Short Communication

Anti-corrosion Performance of Chromium-coated Steel in a Carbon Dioxide-saturated Simulated Oilfield Brine

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doi: 10.20964/2017.06.94

Received: 10 March 2017 / *Accepted:* 28 April 2017 / *Published:* 12 May 2017

A protective chromium coating was prepared on P110 steel by pack cementation. The corrosion behavior of the coated P110 steel in a CO₂-saturated simulated oilfield brine was investigated by static complete immersion tests and electrochemical measurements. The capacitive loop and polarization resistance decreased with increasing immersion time. The temperature of the CO₂-saturated simulated oilfield brine also affected the corrosion behavior. The formation and degradation of the passivation film on the steel were analyzed based on the immersion time and temperature dependence of the electrochemical properties.

Keywords: Oilfield brine; Corrosion; Electrochemical impedance spectroscopy; Carbon dioxide

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