ASTM D 991 TEST FIXTURE

Model 831

Measures volume resistivity using a 4-point test method of electrically conductive material having volume resistance below 10^8 Ohms.

Features:

- ☐ **Conforms to ASTM D 991**
- ☐ **Measures standard 3”x5” (76x127mm) samples**
- ☐ **4-Pole measurement**
- ☐ **Compatible with most V/I instrumentation**
- ☐ **Delrin & nickel-plated steel Construction**

Applications and Description:

ASTM D 991 “Standard Test Method for Rubber Property-Volume Resistively of Electrically Conductive and Antistatic Products” describes a method to evaluate the electrical behavior of rubber products (also applicable to rigid and sheet material) that are used in applications such as safety, static charge accumulation and dissipation, current transmission, etc. This test method is useful in predicting the behavior of such products. The Model 831 Test Fixture measures volume resistivity in accordance with ASTM D 991. This test method utilizes the measurement of current (I) through a material and the voltage drop (V) across a section of the material to calculate the volume resistivity in Ohms-cm. Designed for standard 3”x5” (76x127mm) samples, the Model 831 can measure samples from 0.4 - 4” (10 - 102mm) wide to 5-6” (127 -152mm) long.

Thermoformed plastics that are rendered static dissipative or conductive consist of a plastic resin filler with very high resistance properties loaded with a small percentage of a conductive material such as carbon powder, stainless steel or other fibers. These materials have bulk resistance properties verses the surface only resistance properties found in other ESD materials. When a voltage is applied either across or through the material the dielectric of the filler breaks down and current flows from particle to particle. As the loading of the conductive medium decreases there is greater distance between particles that requires a higher voltage to break down the increased dielectric. At some point, once a higher voltage is applied to establish continuity the resistance of the path created may become altered permanently. Loaded thermoplastic materials are effective in reducing the upper resistance limit to approximately 10^8 Ohms. Another characteristic associated with loaded thermoplastic materials that affects measuring resistance is the microscopic insulative layer that develops on the surface of the molded part. The dielectric of this layer must be broken down before a resistance measurement can be made. Once this occurs the actual resistance of the part may be lower than the measuring range of the instrumentation used.

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