

Floor Resistance Testing with the Megohmmeter Model 6536

ANSI/ESD STM97.2-2006 is the standard test method for measuring the electrostatic voltage on a person in combination with floor materials and footwear as a system. ESD STM 97.2 can be used to characterize ESD protective floor materials including floor coverings (tiles, carpets, epoxies, and laminated structures), mats, paints/coatings, and floor finishes. Electrostatic voltage must be less than +/-100V.

The AEMC Handheld Megohmmeter Model 6536 is available as a floor resistance testing kit (Figure 1) for testing both point-to-ground and point-to-point electrostatic discharge (ESD). In addition to the instrument, the kit contains a 25-foot (7.6m) shielded lead and two 5 pound (2.3 kg) floor weights (also referred to as NFPA probes) that are in compliance with EOS/ESD 11.11 specifications. Each floor weight is coated with insulating paint and a conductive rubber base. The instrument, floor weights, and test leads are packaged in a rugged field case. The kit provides all the necessary elements for compliance with the ANSI/ESD STM97.2-2006 standard for testing ESD flooring.



Figure 1

The instrument, floor weights, and test leads are packaged in a rugged field case. The kit provides all the necessary elements for compliance with the ANSI/ESD STM97.2-2006 standard for testing ESD flooring. The kit can test the effectiveness of conductive carpets, mats, tables, chairs, and other items.

The following simplified procedure is an extrapolation from the ANSI/ESD STM97.2-2006 standard. You may also refer to other sources for alternate procedures.

Setup

- The floor sample should consist of a section covering 48 x 48" (122 x 122cm) in area.
- When the sample is to be tested after installation, the test area dimensions should not exceed a section of floor 20 x 20' (6.1 x 6.1m).
- Whenever possible, condition the test area at least 24 hours at 73.4°F ±1.8°F (23°C ±1°C) and 50% ±5% RH and test under the same conditions.

Test Procedure

1. For uninstalled panels: Place the dry specimen on a nonconductive surface and lightly wipe with a lint-free cloth to remove any foreign material prior to placing the weights. Place the weights 2" (5.1cm) from an edge of the sample and 36" (91cm) apart. Apply 100V and take a reading five seconds after application of the voltage.
2. For installed panels: Place the weights 36" (91cm) apart and at least 36" (91cm) from any ground connections or grounded object resting on the floor sample. Apply 100V and take a reading five seconds after application of the voltage.
3. Unless otherwise specified, make five measurements on each floor section with the weights at different locations for each measurement, and record the value to two significant figures (see Figure 2 below).

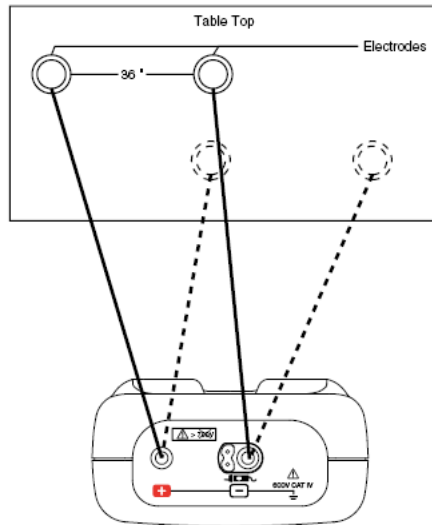


Figure 2

- Repeat this procedure with the Model 6536 connected between one weight and a known electrical ground (Figure 3).

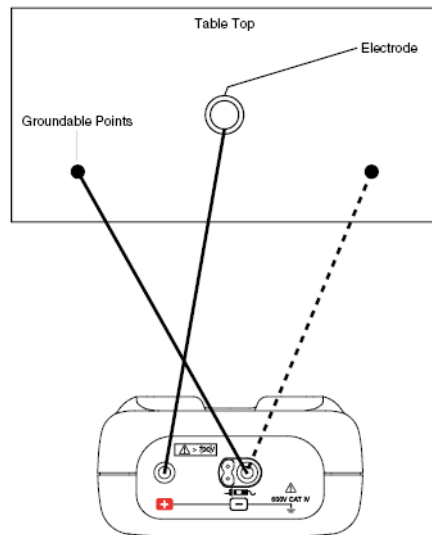


Figure 3

For an uninstalled floor sample (step 1) the ground should be part of the sample panel. For an installed floor sample (step 2) the ground should be a water pipe or known electrical ground. Swap the leads at the instrument for each measurement and record the average value obtained as the value for that measurement.

- When finished, turn off the Model 6536 and return it to the case.

If the resistance changes with time during a measurement, the value observed after about 5 seconds should be considered the measured value.

Measurement Results

The following values may serve as a minimum resistivity level to provide an appropriate level of protection in manufacturing environments.

- Resistance from electrode to electrode (Figure 2): Measured value: $\geq 1\text{M}\Omega$
- Resistance from test electrode to a groundable point (Figure 3): Measured value: $\leq 10,000\text{M}\Omega$ (10G Ω)