Metavanadate(V) Anions as Corrosion Inhibitor for Carbon Steel in Acid Chloride Solution

Mieczyslaw Scendo*, Joanna Trela, Katarzyna Staszewska

Institute of Chemistry, Jan Kochanowski University in Kielce, Swietokrzyska 15G, PL- 25406 Kielce, Poland

*E-mail: scendo@ujk.edu.pl

doi: 10.20964/110402666

Received: 22 December 2015 / Accepted: 26 January 2016 / Published: 1 March 2016

The influence of metavanadate(V) anions (VO_3^-) concentration on the corrosion of S235 carbon steel in acid chloride solutions were studied. The investigations were involved by electrochemical polarization methods. Tafel polarization study revealed that of VO_3^- ions were acted as a mixed-type inhibitor. The inhibition efficiency increased with an increase in the concentration of metavanadate anions. The adsorption of VO_3^- has been found to occur on the surface of S235 carbon steel according to the El-Awady isotherm. The corrosion kinetic parameters of carbon steel, and adsorption thermodynamic parameters for metavanadate(V) anions were determined and discussed.

Keywords: A. S235 carbon steel; A. Metavanadate(V) anion; C. Corrosion rate; C. Kinetic parameters; C. Thermodynamic parameters, C. El-Awady isotherm

[FULL TEXT](#)

© 2016 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).