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Effects of Ozonization on Properties of Wood-Based Board Bonded with Styrene-Butadiene Rubber and Polyethylene Glycol Adhesive

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Abstract: SP adhesive, consisting of styrene-butadiene rubber (SBR) and polyethylene glycol (PEG), has been developed and used to make wood-based boards. This study aimed to improve the wood-based board properties by using an improved adhesive, ozonization and high mat moisture content. The internal bond strength (*IB*) was increased 1.44 times by the improved adhesive. It was also increased by ozonization. The optimum ozone charge was 0.5%, which improved the *IB* 1.35 times. When both the improved adhesive and ozonization were used, the *IB* was doubled and therefore the amount of adhesive could be reduced greatly. It is important to decrease the use of adhesive in order to encourage the use of boards because the adhesive is very expensive. The cost-saving of this adhesive more than offset the increase in cost of ozonization. Although the thickness swelling (*TS*) of this board was very high, the *TS* was improved greatly by increasing the mat moisture content.

Keywords: wood-based board, styrene-butadiene rubber, polyethylene glycol, ozone, mat moisture content

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