**ABSTRACT**

The influence of two Benzothiazole derivatives, namely Benzothiazole-2-yl-semicarbazide (SCBT) and N-Benzothiazole-2-yl-N’-Phenylhydrazine (PHBT) on the corrosion inhibition of mild steel in 1M H2SO4 was studied by weight loss and electrochemical (Polarization and AC-Impedance) techniques. The synergistic effect by the addition of halide ions had been studied. The results showed that inhibitor performance depends on concentration of inhibitors, temperature and molecular structure. Polarization studies revealed that these compounds behave as cathodic inhibitors. This was supported by the impedance measurements. The inhibition action of benzothiazole derivatives occurs *via* adsorption of the compounds on mild steel surface. The adsorption was spontaneous and followed Langmuir adsorption isotherm. Thermodynamic parameters were calculated for the adsorption process. The results indicate that both PHBT and SCBT are excellent corrosion inhibitors