Evaluation of Single-Lap Adhesive Bond Quality by Means of Electron Microscopy Methods

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The research is focused on an analysis of bonds adhesive bonded with structural two-component epoxy adhesives by means of an electron microscopy. The paper deals with an evaluation of basic factors influencing an adhesive bond creation with an emphasis on a resultant adhesive bond quality. The adhesive bond quality was reviewed on the basis of an assessment of reached adhesive bond strength, a fracture surface and by a research on adhesive bonds cuts by means of the optical analysis (SEM). Evaluated criteria of the adhesive bond creation were: the adhesive bonded surface treatment, the time of an adhesive workability and the loading value at the fixation of adhesive parts. The results of SEM analysis proved an occurrence of impurities in the adhesive bond at omitting the chemical cleaning of the adhesive bond which get into the adhesive layer. The adhesive bond strength fall was more than 70 %. The strength and the quality of the adhesive bond depend on the adhesive bonded surface treatment, the adhesive workability time and the loading value of the adhesive bond at its creation. Above mentioned conclusions were proved by the mechanical tests and SEM analysis.

Keywords: adhesive bond loading, adhesive bond treatment, adhesive bonding technology, strength, workability time

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