

Development of oriented strand board from acacia wood (*Acacia mangium willd*): effect of pretreatment of strand and adhesive content on the physical and mechanical properties of OSB.

ABSTRACT

Acacia wood (*Acacia mangium Willd.*) is the most popular fast growing tree species planted in timber estate in Indonesia and is considered to be very valuable raw materials for structural composite products. The objective of the research was to evaluate the properties of OSB prepared from *A. Mangium* wood with or without immersing the strands to hot water at 80°C for 2 hours. MDI adhesive was used in 3 levels i.e., 3%, 5%, and 7%. The moisture content of strand was 7%. The results indicated that immersing strands in hot water for 2 hours at 80°C prior to manufacture OSB improved significantly the mechanical properties (i.e., MOR and MOE) of OSB. The higher the adhesive content resulted in the better the dimensional stabilisation (i.e., water absorption and thickness swelling) and the mechanical properties (i.e., MOR, MOE and IB) of OSB. OSB prepared from hot-water immersed strands with 5% adhesive content has met all parameters requirement on the JIS A 5908 (2003) standard.

Keyword: OSB; *Acacia mangium*; Pretreatment; Adhesive content; Dimensional stability; Mechanical properties.