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BSI Standards Publication

Electrostatics

Part 4-2: Standard test methods for specific applications — Electrostatic properties of garments

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Électrostatique – Partie 4-2: Méthodes d'essai normalisées pour des applications spécifiques – Propriétés électrostatiques des vêtements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

Part 4-2: Standard test methods for specific applications – Electrostatic properties of garments

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

This document is being issued in the Technical Specification series of publications (according to the ISO/IEC Directives, Part 1, 3.1.1.1) as a "prospective standard for provisional application" in the field of determination of the electrostatic properties of garments and garment materials because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an “International Standard”. It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the IEC Central Office.

A review of this technical specification will be carried out not later than 3 years after its publication with the options of: extension for another 3 years; conversion into an International Standard; or withdrawal.

IEC 61340-4-2, which is a technical specification, has been prepared by IEC technical committee 101: Electrostatics.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
101/374/DTS	101/388/RVC

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

The French version of this standard has not been voted upon.

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

A list of all the 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 web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International Standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The garments worn by most people in their everyday lives are not usually designed to dissipate static electricity. Some natural fibres, such as cotton or linen, have sufficient retained moisture to provide some degree of conductivity and may dissipate charge at an acceptable rate. However, synthetic fibres, such as polyester or polyamide, or natural fibres under low humidity conditions are not able to dissipate charge quickly. If electrostatic charge builds up on a garment it may cause a number of effects:

a) dust and airborne contaminants can be attracted to the surface of charged garments;

b) light-weight garments can cling to the body of the wearer;

c) the electric field associated with charge on garments can damage or disrupt sensitive electronic systems or components;

d) electrostatic discharges from garments can ignite flammable or explosive materials and can damage or disrupt sensitive electronic systems or components;

e) charge on garments induces a potential on the body of an isolated person wearing the garments and this can lead to damaging or hazardous spark discharges from the body.

Some of the effects can often be tolerated but in many situations the presence of these effects is unacceptable. In order to evaluate whether or not there is a potential problem, it is necessary to determine the propensity of garments to acquire charge or produce electrostatic discharges, or to determine their ability to dissipate charge within an acceptable time. If normal garments are found to be unacceptable, they are replaced with garments specifically designed and manufactured to prevent the undesirable effects of static electricity, i.e. static control garments. Suitable test methods are required both to evaluate the extent of potential problems and to determine the effectiveness of charge dissipation mechanisms in static control garments.

ELECTROSTATICS –

Part 4-2: Standard test methods for specific applications – Electrostatic properties of garments

1 Scope

This part of IEC 61340, which is a technical specification, describes test methods and procedures that can be used to evaluate the electrostatic charging and discharging propensity, field suppression properties and charge dissipation properties of garments and materials from which garments are constructed.

The test methods described are suitable for evaluating garments worn on or about the upper and lower body, including headwear, but excluding footwear, which is covered in other parts of IEC 61340 (see IEC 61340-4-3 and IEC 61340-4-5)[1][1], and excluding gloves and finger cots.

The test methods described may not be suitable for evaluating garments and garment materials in relation to safety of personnel.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TR 61340-1:2012, *Electrostatics – Part 1: Electrostatic phenomena – Principle and measurements*

IEC 61340-2-1:2002, *Electrostatics – Part 2-1: Measurement methods – Ability of materials and products to dissipate static electric charge*

IEC/TR 61340-2-2, *Electrostatics – Part 2-2: Measurement methods – Measurement of chargeability*

IEC 61340-2-3:2000, *Electrostatics – Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation*

IEC 61340-4-9, *Electrostatics – Part 4-9: Standard test methods for specific applications – Garments*

ISO 3175-2, *Textiles – Professional care, drycleaning and wetcleaning of fabrics and garments – Part 2: Procedure for testing performance when cleaning and finishing using tetrachloroethene*

ISO 3175-3, *Textiles – Professional care, drycleaning and wetcleaning of fabrics and garments – Part 3: Procedure for testing performance when cleaning and finishing using hydrocarbon solvents*

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1 Numbers in square brackets refer to the Bibliography.