Short Communication

Corrosion behavior of incoloy825 alloy in 3.5% NaCl solution containing different concentrations of NaHSO₃

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The corrosion behavior of incoloy825 alloy in 3.5% NaCl solution containing different concentrations of NaHSO₃ was studied using electrochemical measurements, wet/dry cycle corrosion test and surface analysis technology. The results show that the corrosion potential shifts negatively, and then moves positively with the increase of NaHSO₃ concentration. Meanwhile, the film resistance R_f and charge transfer resistance R_{ct} both decline firstly and then rise as the concentration change. And the anode polarization curves display different characteristics of passivation or activation. As the increasing concentration of NaHSO₃, the corrosion rate of alloy increases firstly and then decreases. In the solution, the corrosion form of the alloy is mainly pitting corrosion, and the addition of NaHSO₃ increases the degree of pitting. The variation of the corrosion resistance as the increase of NaHSO₃ concentration may be attributed to the combined actions of solution acidification and competitive adsorption.

Keywords: Incoloy825; Corrosion behavior; Pitting corrosion; NaHSO₃ concentration

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