

Investigating what Effects Aviation Fluids Have on the Flatwise Compressive Strength of Nomex® Honeycomb Core Material

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Abstract : One of the disadvantages of honeycomb sandwich structure is that they are prone to fluid intrusion. The purpose of this study is to determine if the structural properties of honeycomb core are affected by contact with a fluid. The test specimens were manufactured of fiberglass prepreg for the facesheets and Nomex^{®} honeycomb core for the core material in accordance with ASTM C-365/365M. Test specimens were soaked in several different kinds of fluids, such as aircraft fuel, turbine engine oil, hydraulic fluid, and water for a period of 60 days. A flatwise compressive test was performed, and the test results were analyzed to determine how the contact with aircraft fluids affected the compressive strength of the Nomex^{®} honeycomb core and how the strength was recovered when the specimens were dry. In addition, the investigation of de-bonding between facesheet and core material after soaking were performed to support the study.

Keywords : sandwich structure, honeycomb, environmental degradation, debonding

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