

## Accepted Manuscript

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PII: S0263-2241(16)30530-9

DOI: <http://dx.doi.org/10.1016/j.measurement.2016.09.027>

Reference: MEASUR 4344

To appear in: *Measurement*

Received Date: 18 August 2015

Revised Date: 30 June 2016

Accepted Date: 14 September 2016

Please cite this article as: H. Hamani, T. Douadi, D. Daoud, M. Al-Noaimi, S. Chafaa, Corrosion inhibition efficiency and adsorption behavior of azomethine compounds at mild steel /hydrochloric acid interface, *Measurement* (2016), doi: <http://dx.doi.org/10.1016/j.measurement.2016.09.027>

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## Corrosion inhibition efficiency and adsorption behavior of azomethine compounds at mild steel /hydrochloric acid interface

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### Abstract

The adsorption and inhibition effect of azomethine compounds:  $\text{PhN=NAC}(\text{COCH}_3)=\text{NC}_6\text{H}_4\text{Y}$  {Y =  $\text{OCH}_3$  ( $\text{SB}_1$ ),  $\text{CH}_3$  ( $\text{SB}_2$ ), H ( $\text{SB}_3$ ), Br ( $\text{SB}_4$ ) and Y = Cl ( $\text{SB}_5$ )} on mild steel in 1 M HCl at 25 °C were studied using gravimetric measurements, cyclic voltammetry, UV-visible Spectrophotométrie and scanning electron microscope (SEM) methods. Inhibition efficiency was found to increase with the increase in azomethine  $\text{SB}_1$ - $\text{SB}_5$  concentration. The adsorption of each inhibitor on mild steel surface obeys Langmuir adsorption isotherm. The results of cyclic voltammetry showed that the presence of azomethine compound decreases the charge density in the transpassive region. The UV-visible absorption spectra of the solution containing the inhibitor after the immersion of mild steel specimen indicate the formation of a ( $\text{SB}_1$ - $\text{SB}_5$ )-Fe complex. SEM and EDX observations confirmed the existence of protective inhibitor film on a metal surface.

**Keywords:** Mild steel, corrosion inhibitors, Weight loss measurement, cyclic voltammetry, UV-visible, SEM.

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