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Experimental and numerical investigation of the fracture toughness of Glass/Vinylester composite laminates

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ABSTRACT

Mixed-mode interlaminar fracture behaviour of Glass/Vinylester composite laminate has been investigated numerically and experimentally. In the current study, fracture parameters of this type of material have been obtained in pure mode-I, pure mode-II and mixed-mode loading conditions. For this purpose, the butterfly Arcan specimens were produced with various lengths of delamination as pre-cracks and were tested in various loading conditions. The experiments were conducted using an Arcan fixture to obtain the critical load. The geometrical correction factors have been calculated using finite elements. Finally, the fracture toughness and critical energy release rate has been determined by experimental and numerical results.

Keywords: Fracture mechanics; Arcan; Mixed-mode; composites; VCCT

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