

Abstract

Effect of Temperature on Curing Time of Single-Lap Adhesive Joints in Marine Applications [†]

Tiziana Alderucci, Chiara Borsellino, Guido Di Bella *  and Federica Favaloro

Department of Engineering, University of Messina, 98166 Messina, Italy; tiziana.alderucci@unime.it (T.A.); chiara.borsellino@unime.it (C.B.); federica.favaloro@unime.it (F.F.)

* Correspondence: guido.dibella@unime.it

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Abstract: In the industrial field, manufacturing time is one of the most important factors affecting production costs. Structural adhesives require long curing times (i.e., 3–4 weeks) before the joined components can be safely employed. The aim of the present work is to test the effect of several thermal treatments on a commercial epoxy structural adhesive on the final resistance of single lap joints, trying to attain the possibility of a curing time reduction. Aluminum alloy 5083, typically employed in marine applications, is used as the substrate. Both the adhesive and the joints are treated at different temperatures/times, and then tensile tests are carried out to obtain the mechanical resistance and study the failure modes. A statistical analysis allows the evaluation of the effects of the thermal cycles on the mechanical performances of the joints and the comparison with those cured with the standard procedure.



Keywords: epoxy resins; adhesive joints; curing time; single lap

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