

Olive Leaf Extract as a Corrosion Inhibitor of Carbon Steel in CO₂-Saturated Chloride–Carbonate Solution

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In the present study corrosion inhibition of carbon steel in CO₂-saturated chloride–carbonate solution by the olive leaf extract has been researched. For that purpose the electrochemical and spectrophotometric techniques such as potentiodynamic polarization, electrochemical impedance spectroscopy and Fourier transform infrared spectroscopy were employed. Both electrochemical techniques, potentiodynamic polarization and electrochemical impedance spectroscopy, demonstrate that olive leaf extract inhibits the carbon steel corrosion in CO₂-saturated chloride–carbonate solution. It was determined that the inhibition efficiency increases with increasing concentration of the olive leaf extract. The olive leaf extract achieves high corrosion efficiency as a mixed type inhibitor, with a prevailing influence on the anode process. Recorded electrochemical impedance spectra in the presence of the extract show the presence of the inhibitor film on the steel surface. This is further confirmed by the recording in Fourier transform infrared spectroscopy spectrum.

Keywords: Carbon steel; CO₂ corrosion; Inhibitor

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