



Corrosion Effective of Condensed Synthetic Automotive Solution Containing Selective Organic Component Mixtures on Al-alloys

Majid H. Abdulmajeed* Slafa I. Ibrahim** Eiman Ali E. Sheet***

* Department of Materials Engineering / University of Technology

** Energy and Renewable Energies Technology Center/ University of Technology

*** Energy and Renewable Energies Technology Center/ University of Technology

*Email: Majed_hamed60@yahoo.com

**Email: chemistsulsfa_59@yahoo.com

***Email: eman_sheet@yahoo.co.uk

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Abstract

This work involves studying the effect of adding some selective organic component mixture on corrosion behavior of pure Al and its alloys in condensed synthetic automotive solution (CSAS) at room temperature. This mixture indicates the increasing of octane number in previous study and in this study show the increasing in corrosion resistance through the decreasing in corrosion rate values.

Electrochemical measurements were carried out by potentiostat at 3 mV/sec to estimate the corrosion parameters using Tafel extrapolation method, in addition to cyclic polarization test to know the pitting susceptibility of materials in tested medium.

The cathodic Tafel slope (b_c) were increased after adding the organic component mixture. But the anodic Tafel slopes (b_a) were varied after addition of the mixture. The increase in cathodic slope indicates the presence of a film on the surface of the tested material, which is less permeable and can even obstruct the metal dissolution reaction but still permits an electrochemical reaction to occur. This behavior can be achieved by the electronic density on oxygen and nitrogen atoms in the organic component mixture.

Keyword: corrosion of Al- alloys, potentiostatic measurements, corrosion in fuel.