

Numerical Investigation for Ductile Fracture of an Aluminium Alloy 6061 T-6: Assessment of Critical J-Integral

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Abstract : The aim of this work is to simulate the ductile fracture of SEN specimens in aluminium alloy. The assessment of fracture toughness is performed with the calculation of J_c (the critical value of J-Integral) through the resistance curves. The study is done using finite element code calculation ABAQUSTM including an elastic plastic with damage model of material's behaviour. The procedure involves specimens of four different thicknesses and four ligament sizes for every thickness. The material of study is an aluminium alloy 6061-T6 for which the necessary parameters to complete the study are given. We found the same results for the same specimen's thickness and for different ligament sizes when the fracture criterion is evaluated.

Keywords : j-integral, critical-j, damage, fracture toughness

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