SIZE EFFECTS ON THE TENSILE AND COMPRESSIVE FAILURE OF NOTCHED COMPOSITE LAMINATES

G. H. Erçin†, P. P. Camanho*, S. Mahdi**, P. Linde**

* Faculdade de Engenharia da Universidade do Porto (FEUP)
  Universidade do Porto
  Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
  e-mail: pcamanho@fe.up.pt, web page: http://www.fe.up.pt

† Instituto de Engenharia Mecânica e Gestão Industrial (INEGI)
  Universidade do Porto
  Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
  e-mail: hgulsum@inegi.up.pt, web page: http://www.fe.up.pt

** AIRBUS OPERATIONS SAS
  316, Route de Bayonne
  31060 Toulouse Cedex 03
  France

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Abstract. An experimental and analytical investigation of the effect of size on the strength of composite laminates with central holes loaded in tension and compression is presented. Specimens with different hole sizes and with constant width-to-diameter ratios were tested in tension and compression under quasi-static loading and the strength reduction for increasing sizes was quantified. In addition, centered cracked specimens loaded in tension and in compression were tested to obtain the laminate fracture toughness. This laminate property is required for the strength prediction method. The applicability of available strength prediction methods (Whitney-Nuismer, Soutis-Fleck, Waddoupous) to simulate the effect of size on the strength of notched composites is discussed.