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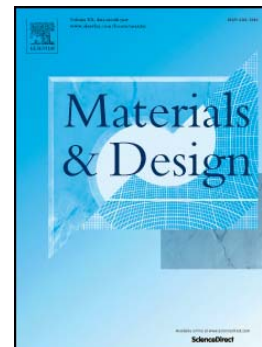
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# Corrosion-fatigue lifetime of Aluminium-Copper-Lithium alloy 2050 in chloride solution

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## Abstract

The fatigue behaviour of Aluminium-Copper-Lithium 2050 alloy under two metallurgical states (T34 and T84) was studied in air for healthy and pre-corroded samples in a 0.7 NaCl solution. The results were compared to those obtained during fatigue-corrosion tests performed in a similar chloride medium. Preliminary corrosion tests demonstrated that the T34 metallurgical state was susceptible to intergranular corrosion, while the T84 metallurgical state was susceptible to intragranular corrosion. Fatigue life tests in air on pre-corroded samples revealed a significant decrease in fatigue life related to the presence of corrosion defects before the cyclic solicitation. A strong effect of the first minutes of immersion in corrosive media was evidenced on fatigue life behaviour. The fatigue-corrosion tests revealed that the T34 metallurgical state was more affected by fatigue-corrosion in terms of fatigue life than the T84 metallurgical state. This observation can be explained by the increased propagation of intergranular corrosion enhanced by the cyclic solicitation.

Keywords: Aluminium-copper-lithium alloy; Fatigue endurance; Fatigue-corrosion, Corrosion morphology.

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