

Assessment of Hygroscopic Characteristics of Hevea brasiliensis Wood

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Abstract : Wood behave differently under different environmental conditions. The knowledge of the hygroscopic nature of wood becomes a key factor in selecting wood for use and required treatment. This study assessed the hygroscopic behaviour of Hevea brasiliensis (Rubber) wood. Void volume, volumetric swelling in the tangential, radial and longitudinal directions and volumetric shrinkage were used to assess the response of the wood when loosing or taking up moisture. Hevea brasiliensis wood samples cut into 20 × 20 × 60 mm taken longitudinally and transversely were used for the study and dried in the oven at 103 ± 2°C. The mean values for moisture content in green Hevea brasiliensis wood were 49.74 %, 51.14 % and 54.36 % for top, middle and bottom portion respectively while 51.77 %, 50.02 % and 53.45 % were recorded for outer, middle and inner portions respectively for the tree. The values obtained for volumetric shrinkage and swelling indicated that shrinkage and swelling were higher at the top part of H. brasiliensis. It was also observed that the longitudinal shrinkage was negligible while tangential direction showed the highest shrinkage among the wood direction. The values of the void volume obtained were 43.0 %, 39.0 % and 38.0 % at the top, middle and bottom respectively. The result obtained showed clarification on the wood density of hevea brasiliensis based on the position and portion of the wood species and the variation in moisture content, void volume, volumetric shrinkage and swelling were also revealed. This will provide information in the process of drying hevea brasiliensis wood to ensure better wood quality devoid of defects.

Keywords : moisture content, shrinkage, swelling, void volume

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