

Non-Linear Finite Element Analysis of Bonded Single Lap Joint in Composite Material

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Abstract : The goal of this work is to analyze the severity of interfacial stress distribution in the single lap adhesive joint under tensile loading. The three-dimensional and non-linear finite element method based on the computation of the peel and shear stresses was used to analyze the fracture behaviour of single lap adhesive joint. The effect of the loading magnitude and the overlap length on the distribution of peel and shear stresses was highlighted. A good correlation was found between the FEM simulations and the analytical results.

Keywords : aluminum 2024-T3 alloy, single-lap adhesive joints, Interface stress distributions, material nonlinear analysis, adhesive, bending moment, finite element method

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