
EFFECT OF COMPRESSION RATIOS ON SOME PROPERTIES OF DENSIFIED ACACIA HYBRID, EUCALYTUS UROPHYLLA AND PINUS MERKUSII WOOD BY THERMO-MECHANICAL TREATMENT METHOD

Pham Van Chuong¹, Vu Manh Tuong², Nguyen Trong Kien³, Le Ngoc Phuoc⁴
^{1,2,3,4} Vietnam National University of Forestry

SUMMARY

Thermo-mechanical treatment is a method to improving durability and physical-mechanical properties of wood. In this study, effect of compression ratios (CR) on quality of densified Acacia hybrid (*Acacia mangium* x *Acacia auriculiformis*), *Eucalytus urophylla* and *Pinus merkusii* were investigated. The samples were initially subjected to natural drying to approximately 35±5% moisture content, and then cut to the dimensions of 400 (l) × 120 (w) x different thicknesses (t) mm. The softening and compression process was performed on the heat press BYD 113/4, and the samples were densified with compression ratios of 10%, 20%, 30%, 40% and 50%. According to the results of this study, compression ratio clearly affects the recovery set (RS) of the wood (the largest RS for *Eucalyptus* and the smallest for *Pinus*); density, static bending strength and elastic modulus of wood increase as the compression ratio increases. To meet the requirements of group III timber according to TCVN 1072-71, with *Acacia hybrid* wood, the compression ratio must be greater than 30%, with *Eucalyptus* wood the compression ratio is greater than 20% and with the *Pinus* wood the compression ratio is greater than 40%.

Keywords: *Acacia mangium* x *Acacia auriculiformis*, compression ratio, *Eucalyptus urophylla*, *Pinus merkusii*, thermo-mechanical treatment.

| | |
|----------------------|--------------|
| Ngày nhận bài | : 24/12/2018 |
| Ngày phản biện | : 29/01/2019 |
| Ngày quyết định đăng | : 11/02/2019 |