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Material Characterization of Glass, Carbon, and Hybrid-Fiber SCRIMP Panels

Akira Kuraishi, Stephen W. Tsai, and Julie Wang
Stanford University
Department of Aeronautics and Astronautics
Stanford, California

Abstract

The purpose of this study was to generate the material database for carbon and glass composite panels created by the SCRIMP process. The materials tested were glass/polyester composites, two types of carbon/polyester composites, and carbon and glass hybrid composites. The differences between the two types of carbon/polyester, which we call Type 1 and Type 2, are the ply thickness (.037"/ply and .048"/ply) and slightly different treatment of polyester resin. The tests that were performed for this study are four-point-bending tests, tension tests, panel warping tests, and beam bend-twist coupling tests. The material properties of interest were basic longitudinal and transverse stiffness and strength, residual stress due to curing, and the effect of bend-twist coupling. The bend-twist coupling is a feature that can be added to the composite laminate or structure, such that when it is bent, it will also twist.