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Effect of carbon nanotube and functionalized liquid rubber on mechanical and electrical properties of epoxy adhesives for Aircraft Structures

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Abstract

New electrical conductive adhesives based on Multi Wall Carbon Nanotubes (MWCNTs) and functionalized liquid rubber have been designed and characterized. The elastomeric domains play a very relevant role in enhancing flexibility and mechanical performance of the adhesive formulation. Lap shear adhesion tests have shown enhancements in the stress up to 69 % for the sample containing 25 phr of elastomeric phase in the matrix. The inclusion of MWCNTs in the toughened adhesive can be advantageously employed for further enhancing adhesive properties simultaneously imparting electrical conductivity, which results of 11 orders of magnitude higher than the unfilled formulation.

Keywords:

A. Carbon-carbon composites (CCCs)

B. Adhesion

B. Electrical properties

D. Mechanical testing