

COLOR OF BIRCH WOOD IN THE PROCESS OF THERMAL TREATMENT WITH SATURATED STEAM AND THE DEPENDENCE OF THE TOTAL COLOR DIFFERENCE ON THE ACIDITY OF WOOD

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ABSTRACT

*The paper presents changes in the color of birch wood (*Betula pendula* Rot.) in the thermal process of wood color modification with saturated water steam in the temperature range $t = 105\text{--}135\text{ }^{\circ}\text{C}$ during $t = 3\text{--}12$ hours. The light white-brown color of birch wood acquires color shades from pale brown to brown in the thermal treatment process. Changes in the color of birch wood are expressed in terms of the total color difference in the color space CIE $L^*a^*b^*$.*

In the thermal process of heat on wet wood, conditions are created for the course of chemical reactions, such as the extraction of water-soluble substances, hydrolysis of wood hemicelluloses, depolymerization of polysaccharides, and chemical changes in lignin manifested by modification of the wood chromophore system manifested by wood color change. Due to the hydrolysis of hemicelluloses under given technological conditions, the acidity of birch wood changes with a decrease in the pH value.

The presented dependence of the total color difference E^ on the change in the pH of birch wood is a suitable technological tool for the evaluation of the achieved change in the color of birch wood in the technological process.*

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