

# AXIAL AND RADIAL VARIATIONS IN THE PHYSICAL PROPERTIES OF PLANTATION GROWN *Tectona grandis* WOOD IN EDO STATE, NIGERIA



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## ABSTRACT

The variations in density, percentage shrinkage and thickness swelling of plantation grown *Tectona grandis* wood aged 15, 20 and 25- year were examined in this study. Six trees from each aged class were selected from the plantation of the species in Edo State, Nigeria. Wood samples were obtained from inner wood, middle wood and outer wood at 10, 50 and 90% of the tree merchantable height. Wood density determination was carried out using samples sizes of 20 x 20 x 60mm. Test samples used for wood density determination were also used for the determination of percentage shrinkage and thickness swelling. The results indicated that the density, percentage shrinkage and thickness swelling increased with increase in tree age. The mean densities for the three age classes on oven-dry weight and volume basis were 478, 556 and 650kg m<sup>-3</sup>. The mean percentage shrinkage values in the radial directions were 3.702, 2.717 and 1.460% while the mean values obtained in the tangential directions were 7.602, 5.520 and 5.040% for ages 15, 20 and 25-year respectively. Similarly, the mean values for thickness swelling in the radial directions were 5.456, 4.081 and 2.404% while the values obtained in the tangential directions were 9.909, 7.559 and 5.133% for 15, 20 and 25-year old *T. grandis* wood respectively. Wood density was also discovered to increase from the pith to bark while it decreases from the base to top. The strong positive correlation between wood density, percentage shrinkage and thickness swelling were significant at 0.05 probability level.

**Keywords:** *Tectona grandis*, Plantation, Density, Percentage shrinkage, Thickness swelling