

## عنوان مقاله:

THE EFFECT OF AGING TREATMENT ON MECHANICAL PROPERTIES OF AA6082 ALLOY: MODELING AND EXPERIMENT

## محل انتشار:

مجله علم مواد و مهندسی ایران، دوره 7، شماره 2 (سال: 1389)

تعداد صفحات اصل مقاله: 8

## نویسندگان:

N. Anjabin

Karimi Taheri

## خلاصه مقاله:

Abstract: properties of AA6082 aluminum alloy. Considering that aging phenomenon affects the distribution of alloying element in matrix, and the fact that different distribution of alloying elements has different impediments to dislocation movement, a material model based on microstructure, has been developed in this research. A relative volume fraction or mean radius of precipitations is introduced into the flow stress by using the appropriate relationships. The GA-based optimization technique is used to evaluate the material constants within the equations from the uni-axial tensile test data of AA6082 alloy. Finally, using the proposed model with optimized constants, the flow behavior of the alloy at different conditions of heat treatment is predicted. The results predicted by the model showed a good agreement with experimental data, indicating the capability of the model in prediction of the material flow behavior after different heat treatment cycles. Also, the calculated flow stress was used for determination of the material property in Abaqus Software to analyze the uniaxial compression test. The force-displacement curves of the analysis were compared to the experimental data obtained in the same condition, and a good agreement was found between the two sets of results. A novel constitutive equation has been proposed to predict the effect of aging treatment on mechanical

## کلمات کلیدی:

Aluminium alloys, Heat treatments, Mechanical properties, FEM analyze

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1723321>

