Corrosion Behaviour of Weathering Steel with High-Content Titanium Exposed to Simulated Marine Environment

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In this work, cyclic immersion experiments were carried out to study the corrosion behaviour of high-Ti weathering steel exposed to a simulated marine environment. The corrosion behaviour of high-Ti weathering steel was characterized by corrosion kinetics, surface morphology of corrosion products and electrochemical techniques. The results indicate that protective corrosion products are formed on the surface of the high-Ti weathering steel sample, improving the corrosion resistance. Corrosion potential (E_{corr}) of high-Ti weathering steel rises with increased corrosion time, and the corrosion current density (I_{corr}) varies little after the formation of the corrosion products. The presence of titanium promotes the formation of dense and compact corrosion products, promoting improved corrosion resistance.

Keywords: corrosion behaviour; marine environment; weathering steel; titanium; electrochemistry

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