

CORROSION RESISTANCE EVALUATION OF DUPLEX STAINLESS STEEL 2205 IN ACIDIC AND CHLORIDE ENVIRONMENT

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Abstract : This work is mainly devoted to the study of electrochemical performance anticorrosive of stainless steel, 2205 duplex by immersion in different study at room temperature and different concentrations of corrosive species environments. The chemical composition and morphological structure of the stainless steel material, respectively, are characterized by X-ray fluorescence and by optical microscopy. Electrochemical tests are performed in three electrolytes, namely sodium chloride (NaCl) at 3 %, hydrochloric acid (HCl) 3% and hydrochloric acid (HCl) 5%. The techniques used in this study are potentiometric open circuit (OCP), linear polarization (LP) and electrochemical impedance spectroscopy (EIS). The impedance spectra and the current - potential curves obtained allowed the estimation of the rate of corrosion in different electrolytes and showed a change of the polarization resistance (R_p) and the degradation kinetics of this material depending on the composition of the study areas.

Keywords : duplex stainless steel, Pitting corrosion, PREN, Electrochemical impedance spectroscopy