

Elastic Constants of Heat Treated Wood

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Abstract : Effects of heat treatment on elastic constants of Black pine (*Pinus nigra*) wood were investigated. Specimens were exposed to heat under atmospheric pressure at two different temperatures (180 and 210 °C) and three different time levels (2, 5, 8 hours). Three Young's modulus in three anatomical directions, six Poisson's ratios and three Shear modulus values associated with the main directions were evaluated by compression tests. Compression strength of the samples in three principal directions was also determined. All of the properties of the specimens tested were altered by heat treatment. The degree of alteration depends on the temperature as well as duration applied. Results indicate that EL and compression strength in L direction were not significantly influenced, compression strength in R direction significantly decreased, ER, ET and compression strength in T direction were increased for shorter periods, then dropped for 8-hour application of 180 °C. ER was not significantly affected, compression strength in R direction and EL was significantly decreased, ET and compression strength in T direction were increased for shorter periods, then decreased for 8-hour application of 210 °C. The shear modulus of the samples was decreased with application of treatment combinations. Most of the Poisson's ratios were not affected by heat treatment.

Keywords : black pine, elastic constants, heat treatment, wood

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