DEVELOPMENT OF A CLASSIFICATION SCALE AND A MODEL FOR FIBER SATURATION POINT ANDSHRINKAGE OF SRI LANKAN TIMBER SPECIES

Bachelor of Technology Dissertation

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Abstract

Sri Lanka produces valuable and exquisite timber species and those are extensively used for many purposes. For efficient use of the timber understanding of physical property of them is a must. Research was done on physical property of wood specially, timber density and volumetric shrinkage is very few and far better. Timber seasoning without considering its shrinkage properties increases the cost of seasoning and wastage the timber.

Timber density calculated by Archimedes theorem. To find out the shrinkage values, the dimensions of the timber samples were measured in green to oven dry and the percentage of shrinkagewas calculated.

Also, there is a strong correlation (P value<0.05) between moisture content at fiber saturation point and density and volumetric shrinkage and density. As the final conclusion,The Radial Shrinkage for most of the timber species tested varied between 4.6- 5.5. % and The Tangential Shrinkage for most of the timber species tested varied between 8.5-9.5%. The density value varies within (650-750kg/m3)range for most of the local timber species.The moisture content at Fiber Saturation point varies between 30-35 % for most of the timber species in Sri Lanka.

The model has been developed to explain the Moisture content at FSP asY (MC (% at FSP) = 93.23-0.08219 Density (P value<0.05;R-sq= 88.1%, R-sq (adj) = 88.0%, DW= 0.69081) and volumetric shrinkageas Y (Volumetric Shrinkage (%) = -2.943 + 0.02112 Density (P value<0.05;R-sq= 88.5%,R-sq (adj) = 88.3%,DW= 0.834763).

Key words: Fiber Saturation point, Volumetric Shrinkage, Radial Shrinkage, Tangential Shrinkage, Longitudinal Shrinkage, Density, Specific Gravity, Oven dry method, moisture content, Hardwood, Softwood, Heart wood, Sapwood ,Green Wood.