

Static Control

The action of rubbing of two dissimilar materials together may generate static electricity. Walking across a carpet results in rubbing two materials together – the carpet face fibers and shoe sole materials.

Several variables affect the amount of static that is generated. These may include differences in environments, humans, shoe soles, fiber types, carpet constructions, carpet backing materials, and carpet cushions. In-use wear, soiling, cleaning, temperature, relative humidity, etc. may alter the amount of static electricity generated in the carpet and, therefore, the level of shock. Studies have revealed that static electricity does not become a problem with most people until the relative humidity drops below 40 percent.

Specifying Considerations

Most carpet is available today with built-in static inhibitors. These control elements include specific fiber blends and specially engineered conductive fibers which can dissipate the static charge.

When static shock is a concern in residential or commercial environments, it is advisable to specify a built-in static control system. Carpet that has been properly tested by American Association of Textile Chemists and Colorists (AATCC) Test Method 134, Electrostatic Propensity of Carpets¹, and does not yield voltages in excess of 5.0 kV (kilovolts) will provide acceptable static performance in residential end uses.

For commercial environments, 3.5 kV is the generally accepted maximum value as tested by AATCC Test Method 134. For more critical environments involving sensitive electronic equipment, more stringent requirements may be desirable. Personal computers have built-in protection systems to shield components from damage or disruption from electrostatic discharges and would not fall into that category. In highly critical environments, such as the handling of semiconductors, the typical “antistatic” carpet may not provide sufficient static protection and highly specialized carpets must be specified.

Controlling Static in Existing Installations

Static electricity problems with existing carpet installations can be reduced by maintaining a proper level of relative humidity. If for some reason the relative humidity cannot be adequately controlled, there are several non-permanent antistatic products that can be supplied and/or applied by professional cleaners. These products significantly reduce static electricity to levels below the level of human sensitivity. Caution should be considered before using a topically applied product, however, because some products can cause carpet to soil at a much faster rate than normal and may void manufacturer’s warranty.

¹ AATCC Test Method 134: Electrostatic Propensity of Carpets is a laboratory simulation that assesses the static generated when a person walks across a carpet area. As previously mentioned, static generation is dependent mostly upon humidity conditions; therefore, testing is performed at 20% ±2% relative humidity.