**By**

SITI ZALEHA BINTI NOR AZLAN

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## ABSTRACT

The investigation of mechanical properties for three bamboo species found in Malaysia namely Bambusa vulgaris (Buluh Minyak), Dendrocalamus asper (Buluh Betong) and Gigantichloa scortechinii (Buluh Semantan) were carried out. The density and moisture content of bamboo culm which are basic requirement for effective analysis of its mechanical properties were investigated. The parameter studied were hardness and compressive strength of bamboo culms along different height sections which are at top, middle and bottom internode sections. The results showed that the strength of bamboo increases with length of culm for both hardness and compressive strength. The values for hardness strength for Bambusa vulgaris are 1083.33 $N/mm^2$ (top), 1000 $N/mm^2$ (middle) and 777.78 $N/mm^2$ (bottom), Dendrocalamus asper with 3194.44 $N/mm^2$ (top), 2222.22 $N/mm^2$ (middle) and 1333.33 $N/mm^2$ (bottom) and lastly Gigantochloa scortechinii with 263.89 $N/mm^2$ (top), 250 $N/mm^2$ (middle) and 116.68 $N/mm^2$ (bottom). The values for compressive strength for Bambusa vulgaris are 101.70 $N/mm^2$ (top), 60.32 $N/mm^2$ (middle) and 30.73 $N/mm^2$ (bottom), while Dendrocalamus asper strength are 89.27 $N/mm^2$ (top), 73.24 $N/mm^2$ (middle) and 40.23 $N/mm^2$ (bottom) and lastly Gigantochloa scortechinii with its strength of 121.06 $N/mm^2$ (top), 89.23 $N/mm^2$ (middle) and 76.46 $N/mm^2$ (bottom). The results of compressive strength of all three species of bamboo were comparable to wood, concrete, mild steel and plastic, while the hardness strength was comparable to softwood and some hardwood. Due to the results of the investigation, it was found that bamboo that has been under-utilized in Malaysia could be used as alternative material to wood, concrete, steel and plastic in applications such as housing, construction and other engineering applications.

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