Short Communication

Influence of AC Interference on the Corrosion Behavior of 2507 Super Duplex Stainless in Simulated Concrete Pore Solution

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doi: 10.20964/2020.11.69

Received: 27 July 2020 / Accepted: 11 September 2020 / Published: 30 September 2020

The corrosion behavior of 2507 super duplex stainless steel (SDSS) interfered by AC in simulated concrete pore solution containing Cl^- was studied in this work. The results show that a rapid increase in i_p and an apparent drop in E_p as well the significant decrease in R_f and R_{ct} values suggest that the addition of Cl^- and applied AC result in an obviously harmful effect on the passive film, and enhance the dissolution rate of film. The change in N_D and N_A values indicates that the presence of Cl^- or AC application reduce the compactness of film, increase the amount of defects, and weaken the protective ability. Especially at the combined action of Cl^- and imposed AC, the instability of passive film becomes much worse, causing a further decrease in the anti-corrosion resistance of SDSS. AC facilitates the adsorption of Cl^- and H^+ ions on the defects within passive film.

Keywords: Corrosion behavior; Imposed AC; Protective ability; Passive film

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