

عنوان مقاله:

Effect of Nanofillers on the properties and corrosion performance of epoxy composite coating

محل انتشار:

دومین کنفرانس بین المللی کامپوزیت (سال: 1389)

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خلاصه مقاله:

Epoxy/layered silicate based nanocomposite coatings have been processed and characterized for corrosion protection of Aluminum Alloy. The nanocomposite coatings were processed in N-Methyl-Pyrrolidinone (NMP) and water, forming self-assembled nanoscale composite. The layered silicate used in the NMP Coating System was PolyAniline coated Cloisite 20 A. Pristine montmorillonite clay, Cloisite Na⁺ was used in the Water Based Coatings. The structure and composition of the nanocomposite coatings was determined using Fourier Transform Infrared Spectroscopy (FTIR) and X-ray Diffraction Spectrometry (XRD). XRD results indicated the formation of an exfoliated nanocomposite in the NMP System. The PACN powder was exfoliated, as determined by the disappearance of clay peak. Corrosion performance was determined using DC Polarization and Electrochemical Impedance Spectroscopy (EIS). The DCP results were used to determine the optimal filler % of the nanocomposite and in both the systems. The corrosion current and hence the corrosion rate for the NMP system decreased with increasing weight % of PolyAniline coated Clay. Water system coatings also exhibited a decrease in the corrosion current with the addition of pristine clay. EIS results show that the NMP System has higher impedance than the Water system coatings. The impedance was in the order of E+6 Ohms, which remained consistent over 8 weeks of testing, and in the order of E+5 .Ohms for the water system

کلمات کلیدی:

Effect of Nanofiller ; corrosion performance; nanocomposite coatings

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