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Evaluation of the dimensional effect and relationship between density and shrinkage of Sri Lankan grown timber species

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Abstract
Wood shrinkage mainly occurs along two main directions: radial (R) and tangential (T). Volumetric shrinkage measures the magnitude of the shrinkage. But T/R ratio measures the uniformity of the shrinkage. This is very good indicator of wood's stability. To be a good stable wood it must have both low volumetric shrinkage and low T/R ratio. This study was attempted to identify the variations of T/R ratio of 32 timber species in Sri Lanka in year 2019. The T/R ratios of 32 different timber species were analyzed and classified into three classes based on the results. These classes are: T/R ratios below 1, T/R ratios ranging from 1 to 2, and T/R ratios above 2. It was observed that a T/R ratio of 1 indicates uniform shrinkage. Timber species with T/R values ranging from 1 to 1.50 were found to have stable dimensional effects and are thus recommended as good timber species. However, no significant correlation was observed between the density of timber species and their radial shrinkage, tangential shrinkage, or T/R ratio. To minimize defects when combining different timber species in furniture manufacturing, it is recommended to use three timber groups that have been prepared based on T/R values. This approach helps in selecting the best matching timber pieces for the furniture making process.

Key words: Density, Shrinkage, T/R ratio, Wood stability

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