

Failure Criterion for Mixed Mode Fracture of Cracked Wood Specimens

Authors : Mahdi Fakoor, Seyed Mohammad Navid Ghoreishi

Abstract : Investigation of fracture of wood components can prevent from catastrophic failures. Created fracture process zone (FPZ) in crack tip vicinity has important effect on failure of cracked composite materials. In this paper, a failure criterion for fracture investigation of cracked wood specimens under mixed mode I/II loading is presented. This criterion is based on maximum strain energy release rate and material nonlinearity in the vicinity of crack tip due to presence of microcracks. Verification of results with available experimental data proves the coincidence of the proposed criterion with the nature of fracture of wood. To simplify the estimation of nonlinear properties of FPZ, a damage factor is also introduced for engineering and application purposes.

Keywords : fracture criterion, mixed mode loading, damage zone, micro cracks

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