

INTERNATIONAL STANDARD



Household and similar electrical appliances – Safety –
Part 2-65: Particular requirements for air-cleaning appliances

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-65: Particular requirements for air-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.
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This commented version (CMV) of the official standard IEC 60335-2-65:2023 edition 3.0 allows the user to identify the changes made to the previous IEC 60335-2-65:2002+AMD1:2008+AMD2:2015 CSV edition 2.2. Furthermore, comments from IEC TC 61 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 60335-2-65 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This third edition cancels and replaces the second edition published in 2002, Amendment 1:2008 and Amendment 2:2015. This edition constitutes a technical revision.

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

- a) alignment with IEC 60335-1:2020;
- b) deletion or conversion to normative text for some notes (Clause 1, 11.8, 16.101);
- c) addition of temperature rise limits for accessible surface (Clause 11);
- d) introduction of test probe 19 (8.1.1, 20.2, B.22.3, B.22.4);
- e) modification of definition of air-cleaning appliance to include self-contained appliance having treatment system other than filter (3.5.101);
- f) addition of symbol IEC 60417-6040 for UV radiation air-cleaning appliances in place of the substance of the marking (7.1, 7.6, 7.12);
- g) clarifications on remote operation for air cleaning appliances (22.40, 22.49, 22.51);
- h) removal of requirements for UV-C resistant materials and UV exposure that are now covered by Part 1 (22.106, 23.101, 32.102, Annex AA).

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

Draft	Report on voting
61/7012/FDIS	61/7074/RVD

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

IEC 60335-2-65:2023

https://www.iec.ch/members_experts/refdocs/60335-2-65-2023 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/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: Particular requirements for air-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 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.

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.

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INTRODUCTION

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 ~~may~~ 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 and generic standards~~ 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. ~~For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.~~ 1

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. 2

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-65: Particular requirements for air-cleaning appliances

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **air-cleaning appliances** for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances including direct current (DC) supplied appliances and **battery-operated appliances**. **3**

Appliances not intended for normal household use but that nevertheless ~~may~~ can be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

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 knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

NOTE 101—Attention is drawn to the fact that

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

NOTE 102—This standard does not apply to

- **air-cleaning appliances** where harmful radiation is intentionally emitted from the appliance; **4**
- 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);
- air-cleaning systems incorporated in the building structure;
- appliances for medical purposes (IEC 60601 series). **5**

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

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

~~ISO 4892-4:2013, Plastics — Methods of exposure to laboratory light sources — Part 4: Open-flame carbon-arc lamps~~

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 ~~Replacement~~ Modification:

Replace the first paragraph with the following: **6**

~~normal operation~~

operation of the appliance as supplied or with high-voltage output circuits short-circuited, whichever is more unfavourable

3.5 Definitions relating to types of appliances

3.5.101

air-cleaning appliance

self-contained appliance having a filter system or other treatment system that ~~may~~ can incorporate means for ionizing the air **7**

3.5.102

UV-C emitter

radiating source constructed to emit non-ionizing electromagnetic energy at wavelengths of 100 nm to 280 nm

3.5.103

UV radiation air-cleaning appliance

appliance that incorporates **UV-C emitters** to inactivate air-borne microbes

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.101 *Appliances are tested as motor-operated appliances.*

6 Classification

This clause of Part 1 is applicable.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

UV radiation air-cleaning appliances containing replaceable **UV-C emitters** shall be marked with the type reference of the emitter and with the symbol IEC 60417-6040 (2010-08) **8** or the substance of the following warning:

WARNING: UV radiation is dangerous for the eyes and skin. Do not operate the UV-C emitter outside the appliance.

If it is intended that replacement of the **UV-C emitter** can be carried out by the user, the appliance shall be marked with the substance of "Read the instructions" or with symbol ISO 7000-0790 (2004-01).

7.6 Addition:



[symbol IEC 60417-6040
(2010-08)]

ultraviolet radiation,
instructional safeguard **9**

7.12 Addition:

The instructions shall include details for cleaning and other **user maintenance** of the appliance. They shall state that prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains.

The instructions for **UV radiation air-cleaning appliances** shall give details concerning:

- the method, frequency of cleaning, and necessary precautions to be taken;
- precautions to be taken when replacing **UV-C emitters** and starters, if applicable.

The instructions of appliances containing **UV-C emitters** shall ~~contain the substance of~~ include the following:

- If the replacement of the **UV-C emitter** by the user is not allowed, this must be clearly stated; and
- the substance of the following:
 - This appliance contains a UV-C emitter;
 - Appliances that are obviously damaged must not be operated;
 - Unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in little doses, cause harm to the eyes and skin.

The instructions of appliances containing replaceable **UV-C emitters** shall also contain the substance of the following:

- Read the maintenance instructions before opening the appliance;
- The appliance must be disconnected from the supply before replacing the UV-C emitter;
- Replaceable UV-C emitters must only be replaced by the types indicated in the instructions;
- Replacing ozone-free UV-C emitters with those that are not ozone-free can cause health hazards to people in the area where the device is operated. **10**

If the symbol IEC 60417-6040 (2010-08) is used, the meaning shall be explained. **11**

7.12.1 Addition:

Instructions for **fixed appliances** intended for installation above 850 mm in normal use shall include the substance of the following:

Do not mount this product lower than 850 mm from the floor. **12**

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 Addition:

*Test probe 18 of IEC 61032 is not applied to appliances that according to the instructions are required to be mounted at a height exceeding 1,8 m above the floor. **13***

*For parts of appliances situated not more than 850 mm above the floor after installation or in normal use, in addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied as specified for test probe 18. **14***

8.1.3 Addition:

Test probe 19 of IEC 61032 is not applied.

8.1.4 Addition:

*The discharge from parts that are only accessible after the removal of a cover for cleaning or other **user maintenance** is measured 2 s after the cover has been removed.*

9 Starting of motor-operated appliances -65:2023

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This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3 Addition:

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of $4\text{ N} \pm 1\text{ N}$ to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

*The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used. **15***

11.7 Replacement Modification:

Replace the first paragraph with the following: **16**

Appliances are operated until steady conditions are established.

11.8 Modification:

Replace the first paragraph with the following:

*During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101. **17***

Addition:

*The temperature rise of handles or grips of vents and air shutters shall not exceed the value specified in Table 3 for surfaces of handles, knobs, grips and similar parts which are held for short periods only in normal use. **18***

~~NOTE 101~~—*Operation of a current-limiting device in a high-voltage circuit is allowed.*

Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	Temperature rise of external accessible surfaces ^a K	
	Surfaces situated not more than 850 mm from the floor when installed or in normal use	Other surfaces
Bare metal	38	42
Coated metal ^b	42	49
Glass and ceramic	51	56
Plastic and plastic coating > 0,4 mm ^{c, d}	58	62

NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.

^a Temperature rise on surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.

^b Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.

^c The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.

^d When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.

12 Void Charging of metal-ion batteries

This clause of Part 1 is applicable. **19**

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.