

Investigation Edge Coverage of Automotive Electrocoats Filled by Nano Silica Particles

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Abstract : Attempts have been carried out to enhance the anticorrosion properties as well as edge coverage of an automotive electrocoating using the nano silica particles. To this end, the automotive electrocoating was reinforced with the nano silica particles at various weight fractions. The electrocoats were applied on the surface of punched edge followed by curing at 160°C for 20 min. The effects of nano silica particles on the rheological properties, influencing edge coverage were studied by a RMS (Rheometric Mechanical Spectrometer) technique. The anticorrosion properties were studied by a salt-spray test. The results obtained revealed that nano silica particles can significantly enhance the edge coverage by increasing minimum melt viscosity of electrocoats. It was shown that using 4 wt% nano silica particles, both anticorrosion properties and edge coverage of the electrocoats were significantly improved.

Keywords : nano silica, electrocoat, edge coverage, anticorrosion

Conference Title : ICNB 2015 : International Conference on Nanotechnology and Biotechnology

Conference Location : Miami, United States

Conference Dates : March 09-10, 2015