

Effect of Tempers on Electrochemical Corrosion Behavior of 7150 Aluminum Alloy Plate in Various Corrosive Media

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doi: 10.20964/2017.06.63

Received: 31 May 2016 / Accepted: 13 April 2017 / Published: 12 May 2017

The effect of various tempers (peak ageing T6, RRA T77, two-step ageing T76, and a novel three-step ageing T76 + T6) on electrochemical corrosion of 7150 Al alloy under three corrosive solutions has been investigated. Electrochemical results and corrosion morphologies show that the resistance to pitting corrosion, inter-granular corrosion (IGC) and exfoliation corrosion of alloys is in the following decreasing order: T76 + T6 > T76 > T77 > T6. As indicated by TEM, the corrosion behavior of each temper might depend on the size and spacing of grain boundary particles of alloys. Excellent consistence between electrochemical parameter and stress cracking corrosion resistance was observed. In addition, the pit transition potential and potential differences as criteria to assess Al alloy corrosion behavior were also discussed.

Keywords: 7150 Al alloy; Temper; Cyclic polarization; Potential; TEM

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