

## **Density of Densified *Paraserianthes falcataria* Wood Pre-treated with Alkali**

### **ABSTRACT**

Wood densification is done to improve its mechanical and physical properties, by compressing the porous structure under steam, heat and pressure called Viscoelastic-Thermal Compression (VTC). This study had been done to evaluate the effect of alkaline pre-treatment using different concentrations of Sodium hydroxide (NaOH) on *Paraserianthes falcataria* (local name: Batai) and its density. Alkaline pre-treatment was done before the densification process, using three different concentrations of NaOH (3%, 6% and 9%) with 0% NaOH as the control. There were 30 replicates used for the study. The lamina was prepared by trimming the lamina sawn timber into specific size. Then, laminas cooking process in different NaOH concentrations for 30 minutes, followed by hot water extraction with acetic acid for 20 minutes and 24 hours of oven dried under temperature  $103 \pm 5^{\circ}\text{C}$ . The laminas were then pressed using hot press machine under  $105^{\circ}\text{C}$  temperature and 6 MPa pressure for 30 minutes before cooling phase were conducted for 10 minutes. The density was evaluated continuously for 7 days and the results showed that densified *P. falcataria* without alkaline pre-treatment (0% NaOH) has the highest density compared to treated densified *P. falcataria* with different alkaline pretreatments (3%, 6% and 9%); meanwhile the highest concentration of NaOH (9%) has the lowest density value compared to 3% and 6%, as 3% has the higher value than 6% NaOH.