# EVALUATION ON THE PHYSICAL AND MECHANICAL PROPERTIES OF PARTICLEBOARD FROM BATAI (PARASERIANTHES FALCATARIA)

By

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| $CO^2$ | Carbon Dioxide |
| PB | Particleboard |
| KPPK | Ministry of Plantation Industries and Commodities |
| JIS | Japanese International Standard |
| *spp.* | Species |
| UF | Urea Formaldehyde |
| MDF | Medium Density Fiberboard |
| RH | Relative Humidity |
| MOR | Modulus of Rupture |
| MOE | Modulus of Elasticity |
| IB | Internal Bonding |
| TS | Thickness Swelling |
| WA | Water Absorption |

## ABSTRACT

### EVALUATION ON THE PHYSICAL AND MECHANICAL PROPERTIES OF PARTICLEBOARD FROM BATAI (*PARASERIANTHES FALCATARIA*)

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The objective of this study was to investigate the suitability of Batai tree *(Paraserianthes Falcataria)* in manufacturing particleboard. In this study, UF (Urea Formaldehyde) was used as a binder with three different resin contain; 8%, 10% and 12% with addition 1% of wax and without addition of wax. Two different particles size; 1.0 mm and 2.0 mm were used. The target density was 550kg/m$^2$. The properties include Bending Strength (MOR and MOE), Internal Bond Strength and water absorption were determined based on Japanese International Standard (JIS A 5908:2003). From the study, it showed that, MOR and MOE value for panel with size 2.0mm is greater compare with 1.0mm. Conversely, panel manufactured using 1.0mm was better in internal bond strength compare with panel 2.0mm. The result also shows that, MOR, MOE and internal bond strength for panel without wax is higher compare with panel with wax. The percentage of resin contain also affected the bending strength of the panel. When the percentage of resin increased, the MOR and MOE value was increased. The water absorption rate for panel with addition of wax using 1.0mm particle was slightly lower compare with panel manufactured without wax. Particles sizes, percentage of resin contain and addition of wax were affected the mechanical properties of particleboard from Batai.