Corrosion Inhibition effect of Antimony Potassium Tartrate for Q235 Carbon Steel in NaCl Solutions

Shifang WANG, Yu ZUO, Yuming TANG, Xuhui ZHAO*

Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, China

*E-mail: xhzhao@mail.buct.edu.cn

doi: 10.20964/2018.01.62

Received: 15 September 2017 / Accepted: 30 October 2017 / Published: 16 December 2017

The inhibition effect of antimony potassium tartrate on the corrosion of Q235 Carbon Steel in NaCl solutions was studied through weight loss measurement, potentiodynamic polarization, scanning electron microscopy (SEM), and X-ray photoelectron spectroscopy (XPS). Thermodynamic calculations were carried out to explore the adsorption mechanism of antimony potassium tartrate. The results showed that antimony potassium tartrate can inhibit the corrosion of Q235 carbon steel in a 0.01M NaCl solution. A maximum inhibition efficiency of 63.5% was observed in the presence of 400 ppm of antimony potassium tartrate. In a 0.01M NaCl + 0.15 M NaHCO₃ solution, the inhibition efficiency increased drastically and reached 95.6% in the presence of 300 ppm of antimony potassium tartrate. Both chemical and physical adsorption occurred, and the Langmuir isotherm model was found to accurately describe the process.

Keywords: Corrosion inhibition, Antimony potassium tartrate, Carbon steel, Adsorption

[FULL TEXT](#)

© 2018 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/>).