Physical and mechanical properties performance between untreated and treated with CCA treatment at different age groups of fast-growing acacia hybrid of Sarawak

ABSTRACT

An effort was carried out to fully utilise fast-growing Acacia hybrid usage in the timber engineering field; however, the research data are still lacking. This paper aims to evaluate the physical and mechanical properties performance between untreated (control) and treated with 10% copper chrome arsenic of Acacia hybrid collected from Daikin Plantation Sdn. Bhd. Bintulu, Sarawak at air-dry condition at different age groups using the small clear method. Mechanical properties test refers to shear parallel to grain (tangential and radial directions), cleavage (tangential and radial directions), and tension parallel to grain test. Meanwhile, the physical properties test refers to moisture content (MC) and density test. After treatment, mechanical properties increase with an average of 13.67%; meanwhile, moisture content decreased with an average of 0.58% or 0.09% MC, and density slightly increased with an average of 0.44% or 0.002 g/cm3. Results indicate that 10-yearold Acacia hybrid exhibits the highest strength values in shear parallel to the grain, tension parallel to the grain, and cleavage, followed by 13-year-old and 7-year-old. Treated samples in the tangential direction performed better with consistent mean results than that of the untreated samples, while radial direction gave a high average strength increment when treated.