

Poly(Butadiene-co-Acrylonitrile)-Polyaniline Dodecylbenzenesulfonate [NBR-PAni.DBSA] Blends for Corrosion Inhibition of Carbon Steel

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Abstract : Poly(butadiene-co-acrylonitrile)-polyaniline Dodecylbenzenesulfonate [NBR-PAni.DBSA] blends with useful electrical conductivity (up to 0.1 S/cm) were prepared and their corrosion inhibiting behaviours for carbon steel were successfully assessed for the first time. The level of compatibility between NBR and PAni.DBSA was enhanced through the introduction of 1.0 wt % hydroquinone. As found from both total immersion and electrochemical corrosion tests, NBR-PAni.DBSA blends with 10.0-30.0 wt% of PAni.DBSA content exhibited the best corrosion inhibiting behaviour for carbon steel, either in acid or artificial brine environment. On the other hand, blends consisting of very low and very high PAni.DBSA contents (i.e. ≤ 5.0 wt % and ≥ 40.0 wt %) showed significantly poorer corrosion inhibiting behaviour for carbon steel.

Keywords : conductive rubber, nitrile rubber, polyaniline, carbon steel, corrosion inhibition

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