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Electrical properties investigation of unsaturated polyester resin with carbon black as fillers

Abstract

In this paper, conducting polymer composites were prepared by adding different percentage of carbon black (2, 4, 6 and 8)% to unsaturated polyester resin. Hence, this project focuses on two types of carbon black which is commercially available that is activated carbon black and carbon black produced internally from water hyacinth. Their effect on the electrical properties of the polyester compositewas analyzed. The A.C. electrical conductivity of the polyester composite was studied using Precision LCR meter. The A.C. electrical conductivity of polyester-carbon black composite has been investigated at a frequency ranging from 50 Hz to 1 MHz. The result showed that the electrical conductivity ofthe composite was changing with different concentration of carbon black. It has been observed that the electrical conductivity of the composite is frequency dependent and increases with increasing percentage of carbon black fillers in the polyester composite.

Keywords — Electrical characterization, thermoset, unsaturated polyester resin, percolation, carbon black, polymer composites, electromagnetic interference shielding (EMI)