

STATIC CONTROL FLOORS

INTRODUCTION

This TECHnote highlights the different types of static control floors and their application.

What is static?

Electrostatic charges occur when two materials rub against one another causing a build-up of electrons. Sudden discharge of these electrons (earthing) can cause discomfort to people, damage to equipment or excessive buildup of dust. Most flooring materials hold electrostatic charges unless specially treated to give either gradual or rapid discharge.

Humidity

Normal moisture content in textile floor coverings, particularly wool carpet, has sufficient conductance to lower the electrostatic build up to acceptable levels. When the relative humidity of the environment is over 50% there is seldom an electrostatic problem. For excessively dry weather, antistatic surface treatments can be applied to timber and vinyl to reduce the nuisance of static discharge and dust collection.

When static is a problem

Understanding static buildup is important when designing clean rooms for prevention of dust build-up, where explosive or flammable materials are being handled, where sparking must be eliminated, and where static discharges can damage electronic equipment. Conductive flooring is commonly used for large area electrostatic control. Discharge plates are also often installed for personnel entering controlled areas and at workstations.

ELECTRICAL RESISTANCE

Measurements of electrical resistance are expressed either in terms of volume resistivity (between

two points on opposite surfaces of the material) or surface resistivity (between two points on the same surface). Volume resistivity is the important parameter for a conductive floor with an earthed substructure.

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Antistatic flooring

Antistatic flooring is used to ensure that people do not receive a shock when touching metal after walking across a floor. In an environment under the normal range of humidity levels, linoleum and some vinyl tiles installed with standard laying techniques will fulfill this requirement without additional earthing.

Static dissipative flooring

There are vinyl and linoleum products available with enhanced properties for low electrical resistance. Carpets can be manufactured with a suitable conducting agent within the fibres and the resulting antistatic effect is generally permanent.

Static conductive flooring

Conductive floors are installed with adhesive and levelling compounds of low resistance, incorporating a grid of copper tape to improve the control of static discharge to earth. Typical applications will provide protection to rooms with sensitive electronic equipment, hospital imaging or biomedical repair suites, clean rooms, and data processing areas.

Generally, it is no longer necessary to use static conductive flooring in hospital and veterinary operating theatres because flammable anaesthetic agents (ether and cyclopropane) are no longer used.

Static Control floors are typically required in the following applications:



Computer rooms



Clean room

Static electricity in action



Specifying static control floors.

Checkpoints:

- The material has the manufacturer's warranty matching the design criteria.
- State that the installation be by a subcontractor accredited by the manufacturer.
- Make sure that the installation is tested and certified before acceptance.

If in doubt, consult an electrical engineer.

Relevant Standards

EN 1081 Resilient, laminate and modular multilayer floor coverings. Determination of the electrical resistance.

EN 1815 Resilient and laminate floor coverings - Assessment of static electrical propensity.

ISO 2878 Rubber vulcanized or thermoplastic - Antistatic and conductive products - Determination of electrical resistance.

ISO 6356 Textile and laminate floor coverings - Assessment of static electrical propensity - Walking test.

Relevant Worksections

0541 Access floors
0651 Resilient finishes
0652 Carpets

