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Mechanical response of aluminum 7075 with heat treatment and exfoliation corrosion

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Abstract

The present investigation was focussed to evaluate the mechanical properties of AA7075 subjected to corrosion and heat treatment. Exfoliation corrosion has been used to infuse rapid corrosion on the material coupled with high temperature and subsequent low-temperature aging (HLA). It has been

found that the localized corrosion pit formation occurs with HLA and corrosion exposure durations with substantial inter-granular changes and formation of cracks. Significant reduction in mechanical properties was observed with HLA-treated samples subjected to corrosion . The material's stiffness was increased due to HLA, and again within the corrosive environment, a decreasing trend was observed with immersion durations. A series of simple one-dimensional linear and polynomial equations were developed to determine the properties of AA7075 samples subjected to HLA and corrosion .

Author keywords

AA7075; Exfoliation corrosion ; HLA - Heat treatment ; Mechanical properties; SEM

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