

Properties of particleboard with oil palm trunk as core layer in comparison to three-layer rubberwood particleboard

ABSTRACT

Compaction ratio is highly dependent on the density of the wood materials used in the production of particleboard. Lower density wood materials will produce particleboard with higher compaction ratio and is believed to give better properties. The objective of this study was to evaluate the properties of threelayer particleboard made from rubberwood and oil palm trunk with different bulk density as the core layer, while the rubberwood fine particles served as surface layers for both types of particleboard. This study also investigated the effect of shelling ratios on the mechanical and physical properties of the threelayer particleboard. Melamine-fortified urea formaldehyde (UF) resin was used as the binder. The modulus of rupture (MOR), internal bond strength (IB) and thickness swelling (TS) of the particleboards were evaluated based on the Japanese Industrial Standard for particleboard (JIS A 5908:2003). The results showed that both species and shelling ratios are variables that influenced the mechanical and physical properties of the particleboard. Despite its lower compaction ratio, particleboard made from rubberwood alone had better strength properties and dimensional stability than particleboard made from a mixture of rubberwood and oil palm trunk.

Keyword: Compaction ratio; Oil palm trunk; Rubberwood; Shelling ratio; Slenderness ratio