Electrostatics - Part 2-1: Measurement methods - Ability of materials and products to dissipate static electric charge (IEC 61340-2-1:2015 + IEC 61340-2-1:2015/AMD1:2022)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61340-2-1:2015 +A1:2022 sisaldab Euroopa standardi EN 61340-2-1:2015 ja selle muudatuse A1:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 61340-2-1:2015+A1:2022 consists of the English text of the European standard EN 61340-2-1:2015 and its amendment A1:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 20.11.2015, muudatused A1 12.08.2022.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 20.11.2015, for A1 12.08.2022.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A1] [A1]. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags [A1] [A1]. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 17.220.99; 29.020

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61340-2-1 + A1

November 2015, August 2022

ICS 17.220.99; 29.020

Supersedes EN 61340-2-1:2002

English Version

Electrostatics - Part 2-1: Measurement methods - Ability of materials and products to dissipate static electric charge (IEC 61340-2-1:2015 + IEC 61340-2-1:2015/AMD1:2022)

Electrostatique - Partie 2-1: Méthodes de mesure - Capacité des matériaux et des produits à dissiper des charges électrostatiques
(IEC 61340-2-1:2015 + IEC 61340-2-1:2015/AMD1:2022)

Elektrostatik - Teil 2-1: Messverfahren - Fähigkeit von Materialien und Erzeugnissen, elektrostatische Ladungen abzuleiten
(IEC 61340-2-1:2015 + IEC 61340-2-1:2015/AMD1:2022)

This European Standard was approved by CENELEC on 2015-10-02. Amendment A1 was approved by CENELEC on 2022-07-27. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard and its Amendment A1 exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 101/446/CDV, future edition 2 of IEC 61340-2-1, prepared by IEC/TC 101 "Electrostatics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61340-2-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-07-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-10-02

This document supersedes EN 61340-2-1:2002.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61340-2-1:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated :

IEC 61340-5-1	NOTE	Harmonized as EN 61340-5-1.

A1 Amendment A1 European foreword

The text of document 101/639/CDV, future IEC 61340-2-1/AMD1, prepared by IEC/TC 101 "Electrostatics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61340-2-1:2015/A1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-04-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-07-27

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61340-2-1:2015/AMD1:2022 was approved by CENELEC as a European Standard without any modification. A1

IEC 61340-2-1

Edition 2.1 2022-06
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

colour inside

HORIZONTAL PUBLICATION

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

IEC 61340-2-1:2015-08+AMD1:2022-06 CSV(en)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC 61340-2-1

Edition 2.1 2022-06
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

colour inside

HORIZONTAL PUBLICATION

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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 17.220.99; 29.020

ISBN 978-2-8322-3945-2

Warning! Make sure that you obtained this publication from an authorized distributor.

[Blank page]

CONTENTS

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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;

_____

1 Numbers in square brackets refer to the Bibliography.

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.

〈A1〉 Amendment A1 FOREWORD

Amendment 1 to IEC 61340-2-1:2015 has been prepared by IEC technical committee 101: Electrostatics.

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

Draft	Report on voting
101/639/CDV	101/651/RVC

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 Amendment 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/standardsdev/publications/.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended. 〈A1〉

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, it is possible that resistance measurements will not be reliable or will not give enough information. It is also possible that resistance measurements will not be reliable when evaluating materials in the dissipative or insulative range and especially for high ohmic materials that include 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.

〈A1〉 The two test methods for measuring charge decay time, one using corona charging and one using a charged metal plate are different and it is possible that they will 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, for example textiles, packaging, 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, to dissipate charge from conductive objects placed on or in contact with them. It is possible that the charged plate method will not be suitable for evaluating the ability of materials to dissipate charge from their own surfaces. 〈A1〉

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.

〈A1〉 IEC 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits* 〈A1〉

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*