Evaluation of Conductivity Measurement Methods for Conductive Particulate Polymer Composite

JYOTSNA KIRAN MATHAD, KAVITHA, SENDIL MURUGAN, T PADMAVATHI, SHYLAJA SHRIHARI, A VANAJA
Centre for Societal Missions and Special Technologies (CSMST)

Project Document CSMST 1122
May 2011

National Aerospace Laboratories
(Council of Scientific & Industrial Research)
Bangalore 560 017, India
Title: Evaluation of Conductivity Measurement Methods for Conductive Particulate Polymer Composites

Author/s: Jyotsna Kiran Mathad, Kavitha, Sendil Murugan, T.Padmavathi, Shylaja Srihari, A.Vanaja.

Division: CSMST
Project No: SIP-FRP-01

Document No.: CSMST 1122
Date of Issue: 18/5/2011

Contents: Pages: 21 Figures: 9 Tables: 8 Annexure:--

External Participation: Nil

Sponsor: CSIR

Approval: 

Remarks: ----

Keywords: Particulate polymer composites, surface resistivity, ohms law, Electrical conductivity, Electrometers, van der Pauw technique

Abstract:
SIP-FRP-01 project aims at the development of conductive polymer composites for Electromagnetic Interference shielding (EMI) applications. Highly conductive materials are best suited for electromagnetic shielding. Polymers are generally insulators in nature. They can be made conductive by dispersing the particulate conductive fillers. Depending on the nature of the filler (metallic/nonmetallic) and the percentage of filler loading these novel materials can either behave as semiconductors or conductors. In literature various methods of conductivity measurements were reported for insulators, semiconductors and conductor materials. This document brings out the consolidated efforts made towards the evaluation and optimization of right procedures for measuring the conductivity of the various in-house developed particulate polymer composites.