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研究论文

热镀锌钢材在海洋大气环境中的氢渗透行为

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摘要:

用改进的Devanathan双面电解池在恒温、恒湿条件下检测热镀锌钢材的渗氢电流密度并观测其腐蚀形貌,研究了温度对其氢渗透行为的影响.结果表明,在湿度相同的条件下,随着模拟海洋大气环境温度的升高试样的氢渗透加速,且湿度越高温度的这种加速作用越显著;在高温和高湿条件下,试样的氢吸收和氢渗透进行得更快.

关键词: 材料失效与保护 热镀锌镀层 氢吸收 氢渗透 大气腐蚀

Hydrogen permeation of hot-dip galvanized steel exposed to simulated marine atmosphere

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Abstract:

Hydrogen permeation behavior of hot-dip galvanized steels exposed to stimulated marine atmospheric environment at different relative humidity and temperature was investigated by hydrogen permeation current measurement using modified Devanathan cell and scanning electron microscopy technique. Influence of temperature on hydrogen permeation process of galvanized steel exposed to simulated marine atmosphere was discussed. The results show that the rate of hydrogen permeation increased gradually with the temperature rising; higher relative humidity stimulated, more obvious hydrogen permeation current; the hydrogen permeation of galvanized steel was the most rapidly when exposed to marine atmospheric environment with high relative humidity and temperature.

Keywords: materials failure and protection hot-dip galvanized coating hydrogen absorption hydrogen permeation atmospheric corrosion

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