

Density profile of alkaline-treated and densified 3-layered *Paraserianthes falcataria* composites

ABSTRACT

Wood densification is one of the wood modification methods that had been invented in the 1900s. However, this method was discontinued due to lack of knowledge to completely understand the process. Findings indicated that the procedure of wood densification had been remediated in recent years due to increase competition in construction materials and the needs of quality structural materials. In this study, low-density plantation timber, *Paraserianthes falcataria* was pretreated with alkaline before undergoing densification process. The aim of this paper was to determine the density profile of the treated and untreated densified 3-layered *P. falcataria* composites. Alkaline pretreatment using NaOH was done according to soda pulping method to remove partially lignin from the timber used. Wood densification was done according to hot-pressing mathematical modelled by previous researchers, to enhance the properties of timber, such as density, by compressing the timber cell wall structure to eliminate voids between walls. In this study, 3%, 6% and 9% NaOH were used with 0% NaOH as control and the results for density profile showed that densified composites treated with 6% NaOH has the highest density profile, while densified composites treated with 0% NaOH (control) has the lowest density profile.