Maintenance of Static Control Systems 8200 Mats

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The basic purpose of conductive work surfaces is to provide a surface that is free of static charge and also is capable of removing the static charge from conductive items placed on it. The total resistance to ground determines the level of charge and rate at which it will be drained. A resistance to ground of 1000 megohms or less is required on an 8200 mat to drain a charge to a level of 100 volts or less in one second from a person or tote box charged to 5KV (ref.1, 2).

Resistance Measurement:

Measuring the resistance of the mat requires a high voltage megohmmeter. The megohmmeter must have a test voltage of 50-100 volts and a meter range of 0-1000 megohms. The ground lead of the megohmmeter is attached to the ground points of the mat. The other lead of megohmmeter is attached to an electrode that is described in both ASTM F 150 and NFPA 56A paragraph 4-6.2.7(b).

The resistance to ground should be greater than 10^6 ohms and less than 10^9 ohms. if the resistance is less than 10^6 ohms, an alternate path to ground has been established which bypasses the one megohm resistor in the ground cord. If the resistance is greater than 10^9 ohms, the ground connection has been interrupted.

Cleaning:

Mats should be periodically cleaned with a detergent and water solution. To reduce the possibility of leaving a residue, detergents (rather than soaps) should be used. Powdered detergents such as Tide®, Ajax®, etc. should be added to water at a 1-2% concentration, liquid detergents such as Wisk®, All®, etc. at a 2-3% concentration, and general purpose cleaners such as 409®, Mr. Clean®, etc. can be used full strength.

Normally, only a cloth that is thoroughly wetted with the detergent solution is needed to wipe off the mat; however, hardened stains may require brushing with a semirigid bristled brush. The wiping or brushing action should be in a circular motion to ensure removal of the particles from the surface depressions. Extremely soiled mats may require several repeated cleanings with a water rinse between each cleaning. The water rinse should consist of wetting a cloth with clean water and wiping the surface to remove loosened dirt and detergent.

The final step should be to use a cloth dampened with isopropanol and wipe the mat to remove any organic contamination as well as the residual detergent. Avoid using excessive isopropanol because the bottom foam layer will absorb the solvent and cause the mat to swell.

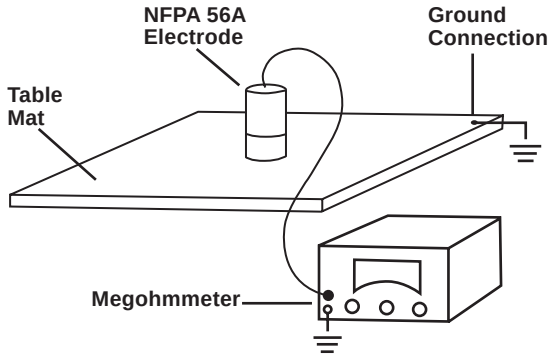
Regardless of the technique used to clean the mats, the previously described resistance measurement should be performed to verify that the mat is functional.

Note: Read all Health Hazard, Precautionary, and First Aid statements found in the Material Safety Data Sheet (MSDS) and/or product label of cleaning materials prior to handling or use.

Reference:

1. D. M. Yenni, Jr. "Basic Electrical Considerations in the Design of a Static-Safe Work Environment", Proc., (NEPCON/WEST), March 1979, pp. 273-284.

2. J. R. Huntsman, D. M. Yenni, Jr., "Test Methods for Static Control Products", Proc., EOS/ESD Symposium 1982, pp. 94-109.



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