



A method of making an aqueous dispersion of polyaniline and inhibiting corrosion in cooling water

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ABSTRACT

The present study provides a process for the dispersion of polyaniline after its synthesis, to improve the solubility of the polyaniline in an aqueous medium in the presence of nonionic surfactant (fatty alcohol ethoxylate). The surfactant selected based on their chemical composition and their Hydrophile-Lipophile-Balance and the induced steric hindrance effect. The dispersion process was developed, and the polyaniline dispersion was characterized by the electrical conductivity and in the macroscopic phase boundary. The polyaniline dispersions have been studied for their possible use in such fields as a corrosion inhibitor. In our case, the corrosion inhibitor was employed in industrial cooling water, which contains hardness and operating at temperature of 41°C and pH of 8.7. The weight-loss and corrosion polarization resistance (corrosion system) methods were carried out to study the corrosion of carbon steel. Inhibition efficiencies of nearly 80% have been observed even at as low concentration of 50 mg l⁻¹.

Keywords: Polyaniline; Dispersion; Nonionic surfactant; Cooling water; Corrosion inhibition; Corrosion test; Carbon steel

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