Short Communication

Davidian involucrata Leaves Extract as Green Corrosion Inhibitor for low carbon Steel in concrete pore solution containing chloride ions

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In this work, we tried to use the Davidia involucrata leaves extract (DILE) as an eco-friendly inhibitor to enhance corrosion resistance of carbon steel plate in concrete pore solution containing chloride ions. The inhibiting performances of DILE were studied by electrochemical impedance spectroscopy and polarization analysis. Electrochemical results indicated that the DILE was an effective corrosion inhibitor in decreasing the corrosion behavior of carbon steel at the optimal dosage of 100 mg/L inhibitor. The potentiodynamic polarization results indicate that the DILE was a blended-type inhibitor that enhanced the performance of corrosion resistant in carbon steel plate considerably with formation of an organic layer to restrain both the anodic and the cathodic reactions. The surface morphology of a carbon steel plate immersed in concrete pore solution containing 100 mg/L DILE inhibitor revealed the formation of low corrosion products on steel which was in agreement with the results achieved from electrochemical assessments.

Keywords: Green inhibitor; Electrochemical corrosion; Carbon steel plate; Electrochemical impedance spectroscopy; Concrete pore solution

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