Al Microparticles Interaction with Epoxy Resin – Cohesion and Adhesion to Steel and Aluminum

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Aluminium is among the materials that found their application in composite systems. Aluminium matrix composites may form or may be present in the matrix in the form of fillers. Specific applications of aluminium may be present in the epoxy or other polymer matrices in the form of microparticles. Mutual interaction of resin and aluminium particles then creates the resulting properties of the material, which can be used both for surface treatment, and in the bonding and sealing. For this reason, adhesion and cohesion characteristics are among the leading characteristics of such systems. The paper describes cohesive characteristics of two-component epoxy resin filled with microparticles of 30.44 μm. The presence of particles changed tensile strength of resins from the value 49 MPa 30 MPa. The adhesion characteristics were evaluated on both aluminium and steel adherends. The presence of low concentrations of microparticles of aluminum, i.e. to 8% did not result to the statistically significant decrease of values of the shear strength of resin at both, aluminum and steel adherends.

Keywords: Composite, epoxy resin, tensile strength, lap-shear strength.

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