

عنوان مقاله:

Inhibitive Assesment of Stearamide as a Corrosion Inhibitor for Mild Steel in HCl Solution

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 25، شماره 2 (سال: 1390)

تعداد صفحات اصل مقاله: 7

نویسندگان:

m noori - *Metallurgical and Materials Engineering Department, Ferdowsi University of Mashhad, Mashhad 91775-1111, Iran*

m momeni - *Metallurgical and Materials Engineering Department, Ferdowsi University of Mashhad, Mashhad 91775-1111, Iran*

m.h moayed - *Metallurgical and Materials Engineering Department, Ferdowsi University of Mashhad, Mashhad 91775-1111, Iran*

خلاصه مقاله:

In this study effect of Stearamide as a corrosion inhibitor for mild steel in hydrochloric acid media was investigated employing various electrochemical techniques include potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) and liner polarization resistance (LPR). In view of the fact that Stearamide is an insoluble compound in water, its inhibitive effect was examined by dissolving 10000ppm of it into an organic solvent followed by immersing of steel surface into the solution for 7, 15, 30 and 60 minutes. As a result of the immersion of steel into the solution, the Stearamide was allowed to be adsorbed on the surface and its corrosion inhibition was investigated by moving the sample into a 0.1M HCl solution and employing several electrochemical techniques. Such a method of inhibitor adsorption is regularly used during corrosion inhibitor injection into the gas well tubing. The results of investigation show that Stearamide acts as adsorptive inhibitor, reduces anodic dissolution and also retards the hydrogen evolution reaction via blocking the active reaction sites on the metal surface. Additionally, it was illustrated that Isopropyl alcohol is a more beneficial solvent for Stearamide as compared to demethyl sulfoxide (DMSO). Isopropyl alcohol acts as inhibitor itself and its mixture with Stearamide has synergistic effect on corrosion inhibition. The optimal condition of immersing steel into the solution was 15min immersion of mild steel in both solutions, and the inhibition efficiency was approximately 90% when Isopropyl alcohol was used as the solvent. EIS investigation demonstrates that the thickness of protective layer formed on metal surface by Isopropyl alcohol solution is almost 5 .times higher than that formed by DMSO

کلمات کلیدی:

Stearamide, Mild steel, Acidic media, Inhibitor

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/254781>



