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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37977.45-2024

**Electrostatics - Part 4-5: Standard test methods for specific
applications - Methods for characterizing the electrostatic protection of
footwear and flooring in combination with a person**

(English Translation)

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Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Principle
5 Atmospheric environment for handling and testing
6 Test methods for human/shoe/ground system
6.1 Sampling and specimen preparation of floor coverings for laboratory testing
6.2 Cleaning of shoes for laboratory evaluation tests and tests on installed floor coverings
6.3 Resistance Measurement
6.4 Measurement of electrification
7 Test Report
Appendix A (Normative) Verification Method of Human Voltage Test System
A.1 Static Verification
A.2 Dynamic Verification
Appendix B (Informative) Optional Walking Modes
B.1 Measurement of electrification
B.2 Walking
References

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document is part 4-5 of GB/T 37977 "Electrostatics". GB/T 37977 has published the following parts.

Part 2-1. Test methods for electrostatic charge dissipation capability of materials and products;

Part 2-3. Test methods for resistance and resistivity of antistatic solid planar materials;

Part 3-2.Simulation methods for electrostatic effects Electrostatic discharge test waveforms for machine models (MM);

Part 4-1.Standard test method for electrical resistance of floor coverings and assembled floors in specific applications;

Part 4-3.Standard test methods for specific applications Footwear; -Part 4-5.Standard test methods for characterization of electrostatic protection properties of man/shoe/ground systems in specific applications;

Part 4-6.Standard test methods for wrist straps for specific applications;

Part 4-8.Standard test methods for electrostatic discharge shielding bags for specific applications;

Part 4-9.Standard test methods for clothing for specific applications; -Part 5-1.General requirements for electrostatic protection of electronic components.

This document is equivalent to IEC 61340-4-5:2018 "Electrostatics Part 4-5.Standard test methods for specific applications Human/shoes / Characterization method of electrostatic protection characteristics of grounding system".

Introduction

GB/T 37977 "Electrostatics" is the basic standard of electrostatics. It adopts the IEC 61340 series of standards and aims to define the model of electrostatic effects.

Simulation method, anti-static parameter test method for anti-static materials and products, standard test method in specific applications, electrostatic protection of electronic devices Etc. GB/T 37977 is intended to consist of the following parts.

Part 2-1.Test methods Electrostatic charge dissipation capability of materials and products. The purpose is to specify test methods for testing insulation and Static dissipative materials and products' ability to dissipate static charge.

Part 2-3.Test methods for resistance and resistivity of antistatic solid planar materials.

Test the resistance and resistivity of anti-static solid flat materials. The applicable range of the measured resistance is 104ohm~1012ohm.

Part 3-2.Simulation methods for electrostatic effects Electrostatic discharge test waveforms for machine models (MM). The purpose is to specify Basic requirements for simulating electrostatic discharge current waveforms for MM and the equipment used to generate and verify these waveforms.

Part 4-1.Standard test methods for electrical resistance of floor coverings and assembled floors in specific applications.

Method for testing the resistance of floor coverings and assembled floors, including

resistance to ground, point-to-point resistance and vertical resistance.

The applicable range of resistance is 104ohm~1013ohm.

Part 4-3. Standard test methods for specific applications - Footwear. The purpose is to specify test methods for testing the performance of anti-static footwear.

resistance.

Part 4-4. Standard test methods for specific applications - Classification of flexible bulk containers (FIBC) for static electricity.

Requirements for flexible bulk containers (FIBC) with a volume of 0.25 m³ to 3 m³ used in hazardous explosive atmospheres.

Part 4-5. Standard test methods for specific applications Characterization of electrostatic protection properties of man/shoe/ground systems.

Establish test methods to evaluate the anti-static performance of human/shoe/floor systems.

Part 4-6. Standard test methods for specific applications Wrist straps. The purpose is to specify the electrical and mechanical performance requirements of wrist straps.

and test methods for testing these properties.

Part 4-8. Standard test methods for electrostatic discharge shielding bags in specific applications. The purpose is to provide a method for evaluating electrostatic discharge shielding bags.

Performance test methods.

Part 4-9. Standard test methods for specific applications Clothing. The purpose is to specify test methods for testing antistatic clothing resistance.

Part 5-1. General requirements for electrostatic protection of electronic devices. The purpose is to establish anti-static management and technical requirements to avoid or reduce Low electronics damage due to electrostatic discharge.

Part 5-4. Electrostatic protection of electronic devices Compliance verification; the purpose is to propose technical items involved in the electrostatic control program Compliance verification test methods.

Part 6-1. General requirements for electrostatic control facilities in medical facilities. The purpose is to specify the equipment, materials and procedures for electrostatic control in medical facilities.

Material and product requirements.

The test method described in this document is used to test the electrical resistance of a

system consisting of shoes, floor and human body, and thus to evaluate the antistatic performance of the system.

characteristic.

Electrostatics Part 4-5. Specific Standard test methods in application Characterization method of electrostatic protection characteristics of human/shoe/ground system

1 Scope

This document is part of the standard test method for specific applications of the GB/T 37977 series of standards, evaluating the anti-static properties of the person/shoe/ground system.

performance.

The test results apply only to the shoe and floor combination tested.

The test methods provided in this document are applicable to the person/shoe/floor system and are not applicable to product approval testing of individual shoes or floors.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies.

in this document.

ISO 1957 Selection and cutting of specimens for physical testing of machine-made textile floor coverings
IEC 61340-4-1:2015 Selection and cutting of specimens for physical tests
IEC 61340-4-1:2015 Electrostatics Part 4-1. Standard test methods for specific applications
Electrical resistance of floor coverings and assembled floors (Electrostatics-Part 4-1. Standard test methods for specific applications-Electrical resistance of floor coverings and installed floors)
Note. GB/T 37977.41-2024 Electrostatics Part 4-1. Standard test method for electrical resistance of floor coverings and assembled floors in specific applications (IEC 61340-4-1:2015, IDT)
IEC 62631-3-1:2015 Dielectric and resistive properties of solid insulating materials Part 3-1. Determination of electrical resistance characteristics (DC method)
Volume resistance and volume resistivity general method [Dielectric and resistive properties of solid insulating materials-Part 3-1.

Determination of resistive properties (DC methods) - Volume resistance and volume resistivity-General method] Note. GB/T 31838.2-2019 Dielectric and resistance properties of solid insulating materials Part 2: Resistance properties (DC method) Volume resistance