

INTERNATIONAL STANDARD

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Electrostatics –

Part 2-1: Measurement methods – Ability of materials and products to dissipate static electric charge

Électrostatique –

Partie 2-1: Méthodes de mesure – Capacité des matériaux et des produits à dissiper des charges électrostatiques



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

**Part 2-1: Measurement methods –
Ability of materials and products
to dissipate static electric charge**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61340-2-1 has been prepared by IEC technical committee 101: Electrostatics.

This second edition cancels and replaces the first edition published in 2002. This edition constitutes a technical revision.

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

- a) the first edition supported requirements in IEC TR 61340-5-1, but with the revision of IEC TR 61340-5-1 into an International Standard, this support is no longer required; references to IEC 61340-5-1[1]¹ have been removed;
- b) the introduction gives additional information on when charge decay time measurements are appropriate, and the applications for which each of the two test methods are best suited;
- c) procedures for performance verification of measuring instruments for the corona charging method have been added.

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

CDV	Report on voting
101/446/CDV	101/462/RVC

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.

It has the status of a horizontal standard in accordance with IEC Guide 108[3].

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 website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

¹ Numbers in square brackets refer to the Bibliography.

INTRODUCTION

Measurements of the rate of dissipation of static charge belong to the essential measurement techniques in the field of electrostatics.

For homogeneous conductive materials, this property can be evaluated indirectly by measuring resistance or resistivity parameters. Care should be exercised when determining the homogeneity of materials, as some materials that appear homogenous do exhibit non-homogeneous electrical characteristics. If the homogeneity of materials is not known and cannot be otherwise verified, resistance measurements may not be reliable or may not give enough information. Resistance measurements may also not be reliable when evaluating materials in the dissipative or insulative range and especially for high ohmic materials including conductive fibres (e.g. textiles with a metallic grid). In such cases, the rate of dissipation of static charge should be measured directly.

ELECTROSTATICS –

Part 2-1: Measurement methods – Ability of materials and products to dissipate static electric charge

1 Scope

This part of IEC 61340 describes test methods for measuring the rate of dissipation of static charge of insulating and static dissipative materials and products.

It includes a generic description of test methods and detailed test procedures for specific applications.

The two test methods for measuring charge decay time, one using corona charging and one using a charged metal plate are different and may not give equivalent results. Nevertheless, each method has a range of applications for which it is best suited. The corona charging method is suitable for evaluating the ability of materials, e.g. textiles, packaging, etc., to dissipate charge from their own surfaces. The charged metal plate method is suitable for evaluating the ability of materials and objects such as gloves, finger cots, hand tools, etc. to dissipate charge from conductive objects placed on or in contact with them. The charged plate method may not be suitable for evaluating the ability of materials to dissipate charge from their own surfaces.

In addition to its general application, this horizontal standard is also intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 108.

One of the responsibilities of a technical committee is, wherever applicable, to make use of horizontal standards in the preparation of its publications. The contents of this horizontal standard shall not apply unless specifically referred to or included in the relevant publications.

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 61340-4-6, *Electrostatics – Part 4-6: Standard test methods for specific applications – Wrist straps*

IEC 61340-4-7, *Electrostatics – Part 4-7: Standard test methods for specific applications – Ionization*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.