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Effect of conducting composite carbon nanotube-poly(o-toluidine) coatings on the corrosion resistance of stainless steel material

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POLYMER COMPOSITES

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Abstract

This study examines the use of poly(o-toluidine) (POT) coatings and poly(o-toluidine)/oxidized multi-walled carbon nanotubes (POT-MWCNT) composite on 304 stainless steel for corrosion protection. The POT coatings and its composite were synthesized on steel substrates under cyclic voltammetric conditions. These coatings were characterized by cyclic voltammetry (CV), Fourier transform infrared (FTIR) spectroscopy, and scanning electron microscopy (SEM). The ability of POT and its composite to serve as a corrosion protective coating was examined by potentiodynamic polarization, CV, and potential-time measurements. The nanocomposite layers as well as the pure POT layer keeps the stainless steel in a passive state. POLYM. COMPOS., 34:1180-1185, 2013. (c) 2013 Society of Plastics Engineers

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