International Journal of Civil Engineering
(IJCE)
ISSN (P): 2278–9987; ISSN (E): 2278–9995
Vol. 12, Issue 1, Jan–Jun 2023; 1–10

International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations

ESTIMATION FOR CHARACTERISTIC VALUE MECHANICAL PROPERTIES OF STRUCTURAL TIMBER

Amitava Sil, Ram Kumar VR & S.C.Sahoo

Scientist, Institute of Wood Science and Technology, Sarsuna, Kolkata, India

ABSTRACT

Characteristic value is generally a value that corresponds to a fractile of the statistical distribution of a timber property. For modulus of elasticity, the fractile is the 5-percentile and the mean value is also a characteristic value. Due to the presence of random defects, the testing of samples from a population will result in mechanical properties which can be represented by a statistical distribution. Limit state design codes are based on characteristic values of these properties and are determined as the weighted means of the sample lower 5-percentiles for strength properties and density, whereas the weighted mean of the sample averages (50-percentile) is used for determining modulus of elasticity. To account for safety reasons and strength values of timber, there is very much essential for structural dimensioning, and these are calculated based on the characteristic value of timber, which corresponds to the 5% percentile of a given probability distribution model. The main objective of this study was to estimate the characteristic values of modulus of elasticity and modulus of rupture of timber on best probability distribution model and the subsequent calculation of the characteristic value as indicated by EN 384:2004 allowing to evaluate its accuracy. In the estimation method, Indian standard methods to evaluate the mean strength values and then they are being compared with strength class table for different timber species.

KEYWORDS: *Characteristic Value, Bending Strength, Modulus of Elasticity, Strength Class*

Article History

Received: *21 Mar 2023* | ***Revised:*** *22 Mar 2023* | ***Accepted:*** *28 Mar 2023*