شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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HANAA ALY

EFFECT OF SOME ADDITIONS AND THERMO-MECHANICAL TREATMENT ON MICROSTRUCTURE AND MECHANICAL PROPERTIES OF AM60 MAGNESIUM ALLOY

By

Ahmed Mohamed Abdelmaged

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
Metallurgical Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

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Key Words: (must be 5 words only)

Mg alloy AM60; Thermomechanical treatment; Homogenization; Grain size refining; Mechanical properties

Summary:

The goal of this thesis is to improving the microstructure and the mechanical properties of AM60 magnesium alloy by using two different processes: RE and/or Si are used as a melt treated additions, The casting process are carried out under control atmosphere of Sf_6/Ar at 750^o C, after which the ingots are homogenized at 380^o C for 2 hours, and then all samples are subjected to TMT (five paths of hot rolling each path10% reduction at 430^o C and directly water quenched). Samples are investigated using XRF, optical electron microscope, SEM & EDX, mechanical tests, hardness and tensile strength. The results showed that the highest grain refining is obtained after TMT of alloy containing RE and Si (13µm), also has highest hardness 79 HV, maximum tensile strength 337 MPa, greater yield strength 207 MPa, and best elongation 17%.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Signature:

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Dedication

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