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The Effect of Nicotinamide on Iron Corrosion in Chloride Solutions

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Abstract: The use of nicotinamide "3-pyridineamide" as an iron corrosion inhibitor was tested in aerated aqueous solutions of NaCl and Na₂SO₄ for different pH values. Polarization resistance (R_p) measurements, polarization curves and AC impedance spectroscopy techniques were used to obtain experimental data. Nicotinamide (ND) was found to exhibit a cationic-type inhibitor behaviour in acidic solution of NaCl (pH 3) and also a weak inhibitory effect in acidic sulphate solution (pH 3). The impedance spectra at open circuit potential showed that the corrosion process of the metal was characterized by two distinguishable capacitive loops. The charge transfer resistance (R_t) and the polarization resistance (R_p) values calculated from the interpretation of Nyquist plots were in agreement with the results of the other techniques.

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