عنوان مقاله:

AN IMPROVEMENT TO THE ANTICORROSIVE PROPERTIES OF EPOXY POWDER COATING BY ZINC PHOSPHATE AND ZINC ALUMINUM PHOSPHATE PIGMENTS

محل انتشار:

مجله علوم و فن آوری نفت, دوره 3, شماره 2 (سال: 1392)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Alireza Ghanbari - Polymer Engineering & color technology Department

Mohammadreza Mohammadzade Attar - Polymer Engineering & color technology Department

خلاصه مقاله:

Epoxy powder coatings containing zinc aluminum phosphate (ZAP) and zinc phosphate (ZP), which are the ۲nd and ۱st generation of phosphate-based pigments respectively, were applied to the surface of mild steel sheets. The anticorrosive performances of the coated samples were studied using electrochemical impedance spectroscopy (EIS). Cathodic disbonding resistance and the adhesion performance of the two coating systems were measured by cathodic delamination and pull-off test respectively. The charge transfer resistance and double layer capacitance obtained from EIS revealed the greater anticorrosive performance of the coating modified by zinc aluminum phosphate compared to the one treated with zinc phosphate. While an electrolyte diffuses in the organic coating, phosphate pigments dissolve and make a passive layer on the surface of mild steel. Due to the more solubility of ZAP in comparison with ZP, the cathodic desbonding resistance and adhesion of the epoxy powder coating containing ZAP were greater than those of ZP-loaded powder coating. The results show that the anticorrosive performance of the epoxy powder coating containing ZAP is better than that of the epoxy powder coating modified with ZP.

کلمات کلیدی:

Phosphate Pigment, Powder Coating, EIS, Cathodic Disbanding, Pull-off Test