



Anticorrosion Activities of The Synthesized Poly Acrylic Acid Modified With Dihydroxy Benzene-Redox Polymer

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ABSTRACT

Poly acrylic acid was synthesized using hydrogen peroxide as an oxidant and it was functionalized with catechol, hydroquinone, a homolytic modification by an oxidative decarboxylation and was characterized using UV and FT-IR. The thermal analysis shows that the poly acrylic acid modified with Hydroquinone was more stable. The percentage of substitution was found to be 74% in PAA/Catechol and 86% for PAA / Hydroquinone. The average molecular weight measured by viscometer was found to be around 5.6×10^5 , 8.2×10^5 g/mol and 9.5×10^5 g/mol for PAA, PAA/Catechol and PAA / Hydroquinone. The XRD and SEM studies shows that the PAA modified with Catechol and Hydroquinone moieties are semi crystalline in nature. The PAA modified with Catechol and Hydroquinone inhibits the corrosion reaction of aluminum at pH 10. Polarization measurements showed that the polymers act as mixed-type inhibitors. The inhibition efficiencies of these polymers increase with increasing concentration and molecular weight. The inhibition efficiency was calculated through the polarization method.

Keywords: Polyacrylic acid, Catechol, Hydroquinone, Redox polymer, Polarization.
