

Effect of applied and residual stresses on the electrochemically induced repassivation of sensitized 5xxx series Al alloys in NaCl solutions

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This work highlights the connotation of the response to electrochemically induced repassivation by means of single cycle anodic polarization in the understanding of the susceptibility to IGC and IGSC of Al-Mg alloys in chloride-containing solutions. The delayed repassivation, manifested by the occurrence of an inflection during the reverse scan, is likely driven by the Al_3Mg_2 phase acting as anode and as local source of hydrogen. The effect of residual and applied (bending) stresses on the electrochemical properties of delayed repassivation is discussed. A possible correlation between microstructural, electrochemical and mechanical states is addressed.