



RESEARCH ARTICLE

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Effect of needle punch technique on the properties of MDF board from bamboo (*Dendrocalamus strictus*)

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ABSTRACT : Bamboo is as a raw material found in whole over India. A number of production techniques can be used to improve the properties of MDF; particularly the tensile strength perpendicular to grain (internal bond). One of the new techniques is needle punch. Where-in the wooden frame with needles is used to punch the fibre mattress before making a board. Effect of needle punch technique on physical and mechanical properties of MDF board was evaluated. Boards were prepared from bamboo with 6%, 8% and 10% phenol formaldehyde resin using needle punch technique (two time punch) after the mat formation at three different pressure *i.e.*, 14 kg/cm², 17.5 kg/cm² and 21 kg/cm², respectively, for 15 minute hot pressing. The physical and mechanical properties of MDF board were evaluated as per IS specification 12406:2003. An increase trend in the internal bond strength of MDF board with the increase in needle punching during mat formation as well as resin content and pressure was observed. The results indicate that suitable MDF boards can be prepared using needle punch technique (two time punch) with 10% resin content at 21kg/cm² specific pressure which meets most of the other physical and mechanical properties as per IS: 12406:2003. Some of the physical properties of board like water absorption and general swelling were higher than the Indian Standard requirements which can be controlled by suitable treatment.

KEY WORDS : MDF Board, *Dendrocalamus strictus*, Bamboo fibre, Phenol formaldehyde

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