

MIL-G-83528: method of measuring volume resistivity of finished parts.

The MIL-G-83528 represent a valid alternative at the “standard” test method for volume resistivity of conductive elastomers: ASTM D991 for low resistance materials.

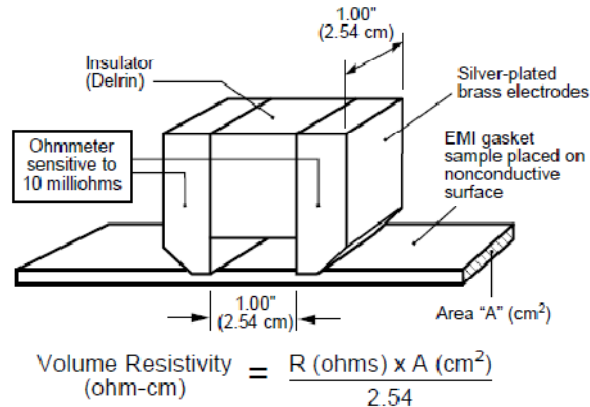


Fig.1 Modified ASTM D991 test probe for measuring volume resistivity of conductive elastomers.

Tests using this probe have been shown to correlate well with ASTM D991 and other 4-point probe methods of measuring volume resistivity. Using this 2-point probe, measured resistance values for EMI gaskets in the 0.002 to 0.02 ohm-cm range are typically 0.01 to 1.0 ohm (depending on cross section).

The probe can be used to make accurate volume resistivity measurements on actual gaskets such as molded rings, extruded strips, or custom cross sections.

The weight of the probe (200-500 gm) is sufficient to produce accurate and reproducible measurements after a stabilization period of about 15-60 seconds.

The addition of 1-2 lbs (450-900 gm) manual force will allow a stabilized resistance value to be reached more quickly.

Since this is a common problem with poorly-manufactured conductive elastomers (“resin-rich” on one side), it is recommended that random measurements be made on both sides of parts during QC or Acceptance testing. Other good rule is perform measure with plied-up sample, it will result in a resistance measurement almost exactly half the first measurement. By doubling the cross sectional area “A” (Figure 1), the resistance “R” is halved. It can also be shown that for materials with one side substantially more conductive than the other, measurement with the probe of Figure 1) will clearly show the difference.

For extremely small gaskets, shorter electrode spacing may be required – such as 0.50 in. (1.27 cm). For a probe with 1.27 cm separation, change the denominator in the equation shown in Figure 1) to 1.27.

Fig.2 Typical Test Set-Up measure.

- Electrodes according MIL-G-83528
- Milli-Ohm-meter
- 4-cables and banana connectors
- DUT (device under test) with perspective of low resistance: < 20 OHm

Fig.3 Electrodes 1" and 1/2" spacing.

