A Novel Waterborne Epoxy Coating with Anticorrosion Properties on Rusty Steel

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This paper reports the synthesis of waterborne epoxy phosphate emulsion (WEP) through the reaction between epoxy resin E44 and phosphoric acid and ammonia neutralization. Synthesized WEP was characterized by FTIR for the confirmation of reaction between epoxy groups and phosphoric acid and SEM for morphology. WEP acted as a modifier in two-component epoxy anticorrosion coating on rusty steel substrate. The anticorrosion properties of the coating on rusty steel were investigated by electrochemical impedance spectroscopy (EIS) and Tafel polarization curve. Tafel polarization curve revealed that waterborne epoxy coating containing WEP had better protection ability which is clearly reflected by the protection efficiency (96.6%). EIS study also showed the higher impedance value for WEP containing coating as compared to pure waterborne epoxy coating.

Keywords: Waterborne coatings; epoxy phosphate; anticorrosion; rusty painting

FULLTEXT

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