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Influence of Vacuum Pressure on the Thermal Bonding Energy of Water in Wood

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Abstract : This paper takes into consideration the influence of bonding energy of water on energy demand of vacuum wood drying using the specific method of obtaining sorption isotherms. The experiment was carried out on oak wood at vacuum pressures of: 0.7 bar, 0.5bar and 0.3bar. The experimental work was done to determine a mathematical equation between the moisture content and energy of water-bonding. This equation helps in finding the average amount of energy of water-bonding necessary in calculation of energy consumption by use of the equation of heat balance in real drying chambers. It is concluded that the energy of water-bonding is large enough to be included into consideration. This energy increases at lower values of moisture content, when drying process approaches to the end, and its average values are lower on lower pressure.

Keywords : bonding energy, drying, isosters, oak, vacuum
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