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End Geometry and Pin-Hole Effects on Axially Loaded Adhesively Bonded Composite Joints

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ABSTRACT

An experimental investigation was performed to analyze the potential impacts of varying joint region geometries and adhesive filled pin holes on adhesively bonded composite structures. Tapers, especially half-length ones are observed to provide an anticipated progress in single lap joints. Besides, scarf joints with aligned adherends in the same plane exhibited enhanced stiffness and strength in consideration of single lap joints. In terms of the stiffness and strength, thickening of adherends was also found to be impressively efficient on composite single lap joints as well as scarf joints. Contrary to the expectation of that the hardened adhesive previously filled into the holes during adhesion would create a pin effect in load bearing, holey specimens exhibited poor performance and induced degradation in joint quality.

Keywords: A. Glass fibers, B. Adhesion, C. Damage mechanics, E. Joints / joining.

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