Environmental Engineering and Management Journal

July/August 2008, Vol.7, No.4, 439-442
http://omicron.ch.tuiasi.ro/EEMJ/

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STUDIES ON HEAT TREATMENT OF AN $AlCu_4Mg_1$ ALLOY

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Abstract

This paper presents experimental and theoretical studies regarding the behavior after heat treatment of an $AlCu_4Mg_1$ aluminum alloy with positive effect on corrosion resistance. On the basis of these experiments and the regression data obtained, an analysis regarding the influence of heating parameters on quenching and aging in order to obtain a certain stress was made. Two cases were considered: stress and quenching temperature are fixed and aging temperature was determined; stress and aging temperature are fixed and quenching temperature was determined.
Using the empirical model resulted, some characteristics were imposed for improving alloy stress characteristics, and the parameters for the quenching and aging heat treatment were calculated for a certain stress. The calculated values of temperature were kept in standard limits. The paper also presents the algorithm for applying the optimum heat treatment in order to obtain the requested alloy properties for various applications and environments.

Keywords: aluminum, heat treatment, mathematical model, stress

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