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论文

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### 高强度钢表面镀锌、镉层加速腐蚀试验研究

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### Research of Accelerated Corrosion Test of Zinc, Cadmium Coating on High-strength Steel

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摘要

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**摘要** 通过模拟海洋大气环境所设计的中性盐雾、加速盐雾、多因子复合3种加速腐蚀试验方法,考察了高强度钢表面镀锌、镉层的腐蚀性能与特点,并将实验室加速试验结果与厦门海洋大气腐蚀结果进行了相关性分析。研究表明:中性盐雾试验对镀锌层具有一定的加速腐蚀效应,对镉层的腐蚀则比较缓慢,而且与海洋大气环境的腐蚀结果相关性差;采用含有Cl<sup>-</sup>,SO<sub>4</sub><sup>2-</sup>,NO<sub>3</sub><sup>-</sup>,SO<sub>3</sub><sup>2-</sup>,pH等环境成分因子的加速盐雾试验,对镀锌、镀锌层具有较好的加速腐蚀效应,且镀锌层腐蚀结果与海洋大气环境腐蚀具有一定的相关性;多因子复合加速腐蚀试验方法将SO<sub>2</sub>气氛、湿热、紫外线照射、加速盐雾等环境因子引入试验,明显加快了镀锌、镀锌层的腐蚀速度,且镀锌层腐蚀结果与海洋大气环境的腐蚀结果存在着对应的线性关系,线性相关系数为0.9889,与厦门外场腐蚀环境具有较好的相关性。

**关键词:** 高强度钢 镀锌层 镀锌层 加速腐蚀试验

**Abstract:** The article studies the corrosion capability and specialty of the zinc, cadmium coating of high-strength steel by three accelerated corrosion tests such as neutral salt spray test, accelerated salt spray test, complex multi-factor accelerated corrosion test, which were designed for simulating the marine atmospheric corrosion environment, also we analyze the relativity of accelerated corrosion result in the lab and XIAMEN marine atmospheric corrosion result. The results show that, the accelerating effect of neutral salt spray test is definite for zinc plating, while the corrosive speed of cadmium coating is slow comparatively, moreover the results have a bad relativity with that of corrosion in the outfield's environment. We adopts accelerated salt spray test containing the environmental factors of Cl<sup>-</sup>,SO<sub>4</sub><sup>2-</sup>,NO<sub>3</sub><sup>-</sup>,SO<sub>3</sub><sup>2-</sup>,pH and so on, the condition of accelerated salt spray have a preferable accelerating effect for both zinc and cadmium coating, and there is a definite relativity existing in the results between accelerated salt spray test and the outfield's environment. The complex multi-factor accelerated corrosion test is a method making the ambience of SO<sub>2</sub>,the humidity and the temperature, the irradiation of ultraviolet radiation and the accelerated salt spray into a complex corrosion environment, where the corrosive speed of zinc and cadmium coating is obviously accelerated, the results of complex multi-factor accelerated corrosion test and the outfield's atmospheric corrosion have a linear relationship and the linearly dependent coefficient is 0.9889, which is a preferable evidence for the relativity of the two tests.

**Keywords:** high-strength steel zinc coating cadmium coating accelerated corrosion testing

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