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
of

Agriculture and Forestry

**Withdrawal Strength of Dowels in Plywood and Oriented Strand Board**

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**Abstract:** Plywood and oriented strand board (OSB) are being used increasingly in the construction of upholstered furniture frames. Yet there is little information available concerning the holding strength of various fasteners, and, in particular, dowels in these materials. A study was conducted accordingly, to obtain basic information about the holding strength of dowels in both plywood and oriented strand board. Results of the tests were incorporated into predictive expressions that allow designers to estimate withdrawal strength as a function of the diameter of the dowels, their depth of embedment and the density of the composite material. Given the variability of the composite materials, significant differences between predicted and observed values must be expected. The maximum differences observed in the tests amounted to no more than 44 percent, however, so that the expressions developed nonetheless provide reasonable first estimates of dowel withdrawal strength. Coefficients of determinations for the expressions varied from 0.868 to 0.623. The results indicated that the generous use of adhesives tends to compensate for inherent material problems such as delamination.

**Key Words:** Plywood, OSB, dowel, withdrawal, strength

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