

Progressive failure of laminated composites with a hole under compressive loading

J.L. Pérez Aparicio; S.C. Tan

Abstract-

A progressive failure model that was developed earlier for tensile loading is extended for laminated composites under uniaxial compressive loading. This model is capable of predicting the extent of damage at any load level, the stiffness loss, the stress- strain behavior and the residual strength of the laminates. The model is composed of the stress analysis, the failure analysis and a degradation model for the damaged lamina. Comparison with three sets of experimental data shows that good correlation was obtained between the theoretical prediction and the data for the ultimate strength. The predicted micro-damage includes matrix cracking and fiber breakage (shear crippling or microbuck ling) that agrees reasonably well with the experimental X-ray radiograph.

Index Terms- Progressive Failure, Composite Materials, Finite Element

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If you institution has a electronic subscription to Journal of Reinforced Plastics and Composites, you can download the paper from the journal website:

[Access to the Journal website](#)

Citation:

Pérez, J.; Tan, S.C. "Progressive failure of laminated composites with a hole under compressive loading", Journal of Reinforced Plastics and Composites, vol.12, no.10, pp.1043-1057, October, 1993.