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

GB/T 37977.49-2023

**Electrostatics - Part 4-9: Standard test methods for specific
applications - Garments**

静电学 第4-9部分:特定应用中的标准试验方法 服装

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document is Part 4-9 of GB/T 37977 "Electrostatics": GB/T 37977 has released the following parts:

---Part 2-1: Test methods Materials and products electrostatic charge dissipation ability;

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

---Part 3-2: Simulation method of electrostatic effects and electrostatic discharge test waveform of machine model (MM);

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

---Part 4-9: Standard test methods for clothing in specific applications;

---Part 5-1: General requirements for electrostatic protection of electronic devices:

This document is modified to adopt IEC 61340-4-9:2016 "Electrostatics Part 4-9: Standard test methods for clothing in specific applications":

Compared with IEC 61340-4-9:2016, this document has made the following structural adjustments:

---Delete the original "5:1 Test Equipment Requirements" and change "5:1:1 Resistance Test Instruments" to "5:1 Resistance Test Instruments": All clauses in Chapter 5 Move up one level;

---The content of "6:3 Cleaning" has been added to the preprocessing, and the original "6:3 Test Procedure" has been adjusted to 6:4;

---Added Appendix B (normative) "Washing Method" and adjusted the original Appendix B to Appendix C:

The technical differences between this document and IEC 61340-4-9:2016 and their reasons are as follows:

---In order to adapt to my country's technical conditions and facilitate the use of standards, GB/T 37977.23 is normatively cited instead of IEC 61340-2 (see 5.3:1);

---Added "6:3 Cleaning" as a pre-treatment to evaluate the long-term durability of clothing (see 6.3), and added a new normative appendix C "Washing Method" Law";

---Added reference to GB/T 8629 to adapt to my country's actual requirements (see Appendix B):

The following editorial changes have been made to this document:

---The figures in this document have been redrawn, and they have been retyped and numbered according to the order in which they appear in the text of this document;

---List 6:4:2:1, 6:4:2:2, and 6:4:2:3 of this document in accordance with the test steps:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

The GB/T 37977 series of standards are basic standards for electrostatics: They all adopt the IEC 61340 series of international standards to define electrostatic effects:

Simulation methods, anti-static parameter testing methods for anti-static materials and products, standard test methods in specific applications, electrostatic protection of electronic devices Protect etc: The GB/T 37977 series of standards is planned to consist of 11 parts, consistent with the structure of the IEC 61340 series of standards:

---Part 2-1: Test methods for electrostatic charge dissipation capabilities of materials and products: The purpose is to specify test methods for testing insulation and the static charge dissipation capabilities of static dissipative materials and products:

---Part 2-3: Test methods for resistance and resistivity of antistatic solid planar materials: The purpose is to specify test methods for measuring Test the resistance and resistivity of the anti-static solid planar material: The applicable range of the measured resistance is 104ohm~1012ohm:

---Part 3-1: Simulation method of electrostatic effects and electrostatic discharge test waveform of human body model (HBM): The purpose is to specify Basic requirements for electrostatic discharge current waveforms used to simulate HBM and the equipment used to generate and verify these waveforms:

---Part 3-2: Simulation method of electrostatic effects and electrostatic discharge test waveform of machine model (MM): The purpose is to specify Basic requirements for simulating electrostatic discharge current waveforms of MM and the equipment used to generate and verify these waveforms:

---Part 4-1: Standard test methods Resistance of floor coverings and assembled floors in specific applications: The purpose is to specify the test this test method is used to test the resistance of floor coverings and assembled floors, including ground resistance, point-to-point resistance and vertical resistance: It is the applicable range of resistance measurement is 104ohm~1013ohm:

---Part 4-3: Standard test methods for footwear in specific applications: The purpose is to specify test methods for testing anti-static shoes the resistance:

---Part 4-5: Standard test methods for characterization of electrostatic protection characteristics of human/shoe/ground systems in specific applications: The purpose is it is a prescribed test method for evaluating the anti-static performance of the person/shoe/ground system:

---Part 4-6: Standard test methods for wristbands in specific applications: The purpose is to clarify the electrical and mechanical performance requirements of the wristband:

requirements, and experimental methods for testing these properties:

---Part 4-8: Standard test methods for electrostatic discharge shielding bags in specific applications: The purpose is to provide evaluation of electrostatic discharge screens Test method for bag performance:

---Part 4-9: Standard test methods for clothing in specific applications: The purpose is to specify test methods for testing anti-static clothing installed resistor:

---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 damage to electronic products due to electrostatic discharge:

Clothes made of chemical fibers are a common source of static electricity: Wear appropriate anti-static clothing over personal clothing to minimize the effects of electrical charges Low: To effectively control static electricity, anti-static clothing should be grounded as much as possible:

This document describes the following three categories of clothing:

a) In an ungrounded environment, anti-static clothing inhibits or affects the electric field of ordinary clothing inside it: However, since there is no ground, the electrical Charge may accumulate on its conductive or dissipative parts (if present):

b) Groundable anti-static clothing provides a higher level of control by grounding the low resistance fabric:

c) Groundable anti-static clothing systems provide a grounding path for the wearer: It works by inhibiting clothing worn on the inside of grounded anti-static clothing:

The electric field is generated and connects the wearer's skin to a defined ground path: Groundable anti-static clothing systems are also available with continuous or used with a continuous monitoring system in a manner similar to the continuous monitoring of wristbands within an anti-static work area (EPA):

Resistive performance is only one aspect of evaluating apparel applications: In order to fully evaluate the performance of the garment, it may also be necessary to consider electric field attenuation, static Performance in terms of electrical attenuation, peak voltage, residual voltage and triboelectric charging: Other properties relevant to the application and environment, such as clean rooms Compatibility, chemistry, and flame retardancy are all evaluated during the garment selection process, but these are outside the scope of this document:

Clothing made from fibers that are not conductive but may have other similar properties may produce some degree of electrical shock when connected to the ground:

Electrostatic charge dissipation or suppression: The methods provided in this document are not suitable for testing such garments: