

Accepted Manuscript

8-Hydroxyquinoline as an alternative green and sustainable acidizing oilfield corrosion inhibitor

I.B. Obot, N.K. Ankah, A. Sorour, Z.M. Gasem, K. Haruna



PII: S2214-9937(17)30105-7
DOI: doi:[10.1016/j.susmat.2017.09.001](https://doi.org/10.1016/j.susmat.2017.09.001)
Reference: SUSMAT 49

To appear in: *Sustainable Materials and Technologies*

Received date: 11 August 2017
Revised date: 12 September 2017
Accepted date: 30 September 2017

Please cite this article as: I.B. Obot, N.K. Ankah, A. Sorour, Z.M. Gasem, K. Haruna , 8-Hydroxyquinoline as an alternative green and sustainable acidizing oilfield corrosion inhibitor. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Susmat*(2017), doi:[10.1016/j.susmat.2017.09.001](https://doi.org/10.1016/j.susmat.2017.09.001)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

8-hydroxyquinoline as an alternative green and sustainable acidizing oilfield corrosion inhibitor

I.B. Obot^{a*}, N.K. Anka^b, A. Sorour^a, Z.M. Gasem^b, K. Haruna^c

^aCenter of Research Excellence in Corrosion, Research Institute, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

^bDepartment of Mechanical Engineering, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

^cDepartment of Chemistry, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

Abstract

Corrosion inhibition performance of an environmentally friendly compound, 8-hydroxyquinoline (8-HQ), on X60 steel was investigated in 15 % hydrochloric acid (HCl), which simulate oil well acidizing environment. Efficacy of the inhibitor was examined utilizing weight loss, potentiodynamic polarization (PDP), electrochemical frequency modulation (EFM), linear polarization (LPR), and electrochemical impedance spectroscopy (EIS). Results show increased inhibitor efficiency with increase in concentration of 8-HQ and was further enhanced when iodide ions were added. The potentiodynamic polarization measurement illustrates the mixed type behavior of 8-HQ. Scanning electron microscopy (SEM) with energy dispersive X-ray (EDX), and Fourier transforms infrared (FT-IR) spectroscopy, were utilized to examine corrosion products and results indicate a layer being formed on the X60 steel by 8-HQ that protects the steel from further corrosion.

Key word: Steel; 8-hydroxyquinoline; FT-IR; corrosion inhibitor.

*Corresponding author

I.B. Obot (Email: obot@kfupm.edu.sa)

Download English Version:

<https://daneshyari.com/en/article/7228393>

Download Persian Version:

<https://daneshyari.com/article/7228393>

[Daneshyari.com](https://daneshyari.com)