

A Super Austenitic 6 Mo Stainless Steel (UNS N08367) Passivity-breakdown Characterization in Acidic Fluoride Solutions

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This work presents the interface characterization of a super austenitic 6 Mo. Stainless Steel (UNS N08367) corrosion resistant alloy in different fluoride solutions. The electrochemical characterization of this material includes sulfuric acid and hydrochloric acid with additions of fluoride ions to establish the cation effect (Na⁺, K⁺) in the breakdown of the passive film at the substrate/electrolyte level. The quantitative characterization includes electrochemical techniques, to determine the corrosion behavior at open circuit and under polarization conditions. Electrochemical Impedance shows the interfacial behavior at different applied potentials under the passive and transpassive region. High surface resolution technologies, such as SEM, AFM, and IFM, are combined with LEIS impedance distribution profiles to correlate the passive film and corrosion products with the corrosion precursors in a qualitative approach