

**MECHANICAL AND PHYSICAL PROPERTIES OF
PARTICLEBOARD FROM LOG CORE**

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ABSTRACT

MECHANICAL AND PHYSICAL PROPERTIES OF PARTICLEBOARD FROM LOG CORE

The aim of this study was to investigate the role of resin content and board density on the properties of particleboard composite. Single layered log core particleboards bonded with melamine urea formaldehyde (MUF) resins were manufactured. The amounts of resin at three levels of 8%, 10% and 12% and the density of particleboard at two levels of 600 kg/m³ and 700 kg/m³ were considered. The boards produced were evaluated for their modulus of rupture (MOR), modulus of elasticity (MOE), internal bonding (IB), thickness swelling (TS) and water absorption (WA) in accordance with the British Standard 312-4:2003. Increasing the density from 600 kg/m³ to 700 kg/m³ led to an increase in MOR, MOE and IB. By increasing the density, water absorption of particleboard decreased but its thickness swelling increased. By increasing the resin content, the mechanical properties of particleboard improved, although this improvement was not statistically significant. Furthermore, by increasing the resin content, the dimensional stability of particleboard improved partially. Mechanical properties exposed that board with higher density, 700 kg/m³ with the higher resin content of 12% shows the highest value for MOR (9.61 MPa), MOE (2190 MPa) and IB (1.56 MPa). While, for the physical properties, board density 600 kg/m with resin content 12% had the best TS for both 2 hours (24.63%) and 24 hours (27.68%). Therefore, particleboard from log core waste with highest board density and resin content has a potential as an alternative raw material to produce particleboard and other wood-based product for furniture industry.