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Influence of high and subsequent low-temperature artificial ageing on exfoliation corrosion of AA2024

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Abstract

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The present study aims at assessing the mechanical behavior of aluminum alloy (AA2024) subjected to exfoliation corrosion. The material was exposed to high temperature and subsequent low temperature (HLA) treatment and further the heat-treated samples were subjected to exfoliation corrosion for the duration of 48 and 96 h at room temperature. The HLA treatment increases the retention property of material in the corrosive environment. Further, hardness and impact strength was also increased under the corrosive environment with HLA treatment. In addition to the experimental investigation, a series of simple second-degree polynomial equations were developed to predict the various mechanical properties at different intervals of corrosion durations of AA2024 specimens subjected to HLA exfoliation corrosion. (c) 2021 Elsevier Ltd. All rights reserved. Selection and peer-review under responsibility of the scientific committee of the Technology Innovation in Mechanical Engineering-2021.

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