IEC 60335-2-2

Edition 8.0 2026-07

INTERNATIONAL STANDARD

EXTENDED VERSION

This full version of IEC 60335-2-2:2026 includes the content of the references made to IEC 60335-1:2020+AMD1:2025

Household and similar electrical appliances - Safety -
Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

ICS 13.120; 97.080

ISBN 978-2-8327-1394-5

IEC 60335-2-2:2026-07 EXV(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2026 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

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 It also gives information on projects, replaced and withdrawn publications.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, graphical symbols and the glossary. 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 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

IEC 60335-1
Edition 6.0 2020-09

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this Interpretation Sheet is based on the following documents:

Draft	Report on voting
61/5999/DISH	61/6009/RVDISH

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

_____

INTRODUCTION

Edition 6 of IEC 60335-1:2020 defines and introduces requirements for a detachable power supply part of an appliance. In the document, 24.2 prohibits the use of a power supply in a flexible cord.

QUESTION:

Does Subclause 24.2 prohibit the use of a detachable power supply part?

ANSWER

No, a "detachable power supply part" is a defined term and is not captured by the term "power supply" as used in Subclause 24.2.

NOTE A detachable power supply part is captured by the defined term when the output of the power supply part is detachable from the class III construction part of the appliance at:

– the power supply part, or

– the class III construction part of the appliance.

However, the supply cord (if any) does not have to be detachable from the detachable power supply part.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

IEC 60335-1
Edition 6.0 2020-09

Household and similar electrical appliances - Safety - Part 1: General requirements

INTERPRETATION SHEET 2

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
61/7436/DISH	61/7464/RVDISH

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

_____

TC 61 interpretation sheet on: Mechanical shock and vibration testing on large metal-ion batteries of IEC 60335-1:2020

INTRODUCTION

Currently the standard mentions:

> **B.24.1** *The relevant standards for non-acid based electrolyte **cells** employed in **batteries** are IEC 62133-1:2017 for nickel systems and IEC 62133-2:2017 for lithium systems.*
>
> NOTE The requirement for **cells** does not extend to the **battery** itself.
>
> *A **battery** that uses metal-ion chemistry shall additionally be subjected to the tests of Subclauses 7.3.8.1 (vibration) and 7.3.8.2 (mechanical shock) of IEC 62133-2:2017.*

When Annex B was written for the IEC 60335-1 edition 6, the batteries foreseen were for portable applications and rather lightweight. The IEC 62133-2:2017 standard referred to is applicable to portable lithium batteries only.

For non-portable and/or large batteries (mass > 12 kg), the tests of IEC 62133-2 for mechanical shock and vibration are not suitable.

QUESTION:

What test sequence for mechanical shock and vibration can be followed for large batteries?

ANSWER:

For practical reasons, IEC 60335-1 should follow the same differentiation as the UN 38.3 transport test or IEC 62281 standard (Safety of primary and secondary lithium cells and batteries during transport).

For larger batteries with a mass exceeding 12 kg, Subclauses 6.4.3 (Test T-3: Vibration) and 6.4.4 (Test T-4: Shock) of IEC 62281:2019, including AMD1:2021 and AMD2:2023, may be applied.

NOTE 1 The tests are technically identical to Test T.3 and Test T.4 of the UN manual of tests and criteria, section 38.3 rev.8 (2023).

NOTE 2 In accordance with Table 5 of IEC 62281:2019, testing is carried out on the battery without packaging.

CONTENTS

FOREWORD 5
INTRODUCTION IEC 60335-1:2020+AMD1:2025 8
INTRODUCTION to IEC 60335-2-2:2026 10
1 Scope 11
2 Normative references 12
3 Terms and definitions 17
4 General requirement 31
5 General conditions for the tests 31
6 Classification 36
7 Marking and instructions 37
8 Protection against access to live parts 46
9 Starting of motor-operated appliances 49
10 Power input and current 49
11 Heating 51
12 Charging of metal-ion batteries 58
13 Leakage current and electric strength at operating temperature 59
14 Transient overvoltages 62
15 Moisture resistance 62
16 Leakage current and electric strength 66
17 Overload protection of transformers and associated circuits 68
18 Endurance 69
19 Abnormal operation 69
20 Stability and mechanical hazards 81
21 Mechanical strength 82
22 Construction 86
23 Internal wiring 101
24 Components 103
25 Supply connection and external flexible cords 108
26 Terminals for external conductors 117
27 Provision for earthing 120
28 Screws and connections 121
29 Clearances, creepage distances and solid insulation 124
30 Resistance to heat and fire 132
31 Resistance to rusting 137
32 Radiation, toxicity and similar hazards 137
Annex A (informative) Routine tests 155
Annex B (normative) Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances 157
Annex C (normative) Ageing test on motors 183
Annex D (normative) Thermal motor protectors 185
Annex E (normative) Needle-flame test 186
Annex F (normative) Capacitors 187

Annex G (normative) Safety isolating transformers 189
Annex H (normative) Switches 190
Annex I (normative) Motors having basic insulation that is inadequate for the rated voltage of the appliance 192
Annex J (normative) Coated printed circuit boards 194
Annex K (informative) Overvoltage categories 195
Annex L (informative) Guidance for the measurement of clearances and creepage distances 196
Annex M (informative) Pollution degree 199
Annex N (normative) Proof tracking test 200
Annex O (informative) Selection and sequence of the tests of Clause 30 201
Annex P (informative) Guidance for the application of this standard to appliances used in tropical climates 206
Annex Q (informative) Sequence of tests for the evaluation of electronic circuits 208
Annex R (normative) Software evaluation 211
Annex S (informative) Guidance for the application of this standard on measurement of power input and current based on the requirements of 10.1 and 10.2 concerning the representative period 226
Annex T (normative) UV-C radiation effect on non-metallic materials 227
Annex U (normative) Appliances intended for remote communication through public networks 230
Bibliography 235
Index of defined terms 238

Figure 1 – Circuit diagram for leakage current measurement at operating temperature for single-phase connection of class II appliances and for parts of class II construction 139
Figure 2 – Circuit diagram for leakage current measurement at operating temperature for single-phase connection of other than class II appliances or parts of class II construction 140
Figure 3 – Circuit diagram for leakage current measurement at operating temperature for three-phase with neutral class II appliances and for parts of class II construction 141
Figure 4 – Circuit diagram for leakage current measurement at operating temperature for three-phase with neutral appliances other than those of class II or parts of class II construction 142
Figure 5 – Small part 143
Figure 6 – Example of an electronic circuit with low-power points 143
Figure 7 – Test finger nail 144
Figure 8 – Flexing test apparatus 145
Figure 9 – Constructions of cord anchorages 146
Figure 10 – An example of parts of an earthing terminal 147
Figure 11 – Examples of clearances 148
Figure 12 – Example of the placement of the cylinder 149
Figure 13 – Small parts cylinder 150
Figure 14 – Example of a specified operating region of a lithium-ion cell during charging 151
Figure 101 – Probe for measuring surface temperatures 151
Figure 102 – Apparatus for testing the abrasion resistance of current-carrying hoses 152

Figure 103 – Apparatus for testing the resistance to flexing of current-carrying hoses 153
Figure 104 – Configuration of the hose for the freezing treatment 153
Figure 105 – Flexing positions for the hose after removal from the freezing cabinet 154
Figure B.1 – Examples of battery-operated appliance constructions and application of normative Annex B *(1 of 2)* 180
Figure B.2 – Examples of correct polarity connection marking representing three batteries 182
Figure I.1 – Simulation of faults 193
Figure L.1 – Sequence for the determination of clearances 196
Figure L.2 – Sequence for the determination of creepage distances 197
Figure L.3 – Measurement of clearances 198
Figure O.1 – Tests for resistance to heat 201
Figure O.2 – Selection and sequence of tests for resistance to fire in hand-held appliances 202
Figure O.3 – Selection and sequence of tests for resistance to fire in attended appliances 202
Figure O.4 – Selection and sequence of tests for resistance to fire in unattended appliances 203
Figure O.5 – Some applications of the term "within a distance of 3 mm" 205
Figure Q.1 – Flowchart outlining the sequence of tests for the evaluation of electronic circuits *(1 of 2)* 209
Figure R.1 – Examples of software separation 222
Figure S.1 – Flowchart giving guidance on measurement of power input and current concerning the representative period 226

Table 1 – Power input deviation 49
Table 2 – Current deviation 50
Table 3 – Maximum normal temperature rises 54
Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions 57
Table 4 – Voltage for electric strength test 61
Table 5 – Characteristics of high-voltage sources 61
Table 6 – Impulse test voltage 62
Table 7 – Test voltages 68
Table 8 – Maximum winding temperature 72
Table 9 – Maximum abnormal temperature rise 77
Table 20 – Halogen-free cord sets and cords 106
Table 10 – Dimensions of cables and conduits 109
Table 11 – Minimum cross-sectional area of conductors 112
Table 12 – Pull force and torque 114
Table 13 – Nominal cross-sectional area of conductors 119
Table 14 – Torque for testing screws and nuts 122
Table 15 – Rated impulse voltage 125
Table 16 – Minimum clearances 125
Table 17 – Minimum creepage distances for basic insulation 129
Table 18 – Minimum creepage distances for functional insulation 130

Table 19 – Minimum thickness for accessible parts of reinforced insulation consisting of a single layer 132
Table A.1 – Test voltages 156
Table B.1 – Artificial source characteristics 159
Table B.2 – Total area of openings for metal-ion cells 169
Table B.3 – Volume of air injected at 2 070 kPa 169
Table C.1 – Test conditions 183
Table R.1 – General fault/error conditions 213
Table R.2 – Specific fault/error conditions 215
Table R.3 – Semi-formal methods 221
Table R.4 – Software architecture specification 221
Table R.8 – Principles of software partitioning 222
Table R.5 – Module design specification 223
Table R.6 – Design and coding standards 223
Table R.7 – Software safety validation 224
Table T.1 – Minimum property retention limits after UV-C exposure 228
Table U.1 – Acceptable measures against unauthorised access and transmission fault/error modes 232

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

Household and similar electrical appliances - Safety - Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch shall not be held responsible for identifying any or all such patent rights.

This extended version (EXV) of the official IEC Standard provides the user with the full content of the Standard.

IEC 60335-2-2:2026 EXV includes the content of IEC 60335-2-2:2026 and the references made to IEC 60335-1:2020+AMD1:2025.

The specific content of IEC 60335-2-2:2026 is displayed on a blue background.

IEC 60335-2-2 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This eighth edition cancels and replaces the seventh edition published in 2019. This edition constitutes a technical revision.

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

– alignment with IEC 60335-1:2020;
– conversion of some notes to normative text (Clause 1);
– addition of multi-phase central vacuum cleaners to the scope (Clause 1);
– addition of appliances with a blowing or inflating function to the scope (Clause 1, 3.1.9.103, 3.8.102, 3.8.103, 7.12);
– clarification of uses similar to household use (Clause 1, 7.12);
– addition of test probes 18 and 19 for accessibility of live parts (8.1.1, 20.2, B.22.3, B.22.4);
– relocation of the replacement in 19.9 to 19.106;
– clarification that the stability test is not applicable to appliances held in the hand during normal use while also being supported by the floor unless they have a stand or rest (20.1);
– allowance for a detachable power supply part in a flexible cord (6.2, 21.107, 21.108, 24.2);
– clarification of remote operation requirements (22.40, 22.49, 22.51, Annex B 22.40);
– addition of requirements for the supply cord of automatic battery-operated cleaners (25.7);
– addition of a running overload test for brush and traction motors of automatic battery-operated cleaners (B.19.101);
– clarification of requirements for docking stations (30.2);
– addition of requirements for spray extraction appliances (Clause 1, 3.1.9.104, 3.5.105, 5.101, 7.12);
– clarification of requirements for appliances with appliance outlets or socket-outlets (6.1, 19.1, 19.107, 22.61, 25.8);
– addition of requirements for appliances with reservoirs that can be overfilled (15.2);
– clarification of air inlets (3.1.9.101, 11.3, 19.4, 19.10, 19.103, 22.32).

The text of this International Standard is based on the following documents:

Draft	Report on voting
61/7568/FDIS	61/7597/RVD

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

The language used for the development of this International Standard 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.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for vacuum cleaners and water-suction cleaning appliances.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
– unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
– additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

– requirements: in roman type;
– *test specifications: in italic type*;
– notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The following differences exist in the countries indicated below.

6.1: Irrespective of the rated voltage Class 0 appliances are not allowed (Australia, New Zealand).

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances - Safety*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION IEC 60335-1:2020+AMD1:2025

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website –

www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If the functions of an appliance are covered by different parts 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

Throughout this publication, when "part 2" is mentioned, it refers to the relevant part of IEC 60335.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

Individual countries may wish to consider the application of this standard, as far as is reasonable, to appliances not mentioned in a part 2, and to appliances designed on new principles. In this case, consideration should be given to defining normal operation, specifying the classification of the appliance according to Clause 6 and specifying whether the appliance is operated attended or unattended. Consideration should also be given to particular categories of likely users and to related specific risks such as access to live parts, hot surfaces or hazardous moving parts.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of this standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with this standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

– IEC standards published by TC 59 concerning methods of measuring performance;

– CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;

– CISPR 14-2 concerning electromagnetic immunity;

– IEC standards published by TC 111 concerning environmental matters.

INTRODUCTION to IEC 60335-2-2:2026

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

https://www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules can differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

– IEC standards published by TC 59 concerning methods of measuring performance;
– CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
– CISPR 14-2 concerning electromagnetic immunity;
– IEC standards published by TC 111 concerning environmental matters.

1 Scope

This part of IEC 60335 deals with the safety of electric vacuum cleaners and **water-suction cleaning appliances** for household and similar purposes, their **rated voltage** being not more than 250 V for single phase (AC) supplied appliances, direct current (DC) supplied appliances and **battery-operated appliances** and 480 V for multi-phase **centrally-sited vacuum cleaners**.

This standard also applies to vacuum cleaners for animal grooming, **centrally-sited vacuum cleaners**, and **automatic battery-operated cleaners**.

This standard also applies to **spray extraction appliances** in which

– the pressure of the employed liquid solution does not exceed 2,5 MPa;
– the product of the pressure (in MPa) and the flow of liquid solution (in litres per minute) does not exceed 100; and
– the temperature of the liquid solution at the spray nozzle outlet does not exceed 60 °C.

This standard also applies to vacuum cleaners and **water-suction cleaning appliances** provided with a **blowing function** or **inflating function**.

This standard also applies to **motorized cleaning heads** and current-carrying hoses associated with a particular vacuum cleaner or **water-suction cleaning appliance**.

Appliances not intended for normal household use, but which nevertheless can be a source of danger to the public, such as appliances intended to be used by laypersons in shops and other premises for normal housekeeping purposes, are within the scope of this standard.

Examples of appliances for household use are appliances for typical housekeeping functions used in the household environment that can also be used by non-expert users for typical intermittent housekeeping functions:

– in shops, schools and other similar working environments;
– in farm houses;
– by clients in hotels, motels and other residential type environments;
– in bed and breakfast type environments.

NOTE 101 Household environments include the dwelling and its associated buildings, the garden, etc.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

Attention is drawn to the fact that

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can be necessary;
– in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to

– appliances intended exclusively for industrial purposes;
– appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
– wet and dry vacuum cleaners, including power brush, for commercial use (IEC 60335-2-69);
– floor treatment and wet scrubbing machines, including rug shampooers, for household and similar use (IEC 60335-2-10);
– hand-held mains-operated garden blowers, vacuums and blower vacuums (IEC 60335-2-100, IEC 62841-4-6);
– spray extraction machines for commercial use (IEC 60335-2-68);
– high-pressure cleaners and steam cleaners (with a rated pressure not less than 2,5 MPa) (IEC 60335-2-79);
– appliances having vacuum-pressure functions for skin care (IEC 60335-2-115).

2 Normative references

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.

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60112:2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials* [1]

IEC 60127 (all parts), *Miniature fuses*

IEC 60227-5:2024, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 5: Flexible cables (cords)*

IEC 60238, *Edison screw lampholders*

_____

[1] Void

IEC 60245-4*, Rubber insulated cables - Rated voltages up to and including 450/750 V - Part 4: Cords and flexible cables*

IEC 60252-1:2010, *AC motor capacitors – Part 1: General – Performance, testing and rating – Safety requirements – Guidance for installation and operation*
IEC 60252-1:2010/AMD1:2013[2]

IEC 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60320-2-3, *Appliance couplers for household and similar general purposes – Part 2-3: Appliance couplers with a degree of protection higher than IPX0*

IEC 60320-3, *Appliance couplers for household and similar general purposes – Part 3: Standard sheets and gauges*

IEC 60384-14:2023, *Fixed capacitors for use in electronic equipment - Part 14: Sectional specification - Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*[3]

IEC 60417, *Graphical symbols for use on equipment*

IEC 60445, *Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013[4]

IEC 60584-1, *Thermocouples - Part 1: EMF specifications and tolerances*

IEC 60598-1:2024, *Luminaires - Part 1: General requirements and tests*[5]

IEC 60603-11, *Connectors for frequencies below 3 MHz for use with printed boards – Part 11: Detail specification for concentric connectors (dimensions for free connectors and fixed connectors)*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests*
IEC 60664-1:2020/AMD1:2025

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

---

2 There exists a consolidated edition 2.1:2013 that includes edition 2 and its Amendment 1.

3 Void

4 There exists a consolidated edition 2.2:2013 that includes edition 2 and its Amendment 1 and Amendment 2.

5 Void

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60691, *Thermal-links – Requirements and application guide*

IEC 60695-2-11:2021, *Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-2-12, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials*

IEC 60695-2-13, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*

IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*

IEC 60695-11-5:2016, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60730-1:2022, *Automatic electrical controls - Part 1: General requirements*[6]

IEC 60730-2-9, *Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing controls*[7]

IEC 60730-2-10, *Automatic electrical controls for household and similar use – Part 2-10: Particular requirements for motor-starting relays*

IEC 60738-1, *Thermistors – Directly heated positive temperature coefficient – Part 1: Generic specification*

IEC 60747-5-5:2020, *Semiconductor devices - Part 5-5: Optoelectronic devices - Photocouplers*

IEC 60799, *Electrical accessories – Cord sets and interconnection cord sets*

IEC 60906-1, *IEC system of plugs and socket-outlets for household and similar purposes – Part 1: Plugs and socket-outlets 16 A 250 V a.c.*

IEC 60934, *Circuit-breakers for equipment (CBE)*

IEC 60990:2016, *Methods of measurement of touch current and protective conductor current*

IEC 60998-2-1, *Connecting devices for low-voltage circuits for household and similar purposes Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

---

6 Void

7 Void

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-11:2020, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61000-4-13:2002, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*
IEC 61000-4-13:2002/AMD1:2009
IEC 61000-4-13:2002/AMD2:2015[8]

IEC 61000-4-34:2005, *Electromagnetic compatibility (EMC) – Part 4-34: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase*
IEC 61000-4-34:2005/AMD1:2009[9]

IEC 61032, *Protection of persons and equipment by enclosures - Probes for verification*

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

IEC 61058-1-1:2016, *Switches for appliances – Part 1-1: Requirements for mechanical switches*

IEC 61058-1-2:2016, *Switches for appliances – Part 1-2: Requirements for electronic switches*

IEC 61180, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*

IEC 61210, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

---

8 There exists a consolidated edition 1.2:2015 that includes edition 1 and its Amendment 1 and Amendment 2.

9 There exists a consolidated edition 1.1:2009 that includes edition 1 and its Amendment 1.

IEC 61558-1:2017, *Safety of transformers, reactors, power supply units and combinations thereof – Part 1: General requirements and tests*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and combinations thereof - Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers for general applications*

IEC 61558-2-16:2021, *Safety of transformers, reactors, power supply units and combinations thereof - Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units for general applications*[10]

IEC 61770, *Electric appliances connected to the water mains – Avoidance of backsiphonage and failure of hose-sets*

IEC 62133-1, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 1: Nickel systems*

IEC 62133-2:2017[11], *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems*
IEC 62133-2:2017/AMD1:2021

IEC 62151, *Safety of equipment electrically connected to a telecommunication network*

IEC 62471, *Photobiological safety of lamps and lamp systems*

IEC 62471-7, *Photobiological safety of lamps and lamp systems - Part 7: Light sources and luminaires primarily emitting visible radiation*

IEC 62477-1, *Safety requirements for power electronic converter systems and equipment – Part 1: General*

IEC 62821-3*, Electric cables - Halogen-free, low smoke, thermoplastic insulated and sheathed cables of rated voltages up to and including 450/750 V - Part 3: Flexible cables (cords)*

IEC TS 62885-1:2026, *Surface cleaning appliances - Part 1: General requirements on test material and test equipment*

IEC 63010-1, *Halogen-free thermoplastic insulated and sheathed flexible cables of rated voltages up to and including 300/300 V - Part 1: General requirements and cables*

ISO 178, *Plastics – Determination of flexural properties*

ISO 179-1, *Plastics – Determination of Charpy impact properties – Part 1: Non-instrumented impact test*

ISO 180, *Plastics – Determination of Izod impact strength*

ISO 216, *Writing paper and certain classes of printed matter - Trimmed sizes - A and B series, and indication of machine direction*

---

[10] Void

[11] There exists a consolidated edition 1.1:2021 that includes edition 1 and its Amendment 1.

ISO 527 (all parts), *Plastics – Determination of tensile properties*

ISO 1463, *Metallic and oxide coatings – Measurement of coating thickness – Microscopical method*

ISO 2178, *Non-magnetic coatings on magnetic substrates – Measurement of coating thickness – Magnetic method*

ISO 2768-1, *General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 4892-1:2016, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*

ISO 4892-2: 2013, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*

ISO 6344-2:2021, *Coated abrasives - Determination and designation of grain size distribution - Part 2: Macrogrit sizes P12 to P220*

ISO 7000, *Graphical symbols for use on equipment – Registered symbols*

ISO 7010, *Graphical symbols - Safety colours and safety signs - Registered safety signs*

ISO 8256, *Plastics – Determination of tensile-impact strength*

ISO 9772, *Cellular plastics – Determination of horizontal burning characteristics of small specimens subjected to a small flame*

ISO 9773, *Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*

ISO 14688-1, *Geotechnical investigation and testing - Identification and classification of soil - Part 1: Identification and description*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

When the terms "voltage" and "current" are used, they are RMS values, unless otherwise specified.

When the term "earthing" is used, it means "protective earthing", unless otherwise specified.

3.1 Definitions relating to physical characteristics

3.1.1
rated voltage
voltage assigned to the appliance by the manufacturer