

FIBERBOARD MODIFICATION BY OZONIZED AND DIMERIZED TALL OIL

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Summary

The fiberboard produced by wet method has some limitations on mechanical strength, water and moisture resistance, therefore, studies on improvement of these properties has been always interested. Tall oil, a by-product of pulp and paper production, after ozonization or dimerization, was studied to investigate the potential use as a modified chemical for wet fiberboard. With an oil content of $9 \pm 0.5\%$ relative to absolute dry weight of fiberboard, after 3 hours of heat treatment at $165 \pm 5^\circ\text{C}$, the wet fiberboard modified by dimerized tall oil showed static bending strength (MOR) 42 MPa, thickness swelling and water uptake when immersed in cold water 24 hours were less than 13% and approximately 7%, respectively - meeting the criteria of hard fiberboard marked T; the fiberboard modified by ozonized tall oil presented MOR 47 MPa, thickness swelling and water uptake when immersed in cold water 24 hours were approximately 10% and 7%, respectively - meeting the criteria of super hard fiberboard marked ST. Moreover, the density, moisture content and internal bonding reached the criteria of hard and super hard fiberboard in accordance with Russian Federal GOST 4598-86. Therefore, the dimerized tall oil and ozonized tall oil indicated the potential use as a reinforcement for wet fiberboard.

Keywords: *Fiberboard modification, physical and mechanical properties, tall oil, wet fiberboard.*