Quasi Static Tests of Adhesive Bonds of Alloy AlCu4Mg

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An application of an adhesive bonding technology is limited by cyclic loading of an adhesive bond. The aim of the experiment is to clarify a fatigue behaviour (low-cyclic tests of the fatigue) of four structural two-component epoxy adhesives applied to an alloy AlCu4Mg. The aim of the research was to evaluate a service life of the adhesive bond in terms of its fatigue stressing at the quasi static shear test. From that reason values of a passing loading for low-cyclic fatigue test were chosen for tested adhesives, i.e. 25 %, 50 % and 75 % from a reference value of a maximum force gained at the static test according to CSN EN 1465. The critical value at the low-cyclic fatigue test was determined from the experiment results for the adhesive bond as 75 %. Most of the adhesive bonds did not reach 100 cycles at this value.
It is obvious from the results that the considerable change of the adhesive bond strength did not occur after 100 cycles at the passing loading corresponding to 25 % and 50 % of the average maximum strength of the adhesive bond. The average fall of the resultant adhesive bond strength was in the interval 3 % to 11 %.

Keywords: Aluminium alloy, Adhesive bond, Structural adhesive, Low-cycling test, Fatigue

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