BS EN IEC 61340-5-3:2022

BSI Standards Publication

Electrostatics

Part 5-3: Protection of electronic devices from electrostatic phenomena — Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

National foreword

This British Standard is the UK implementation of EN IEC 61340-5-3:2022. It is identical to IEC 61340-5-3:2022. It supersedes BS EN 61340-5-3:2015, which will be withdrawn on 2 January 2023.

The UK participation in its preparation was entrusted to Technical Committee GEL/101, Electrostatics.

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

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 04225 2

ICS 17.220.99; 29.020

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2022.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61340-5-3

June 2022

ICS 17.220.99; 29.020

Supersedes EN 61340-5-3:2015

English Version

Electrostatics - Part 5-3: Protection of electronic devices from electrostatic phenomena - Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices (IEC 61340-5-3:2022)

Electrostatique - Partie 5-3: Protection des dispositifs électroniques contre les phénomènes électrostatiques - Classification des propriétés et des exigences relatives à l'emballage destiné aux dispositifs sensibles aux décharges électrostatiques (IEC 61340-5-3:2022)

Elektrostatik - Teil 5-3: Schutz von elektronischen Bauelementen gegen elektrostatische Phänomene - Eigenschaften und Anforderungen für die Klassifizierung von Verpackungen, welche für Bauelemente verwendet werden, die gegen elektrostatische Entladungen empfindlich sind (IEC 61340-5-3:2022)

This European Standard was approved by CENELEC on 2022-06-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 exists 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, Turkey 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

© 2022 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN IEC 61340-5-3:2022 E

AVA Documents Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

European foreword

The text of document 101/649/FDIS, future edition 3 of IEC 61340-5-3, prepared by IEC/TC 101 "Electrostatics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61340-5-3:2022.

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) 2023-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-06-01

This document supersedes EN 61340-5-3:2015 and all of its amendments and corrigenda (if any).

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 61340-5-3:2022 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

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61340-2-3	-	Electrostatics - Part 2-3: Methods of test for determining the resistance and resistivity of solid materials used to avoid electrostatic charge accumulation	EN 61340-2-3	-
IEC 61340-4-8	-	Electrostatics - Part 4-8: Standard test methods for specific applications - Electrostatic discharge shielding - Bags	EN 61340-4-8	-

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

Documents
Document Sharing Hub

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviated terms 7
3.1 Terms and definitions 7
3.2 Abbreviated terms 9
4 Tailoring 9
5 Packaging application requirement 9
5.1 General 9
5.2 Inside an EPA 9
5.3 Outside an EPA 9
6 Classification of ESD packaging material properties 10
6.1 General 10
6.2 Material resistance properties 10
6.2.1 General 10
6.2.2 Resistance of conductive materials 10
6.2.3 Resistance of dissipative materials 10
6.2.4 Resistance of insulating materials 11
6.3 Material electrostatic shielding properties 11
6.3.1 Electrostatic discharge shielding 11
6.3.2 Electrostatic field shielding 11
7 Technical requirements for ESD protective packaging 11
7.1 Packaging and material properties 11
7.2 Packaging marking 12
7.2.1 Classification symbol 12
7.2.2 Packaging classification 13
7.2.3 Traceability 13
Annex A (informative) Guidance on ESD packaging material 14
A.1 Environment and device sensitivity 14
A.1.1 General 14
A.1.2 Environment 14
A.1.3 Device sensitivity 15
A.2 Equipotential bonding 16
A.3 Dissipative material for intimate contact 16
A.4 Packaging from incoming material to the point of use 16
A.5 Periodic verification 17
A.6 Examples of measurement procedures for qualification and verification of packaging 18
Annex B (informative) Device damage 20
B.1 Damage from ESD 20
B.2 Discharge to a device 20
B.2.1 Discharge to device from external objects 20
B.2.2 Retained charge on a packaging 20
B.3 Discharge from a floating device (CDM) 20

AVA Documents
Document Sharing Hub

B.3.1 Discharges from devices in an electric field 20
B.3.2 Discharges from tribo-electrified devices 20
Annex C (informative) Guidance on electric field shielding 21
Annex D (informative) Low charging material property 22
Bibliography 23

Figure 1 – Example of packaging label (*Primary function code) 13
Figure A.1 – Examples of EPA configurations 15
Figure A.2 – Application of ESD protective packaging 17

Table 1 – Test methods for electrostatic protective packaging 12
Table 2 – Test methods and requirements for electrostatic discharge shielding packaging 12
Table 3 – Primary function code and ESD classification symbol 13
Table A.1 – Packaging characteristics for environmental consideration 14
Table A.2 – Examples of qualification and verification of packaging 18

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

Part 5-3: Protection of electronic devices from electrostatic phenomena – Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices

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.

IEC 61340-5-3 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 2015. This edition constitutes a technical revision.

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

a) reference to IEC 61340-4-10[1] [1][2] was removed;
b) material resistance property "electrostatic field shielding" was removed;

[1] Withdrawn.

[2] Numbers in square brackets refer to the bibliography.

Documents
Document Sharing Hub

Full document details: BS EN IEC 61340-5-3:2022