

## 论文 聚合物/达克罗复合涂层体系在3.5% NaCl中耐蚀性能的EIS研究

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摘要:

通过EIS研究了以碳钢为基体的醇酸、聚氨酯、苯丙乳液以及氟树脂4种有机聚合物/达克罗复合涂层体系在3.5% NaCl中的防护性能。结果表明,氟树脂/达克罗复合体系表现出最好的防护性能,水性的苯丙乳液体系次之,聚氨酯体系居中,醇酸体系最差。 $\gamma$ -氨基丙基三乙氧基硅烷( $\gamma$ -APS)对达克罗涂层表面进行预处理可以较大程度地提高醇酸、聚氨酯复合体系的耐蚀性能,但降低了水性的苯丙乳液体系的防护性能,对氟树脂体系的影响不明显。

关键词: 达克罗 复合涂层 EIS 耐蚀性能  $\gamma$ -APS预处理

## EIS Study On The Anti-corrosion Performance of Polymer/Dacromet Composite Systems in 3.5% NaCl Solution

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Abstract:

The protection performance of four polymer/Dacromet composite systems, namely three solvent-borne polymers, polyurethane, alkyd primers and fluorinated polymer as well as a water-borne coating, styrene-acrylate latex, was studied with or without pretreatment by gamma-aminopropyltriethoxysilane ( $\gamma$ -APS) by electrochemical impedance spectra (EIS) in 3.5%NaCl solution. The results showed that the sequence of protective performance was: fluorinated polymer>styrene-acrylate latex>polyurethane>alkyd/Dacromet composite system due to the different hydrophobic Pretreaties of organic polymers and eistence of the dispersed microorganic particles in styrene-acrylate latex. Pretreatment with  $\gamma$ - APS on Dacromet illustrated a markedly enhanced anti-corrosion performance of the polyurethane and alkyd/Dacromet systems because of the presence of the silane film restrained the diffusion of corrosive particles. But it also suppressed the synergetic protective effect in styrene-acrylate latex system, which led to decrease anti- corrosion performance. Pretreatment presented no obvious influence on fluorinated polymer/ Dacromet system due to the good hydrophobic property of the polymer.

Keywords: Dacromet composite coating EIS anti-corrosion performance  $\gamma$ -APS pretreatment

收稿日期 2004-12-29 修回日期 2005-03-07 网络版发布日期 2006-04-25

DOI:

基金项目:

通讯作者: 刘建国

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