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# Inhibition Effect of Natural Junipers Extract towards Steel Corrosion in HCl Solution

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**Abstract :** Steel and steel-based alloys of different grades steel are extensively used in numerous applications where acid solutions are widely applied such as industrial acid pickling, industrial acid cleaning and oil-well acidizing. The use of chemical inhibitors is one of the most practical methods for the protection against corrosion in acidic media. Most of the excellent acid inhibitors are organic compounds containing nitrogen, oxygen, phosphorus and sulphur. The use of non-toxic inhibitors called green or eco-friendly environmental inhibitors is one of the solutions possible to prevent the corrosion of the material. These advantages have incited us to draw a large part of program of our laboratory to examine natural substances as corrosion inhibitors such as: prickly pear seed oil, Argan oil, Argan extract, Fennel oil, Rosemary oil, Thymus oil, Lavender oil, Jojoba oil, Pennyroyal Mint oil, and Artemisia. In the present work, we investigate the corrosion inhibition of steel in 1 M HCl by junipers extract using weight loss, potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) methods. The result obtained of junipers extract (JE) shows excellent inhibition properties for the corrosion of C38 steel in 1M HCl at 298K, and the inhibition efficiency increases with increasing of the JE concentration. The inhibitor efficiencies determined by weight loss, Tafel polarisation and EIS methods are in reasonable agreement. Based on the polarisation results, the investigated junipers extract can be classified as mixed inhibitor. The calculated structural parameters show increase of the obtained Rct values and decrease of the capacitance, Cdl, with JE concentration increase. It is suggested to attribute this to the increase of the thickness of the adsorption layer at steel surface. The adsorption model obeys to the Langmuir adsorption isotherm. The adsorption process is a spontaneous and exothermic process.

**Keywords :** corrosion inhibition, steel, friendly inhibitors, Tafel polarisation
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