wood of varying quality at all stages of its processing to solve it possible by creating complex regulatory and reference documentation for the regulation of wood consumption and the use of nondestructive quality control of raw materials and products.

Analysis of recent research and publications. Today, the greatest attention is given to the technology of sawing logs cutting plans based on individual way of sawing round wood [1]. Cutting timber in this way is carried out on the band saw and circular saws. [2] In addition, this type of horizontal band saws for cutting width of the small countries with small reserves of raw materials occupy a leading position.

Materials and methods of research. The program of experiments in the first stage of the research there are certain objective data flow rates of round timber of oak wood for the production of edged and unedged lumber specifications. This was used horizontal band saws with a belt width of 35 mm - 120 mm, thickness 1.0 mm, width of cut was 2.0 mm. The total number of logs of oak logs 1st, 2nd and 3rd grades of all schemes was cutting 1715 pieces with a diameter of 14 - 46 cm, length 3 m.

The results of research. The second stage of the research was provided for the implementation of rational ways of cutting obtained in the first phase of lumber on the workpiece with regard to their dimension of quality characteristics. Get a response, detect surface or internal defects of wood (knots, cracks, rot, etc.) is possible with the help of modern non-destructive scanning techniques. From cheaper quality assessment and sizes of lumber can be isolated optical, ultrasonic, infrared, including by applying thermal.

To carry out studies on the use of the thermal control method (infrared scanning) in order to detect defects on the surfaces oak lumber were sampled with knots, cracks and rot, a thickness of 30 mm and a length of 1.7 m. During the experiment, the samples were amenable to thermal treatment by heating the blowing agent (air), after which they recorded thermal radiation. It has been found that more efficient in terms of the best image defects and the streaming process, a time interval of fixing of the thermal radiation is 20 seconds.

As a result of experimental studies, the following parameters (temperature range) of visible infrared major wood defects: swirls - $t = 21 - 22^{\circ} \text{C}$; crack - $t = 26 - 27^{\circ} \text{C}$; rot - $t = 23 - 24^{\circ} \text{C}$. When heated, there is a clear difference between the lumber boundaries thermal radiation defect-free wood and plots with defects, which can be explained by such factors: different thermal capacity of wood and fixed defects; different moisture content of individual sections of lumber; heterogeneity of the wood structure that affects its emissivity.

Research conclusions. As a result of experimental studies of the use of the thermal control method for detecting defects on the surfaces wet lumber found that this method is effective and can be used in the process of sawing lumber on the workpiece. However, this method today is not well understood and requires further experimental studies, depending on the influence of replacement factors (moisture content of sawn timber, the temperature of the heating surface, wood, etc.) in the definition of the thermal image of wood defects.