ABSTRACT

THE SYNTHESIS AND CHARACTERIZATION OF DIPHENYLTIN(IV) DICHLOROBENZOATE AS CORROSION INHIBITION FOR MILD STEEL

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In this research, the synthesis and characterization of diphenyltin(IV) di-2-chlorobenzoate, diphenyltin(IV) di-3-chlorobenzoate, and diphenyltin(IV) di-4-chlorobenzoate were succesfully performed and the corrosion inhibition activity tests on mild steel for these compounds have been performed using potensiostat method. The preparation of diphenyltin(IV) dichlorobenzoate compound series was commenced by the synthesis of diphenyltin(IV) oxide from diphenyltin(IV) dichloride with NaOH in methanol. The diphenyltin(IV) oxide compound was then reacted with the ligands of 2-chlorobenzoid acid, 3-chlorobenzoid acid, and 4-chlorobenzoid acid to produce diphenyltin(IV) di-2-chlorobenzoate, diphenyltin(IV) di-3-chlorobenzoate, and diphenyltin(IV) di-4-chlorobenzoate, respectively. The percentage yields of the synthesis of diphenyltin(IV) dichlorobenzoate series at the optimum reflux time of 4 hours was 87.53, 89.69, and 90,64%, respectively. These compounds were well characterized by spectroscopy techniques of infrared (IR), ultraviolet (UV), ^{1}H NMR, and ^{13}C NMR as well as based on the microelemental analysis. The result of corrosion inhibition test of the compounds synthesized toward mild steel showed that the percentage efficiency inhibition (%EI) value for the diphenyltin(IV) di-2-chlorobenzoate, diphenyltin(IV) di-3-chlorobenzoate, and diphenyltin(IV) di-4-chlorobenzoate was 55.96, 51.32, and 48.31%, respectively, at concentration of 100 mg/L.

Keywords: corrosion inhibition, diphenyltin(IV), mild steel, potensiostat