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EFFECT OF CORE LAYER COMPOSITION ON WATER RESISTANCE AND MECHANICAL PROPERTIES OF HYBRID PARTICLEBOARD

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Abstract

In this study, the effect of raw material formulation used in the core layer on the water resistance and mechanical properties of particleboard made from a mixture of rice husk and wood particles was investigated. For this aim, four series of particleboard core layer were produced from different proportions of rice husk/wood particles, different amounts of urea-formaldehyde (UF) adhesive, low density polyethylene (LDPE), and maleic anhydride grafted polyethylene (MAPE), respectively. The amounts of the LDPE and MAPE in the core layer were gradually increased up to 30 wt% and 6 wt%, respectively, while the amount of the UF adhesive was gradually decreased from 8 to 0 wt%. The water absorption, thickness swelling, and internal bond strength of particleboard were greatly improved by the incorporation of LDPE and MAPE into the core layer. The bending properties of the particleboard improved with increasing the LDPE content up to 20 wt%. The MOR and MOE of the particleboard increased with the incorporation MAPE into the core layer.

Key words: compatibilizer, dimensional stability, rice husk, particleboard, wood

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