DEVELOPMENT OF A CLASSIFICATION SYSTEM FOR SRI LANKAN TIMBER SPECIES BASED ON PHYSICAL PROPERTIES

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DECLARATION OF THE CANDIDATE & SUPERVISOR

"I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Abstract

An investigation was carried out on selected twenty five Sri Lankan timber species to study different wood properties which are commonly applied in the timber industry in Sri Lanka. Wood density, modulus of rupture, modulus of elasticity, compression strength at rupture and compression in elastic limit at direction of parallel to grain were tested by five samples of each specimen at moisture content between 12% - 15%. The obtained results were analysed to find correlation among properties and to develop a classification based on the wood properties. BS 373:1957 (1999) standard was followed to test small clear samples in sample sizing, testing and calculation procedures. Three point bending test, compression parallel to grain test were applied to investigate mechanical properties and by measuring weight and volume at 12%-15% moisture content, density was calculated.

Obtained results described a fair correlation among density and mechanical properties specially, modulus of rupture and modulus of elasticity. These results can be used to predict the mechanical properties with respect to density and vice versa. Above properties were referred to develop the classification into four basic grades as super grade, high grade, medium grade and low grade. Further any relationship could not be found between the timber classification published by State Timber Corporation and it proved that this classification is not based on the wood properties. It is recommended to extent the research by increasing types of properties, number of species and samples with various age limits and growing conditions and height of the trees. This could be benefitted to improve the effectiveness of the classification based on properties and to develop standards of the timber industry in Sri Lanka.

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LIST OF ABBREVIATIONS

Abbreviation	Description
MC	Moisture content
EMC	Equilibrium moisture content
MOE	Modulus of elasticity
MOR	Modulus of rupture
STC	State Timber Corporation
UTM	Universal testing machine
BS	British standard
CCA	Copper chrome arsenate preservatives

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