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**CORROSION BEHAVIOR OF ALUMINUM ALLOY (AA6061)
IN ACIDIC MEDIA**

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: CORROSION BEHAVIOR OF ALUMINUM ALLOYS AA6061 IN ACIDIC MEDIA oleh NURMYSITA BINTI MOHAMED MOKHTAR, no matrik UK 10128 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik dan Instrumentasi), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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LIST OF ABBREVIATIONS / SYMBOLS

SEM	-	Scanning Electron microscope
EDXS/EDAXS	-	Energy Dispersive X-Ray Spectroscopy
EIS	-	Electrochemical Impedance Spectroscopy
Al	-	Aluminum
Mg	-	Magnesium
Si	-	Silicon
Mg ₂ O ₃	-	Magnesium oxide
MIC	-	Microbiological
C ₆ H ₅ COONa	-	Sodium benzoate
SCC	-	Stress Cracking Corrosion
SiC	-	Silicon carbide
<i>W</i> _{corr}	-	Corrosion rate
Δm	-	Weight loss
<i>S</i>	-	Surface area
<i>t</i>	-	Times
% <i>I</i>	-	Inhibitor efficiency
<i>W</i> _u	-	Weight loss with the absence of sodium benzoate
<i>W</i> _i	-	Weight loss with the present of sodium benzoate
C ₂ H ₄ O ₂	-	Acetic acid
H ₂ SO ₄	-	Sulfuric acid
Al ₂ O ₃	-	Aluminum oxide

ABSTRACT

The corrosion behavior of aluminum alloy AA6061 in acetic acid ($C_2H_4O_2$) and sulfuric acid (H_2SO_4) have been carried out using weight loss measurement in temperature range of 283-333 K. Sodium benzoate has been used as a corrosion inhibitor to the corrosion process. The inhibition action depends on the chemical structure, concentration of inhibitors, concentration of corrosion medium and the temperature. Results for weight loss data indicated that the corrosion rate increased with increasing of temperature and the inhibitor efficiency decreased with the increasing of temperature. Scanning electron microscope (SEM) has shown that the AA6061 suffer from pitting corrosion. The presence of thin layer on alloy surface was confirmed by EDXS.

ABSTRAK

Kajian berkaitan kakisan aloi aluminium AA6061 di dalam asid asetik ($C_2H_4O_2$) dan asid sulfurik (H_2SO_4) telah dijalankan dengan menggunakan kaedah pengiraan kehilangan berat sampel di dalam julat suhu 283-333 K. Natrium benzoat telah digunakan sebagai perecat untuk mengawal proses kakisan. Tindak balas pemangkin ini bergantung kepada beberapa factor seperti struktur kimia, kepekatan pemangkin, kepekatan medium penghakis dan suhu. Keputusan daripada kehilangan berat sampel menunjukkan kadar pengakisan bertambah dengan pertambahan suhu dan kebolehan pemangkin bertindak untuk mengawal kakisan berkurangan dengan pertambahan suhu. Mikroskop Pengimbas Elektron (SEM) telah menunjukkan bahawa AA6061 mengalami kakisan jenis lubang. Kewujudan lapisan filem oksida pada permukaan aloi dibuktikan dengan menggunakan EDXS.