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**MULTI AXIAL TESTING OF THICK ADHESIVE BONDED JOINTS OF FIBRE
REINFORCED THERMOPLASTIC POLYMERS**

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ABSTRACT

Weight reduction of truck cabs can be achieved by using structural parts made from composite materials and adhesively bonded with a flexible adhesive. This paper presents an experimental study on the behaviour of adhesively bonded joints of fibre reinforced thermoplastic composites. U-shaped glass-polyamide substrates are joined with a flexible polyurethane adhesive and the specimens, inspired from spot weld characterization, are tested in a device allowing loading in different directions.

Effect of load orientation, temperature, loading speed and adhesive thickness on the stiffness, the strength and the energy absorption of the joints are presented and discussed. Results show that the assembly overall mechanical behaviour is mainly controlled by the polyurethane adhesive. Such an adhesive/substrates combination is able to sustain high dynamic loadings when loaded in shear direction. High temperatures have a detrimental effect on the performances of the adhesively bonded joints.

Keywords

Polyurethane, Composites, Fracture, Mechanical properties, Flexible adhesive

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