



Analysis Method for Inelastic, Adhesively Bonded Joints with Anisotropic Adherends

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. A one-dimensional analysis method for evaluating adhesively bonded joints composed of anisotropic adherends and adhesives with nonlinear material behavior is presented in the proposed paper. The strain and resulting stress field in a general, bonded joint overlap are determined by using a variable-step, finite-difference solution algorithm to iteratively solve a system of first-order differential equations. Applied loading is given by a system of combined extensional, bending, and shear forces that are applied to the edge of the joint overlap. Adherends are assumed to behave as linear, cylindrically bent plates using classical laminated plate theory that includes the effects of first-order transverse shear deformation. Using the deformation theory of plasticity and a modified von-Mises yield criterion, inelastic material behavior is modeled in the adhesive layer. Results for the proposed method are verified against previous results from the literature and shown to be in excellent agreement. An additional case that highlights the effects of transverse shear deformation between similar adherends is also presented. This item ships from La Vergne, TN. Paperback.



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