Pitting Corrosion of 2205 Duplex Stainless Steel at High Concentrations of NaCl Solution

Chuan Liu^{1,2}, Min Gong^{1,2,*}, Xingwen Zheng^{2,3}

¹ School of Material and Science Engineering, Sichuan University of Science & Engineering, Zigong 643000, China, Zigong 643000, China

² Key Laboratory of Material Corrosion and Protection of Sichuan Province, Zigong 643000, China

³ School of Chemical and Environmental Engineering, Sichuan University of Science & Engineering, Zigong 643000, China

*E-mail: gmsuse@126.com

doi: 10.20964/2018.08.41

Received: 8 February 2018 / Accepted: 22 May 2018 / Published: 5 July 2018

Critical pitting temperature (CPT) of 2205 duplex stainless steel (2205 DSS) in different concentrations of NaCl solution was investigated through cyclic voltammetry and potentiostatic technique, and the difference of corrosion behavior of 2205 DSS in NaCl solution under high and low CPT was compared. The results revealed that the concentration of NaCl solution has little effect on CPT of 2205 DSS in the range of studied concentrations (50 ~ 300 g/L), and the CPT is between 40 and 45 °C. However, the corrosion current density, electrochemical impedance and corrosion morphology of 2205 DSS were significantly different under temperatures below the CPT and above the CPT.

Keywords: 2205 DSS ; NaCl solution; CPT; pitting corrosion

[FULL TEXT](#)

© 2018 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).