IEC 61340-4-9

Edition 3.0 2024-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Electrostatics –
Part 4-9: Standard test methods for specific applications – Garments – Resistive characterization

Électrostatique –
Partie 4-9: Méthodes d'essai normalisées pour des applications spécifiques – Vêtements – Caractéristiques résistives

IEC 61340-4-9:2024-10(en-fr)

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ELECTROSTATICS –

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FOREWORD

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IEC 61340-4-9 has been prepared by IEC technical committee 101: Electrostatics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) IEC 61010-1 and IEC 61010-2-030 added as requirements for measurement equipment;
b) testing voltage range for personnel ground path changed from "7 V DC to 30 V DC" to "7 V DC to 100 V DC";

c) cleaning requirements changed from a minimum of five cycles of cleaning to a minimum of three cycles of cleaning;

d) moderate humidity requirements deleted;

e) figures replaced with generic drawings.

The text of this International Standard is based on the following documents:

Draft	Report on voting
101/718/FDIS	101/721/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61340 series, published under the general title *Electrostatics*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn, or
- revised.

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INTRODUCTION

This part of IEC 61340 provides test methods for evaluating the electrical resistance of garments that contain surface conductive or dissipative components or materials used in the electronics industry for the control of electrostatic discharge. This document defines procedures for measuring electrical resistance, including a system resistance test for garments that provide a ground path for personnel.

Clothing made from synthetic fibres is a common source of electrostatic charge. Wearing an appropriate static control garment over personnel clothing can minimize the effect of this charge. To effectively control electrostatic charges of the static control garments and effectively shield the electrostatic field of personnel clothing, the static control garment should be grounded.

Three categories of garments are considered in this document.

a) A static control garment can suppress or otherwise affect an electric field from clothing worn underneath the garment without being attached to ground. However, without grounding, a charge can accumulate on conductive or dissipative elements of a garment, if present, resulting in a charged source.

b) A groundable static control garment can provide a higher level of suppression when the lower resistance fabric is connected to ground.

c) A groundable static control garment system provides a ground path for a person that suppresses the electrical field from clothing worn underneath the garment and also bonds the skin of the wearer to an identified ground path. Groundable static control garment systems can also be used in conjunction with a continuous or constant monitoring system in a manner similar to those used in continuous monitoring of wrist straps in an ESD protected area (EPA).

Resistive characterization is only one aspect to consider in evaluating garments for any specific application. To fully characterize a garment, it can be necessary to take into consideration electrical field attenuation, static decay, peak voltage, residual voltage and triboelectric charging. Other attributes related to applications and environments, such as cleanroom compatibility, chemical and fire resistance, should be evaluated in the garment selection process but are beyond the scope of this document.

Garments constructed from fabrics made with fibres that are not surface conductive but can have other related properties that impart some level of electrostatic charge dissipation or suppression when connected to ground, are not specifically measured by the methods provided in this document. This being the case, some garment fabrics and construction can allow for surface voltage accumulation and charge transfer to occur which can be detrimental to electronic items.

Alternate methods for evaluating the electrostatic properties of garments are described in IEC TS 61340-4-2 [1][1].

[1] Numbers in square brackets refer to the Bibliography.