

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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

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





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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTROSTATICS –

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

## FOREWORD

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

This second edition cancels and replaces the first edition published in 2010. This edition constitutes a technical revision.

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

- a) classification of three types of garments
  - static control garments,
  - groundable static control garments, and
  - groundable static control garment system;

- b) additional measurements according to the the garment type including cuff measurements, panel to groundable point, testing with a person in the garment system;
- c) sleeve to sleeve measurements allowed with probes or by hanging;
- d) additional recommended values for new garment types as set out in Annex A.

The text of this standard is based on the following documents:

FDIS	Report on voting
101/500/FDIS	101/502/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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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 standard 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 personal clothing can minimize the effect of this charge. To effectively control electrostatic charges, the static control garment should be grounded.

Three categories of garments are considered in this standard.

- a) A static control garment may suppress or otherwise affect an electric field from clothing worn underneath the garment without being attached to ground. However, without grounding, a charge may accumulate on conductive or dissipative elements of a garment, if present, resulting in a charged source.
- b) A groundable static control garment may 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 may 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, electrical field attenuation, static decay, peak voltage, residual voltage and triboelectric charging may need to be considered. 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 standard.

Garments constructed from fabrics made with fibres that are not surface conductive but may 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 standard.

This being the case, some garment fabrics and construction may allow for surface voltage accumulation and charge transfer to occur which may be detrimental to electronic items.