

Particleboard manufactured from rubberwood RRIM 2002 clone planted with different fertilizer treatment

ABSTRACT

This work focus on the effects of SRF (Slow Release Fertilizer) + NPK fertilizer rates on the properties of rubberwood particleboards produced. The particleboards were fabricated using rubber tree trial clone RRIM 2002. RRIM 2002 clone still in trial plot with age of 4-year old and classified as Latex Timber Clone which estimated to produce large wood volume and also better latex yield. The properties of particleboard were categorized and evaluated based on fertilizer treatment applied on RRIM 2002 clone tree: T1 (SRF + NPK at normal rate), T2 (SRF + 1.5 x NPK at normal rate), T3 (SRF + 2.0 x NPK at normal rate) and T4 (SRF + 2.5 x NPK at normal rate, control (NPK at normal rate). The resin used for particleboard fabrication was urea formaldehyde (UF) (63.9% solid) type E1. The resin content is 10%. The thickness of board is 10 mm with density 700 kgm⁻³. The particleboards were fabricated and assessed in accordance to Japanese Industrial Standard for Particleboard (JIS A 5908-2003). The properties that been assessed were on modulus of elasticity (MOE), modulus of rupture (MOR), internal bonding (IB), thickness swelling (TS) and water absorption (WA). From this study, it is found that fertilizer treatment influences the particle recovery and performance of particleboard especially on dimensional stability and internal bonding properties which significantly affected. The MOR and MOE of particleboard made from rubber trees that treated with SRF-NPK fertilizer showed better performance compared to that of with NPK fertilizer alone (control), however, the differences were not significant. In term of IB, no specific trend was observed. Lastly, for dimensional stability (TS and WA), particleboard produced from SRF-NPK fertilizer reduced the board stability when subjected to cold water soak.

Keyword: Particleboard; Urea formaldehyde; RRIM 2002; Rubberwood; Fertilizer