Static bending and compression properties of alkaline-treated densified timber of paraserianthes falcataria

ABSTRACT

Wood densification and alkaline pretreatment are well-known to enhance the mechanical properties and lignin-removal, respectively, especially those of low-density timber species. This study was aimed to determine the mechanical properties (static bending and compression) of untreated and alkaline-pretreated densified 3-layered Paraserianthes falcataria timbers. Pretreatment with 3%, 6% and 9% NaOH resulted in an increase up to 44% in mechanical static bending properties, where Modulus of Elasticity with 9% NaOH having the highest value in edge-wise bending, while 6% NaOH obtained the highest value of flat-wise bending. Both edge-wise and flat-wise bending showed slight increment in values for Modulus of Rupture between the concentrations. Compressive strength for compression parallel to the grain obtained by 0% NaOH (control) shows the highest value compared to other concentrations. Meanwhile, compression perpendicular to the grain of 9% NaOH enhanced for about 10% in compressive strength value compared to 0% NaOH.