

Antistatic Treatments

Static electricity remains a major concern that ranges from commercial environments with sensitive electronic equipment, general office areas with a network of personal computers, to the average residential end-use. Further advancements in heating and insulation have added to this problem by providing warmer and dryer indoor climates that are ideal for static generation.

The amount of static electricity generated by a material is based on the Triboelectric Scale and is expressed in kilovolts (kV). One kilovolt is the equivalent of 1,000 volts. It is generally accepted that the level of human sensitivity to static electricity is 3,500 volts, or 3.5 kV. Fortunately, shocks generated by carpet from higher kV's are generally only a nuisance, and are not damaging to individuals. One important factor that will determine static generation is room temperature and ambient relative humidity. **Studies show that static electricity is generally not discernable until relative humidity drops below 40%.**

Antistatic options can be added to increase or guarantee a carpet's antistatic performance, for example '**no shock**' fiber can be mixed into the body yarn, or antistatic chemistry is added to face fiber and carpet backing. An alternative method for static reduction is the use of topically applied antistatic sprays. Topical treatments are incapable of providing permanent static protection and can break down over time causing loss of antistatic performance and also risk accelerated soiling.

The most applicable test for static electricity in carpet is the AATCC 134 Electrostatic Propensity of Carpets test method. Using this test, carpets are tested for static generation by step and scuff action using various shoe sole materials at ambient conditions of 70 degrees Fahrenheit and 20% relative humidity. Ratings are then recorded and averaged. According to this test carpets that do not yield voltages in excess of 3 kV for commercial environments, and 5 kV for residential end-use, yield acceptable static performance.

Specifiers for special environments with sensitive equipment, such as aircraft, control rooms etc., will not accept a static level greater than 1.5 to 2 kV. The addition and permanency of built-in static inhibitors such as static dissipative filaments and conductive primary and secondary backings are often required in carpet to protect sensitive computer components. Typically, these carpets will generate 1.0 to 1.5 kV depending on construction and static component materials.

Tai Ping applies both 'no-shock' fiber and antistatic agents to provide a reliable level of antistatic performance such that surface generated static will fall consistently below 3.5kV. The 'no-shock' fiber can be applied to wool, wool and silk blends and some (but not all) pure silk yarns. For example spun silks, such as dull and delicate silk cannot be treated with permanent anti-static options.

If antistatic requirements have been specified it is important to include these options in at the sampling stage as there can be very subtle changes to material appearance.