

Low-cyclic Fatigue Test of Adhesive Bond Reinforced with Biodegradable Fabrics

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To improve mechanical properties of adhesive bonds and to reduce an amount of an adhesive spherical particles or fibres are used. Glass and carbon fibres are mostly used types of fibres, however, they are not environmental friendly. So biodegradable materials, namely jute, cotton and linen were used for experiments. The aim of the experiment is to clarify the fatigue behaviour of structural two-component epoxy adhesive applied to a constructional steel S235J0. The fabrics were composed of jute, cotton and linen in a plain weave and the weights in grams 140g/m² for cotton, 261g/m² for linen and 305g/m² for jute were used. The specimens for quasi-static and lap shear strength tests were made in accordance with EN 1465:2009. It is obvious from the experiment results that it came to the improvement of the quasi-static loading at adhesive bonds reinforced with linen, the increase of static strength was about 28 % compared with bonds without fabric layer.

Keywords: adhesive bond, biodegradable materials, scanning electron microscopy, low-cyclic fatigue

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