CHANGES IN ACIDITY OF BEECH SAPWOOD AND FALSE HEARTWOOD DURING STEAMING IN SATURATED WATER STEAM

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ABSTRACT

The paper presents the results of experimental monitoring of changes in acidity (pH) of beech sapwood and false heartwood during the steaming process using saturated steam at a temperature of 105°C for 18 hours. The aim of the treatment was to eliminate colour differences between individual zones of the wood. The results show that due to the partial hydrolysis of hemicelluloses and amorphous cellulose, the pH decreases: in the sapwood from pH = 5.4 to pH = 4.7 and in the heartwood from pH = 5.1 to pH = 4.5. The changes in acidity are not uniform - approximately 70% of the total decrease occurs within the first 6 hours of the process. The research also confirmed that the enzymatic processes associated with the formation of the false heartwood, specifically the activity of peroxidase and polyphenol oxidase, do not affect the course of hydrolysis during steaming. This knowledge can contribute to the optimisation of beech wood steaming technologies in order to unify the colour of the material.

Keywords: beech wood, sapwood, false heartwood, steaming, saturated water steam, wood colour, wood acidity.