INVESTIGATE THE RELATIONSHIP BETWEEN DENSITIES VS. MECHANICAL PROPERTIES OF SRI LANKAN TIMBER SPECIES

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Abstract: The aim of this study was to investigate the relationships among wood density, modulus of rupture (MOR), modulus of elasticity (MOE), compression parallel to grain (CNP) and compression perpendicular to grain (CPG) in 32 timber species grown in Sri Lanka. Defects free stem section from each timber was taken at the breast height and samples were prepared according to BS 373: 1957 standard. The tests for mechanical properties were performed through the Universal Testing Machine (UTM 100 PC). Linear Regression Analysis was done for interpreting the effectiveness of the relationship in wood density with other mechanical properties (MOR, MOE, CPG, CNG) The relationship between wood density and mechanical strength properties were analyzed by regression models. Wood density showed strong positive relationship with MOE and CPG. Results in the regression test revealed a significant relationship (P=0.001) among wood density and other mechanical properties such as MOR, MOE, CNP and CPG. These results can be used for developing effective timber classification system in Sri Lanka.

Keywords: Density; Mechanical Properties; Timber Classification