STUDY OF DISSOLUTION RATE OF SINK ROLL MATERIAL IN PURE ZINC BATH AND ZINC-0.2WT.% ALUMINIUM BATH

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Abstract

Sink rolls are used to guide the steel sheets into the molten zinc bath in continuous hot dip galvanizing line. They are usually made of AISI SS 316L material due to its properties like high corrosion resistance, low tendency towards carbide precipitation and hot strength characteristics. High temperature immersion corrosion test using potentio-dynamic polarization set up was performed to study the dissolution rate of AISI SS 316L material in pure Zinc bath and Zinc-0.2wt.% Aluminium bath at three different temperature: 460^{0}C, 480^{0}C and 500^{0}C for 5 hours. It was observed that dissolution rate of AISI SS 316L was maximum at 480°C with negative open circuit potential with respect to graphite and minimum at 500°C with positive open circuit potential with respect to graphite. Dissolution rate of AISI SS 316L material was found more in pure Zinc bath compared to Zinc-0.2wt.% Aluminium bath due to formation of protective and adhesive intermetallic inhibition layer during test.

Keywords— *Dissolution rate, High temperature immersion corrosion test, Potentio-dynamic polarization set up, Open circuit potential*

Professional Biography

Ms. Sagarika Bhattacharjee has completed her B.Tech. in Metallurgical Engineering from Indus University, Gujarat in the current year 2018. She was awarded POSCO Asia Fellowship 2017. She has participated in various events like Student Start-up and Innovation Policy by Government of Gujarat, 55th National Metallurgists' Day (NMD) & 71st Annual Technical Meeting (ATM) at BITS, Pilani; won 2nd prize for paper presentation in BTTD 2017 at CSIR-NML, Jamshedpur; won 2nd prize for paper presentation at IIT, Gandhinagar. She is presently working on a research paper on corrosion science.



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