IEC 60335-2-105

Edition 3.0 2026-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances - Safety - Part 2-105: Particular requirements for multifunctional shower cabinets

Appareils électrodomestiques et analogues - Sécurité - Partie 2-105: Exigences particulières pour les cabines de douche multifonctions

ICS 13.120, 97.170

ISBN 978-2-8327-1060-9

IEC 60335-2-105:2026-02(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Household and similar electrical appliances - Safety - Part 2-105: Particular requirements for multifunctional shower cabinets

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IEC 60335-2-105 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 2016 and Amendment 1:2019. 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) conversion of some notes to normative text (Clause 1);
c) updates to the surface temperature requirements (11.8, Table 101).

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

Draft	Report on voting
61/7539/FDIS	61/7543/RVD

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 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 multifunctional shower cabinets.

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.

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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

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 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 clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **multifunctional shower cabinets** and electric **separate multifunctional shower units** 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 DC supplied appliances.

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 laymen in hotels, fitness centres and similar locations, 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 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 water supply authorities, the national authorities responsible for the protection of labour and similar authorities;
– in many countries, mechanical strength, impact resistance and shattering properties of shower enclosures can be covered by national regulations.

If an appliance incorporates a part that is within the scope of IEC 60598 series or IEC 62368 series, the part is tested in accordance with the relevant standard as far as reasonable.

This standard does not apply to

– instantaneous water heaters used for showering (IEC 60335-2-35);
– shower-boost pumps (IEC 60335-2-41);
– appliances intended for medical 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).

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.5 Definitions relating to types of appliances

3.5.101
multifunctional shower cabinet
prefabricated shower cabinet that incorporates at least one other function, such as a steam bath, in addition to the showering function

Note 1 to entry: An example of a **multifunctional shower cabinet** is shown in informative Annex AA.

3.5.102
separate multifunctional shower unit
multifunctional shower unit without a prefabricated shower cabinet that incorporates at least one electric function in addition to the showering function

Note 1 to entry: An example of a **separate multifunctional shower unit** is shown in informative Annex BB.

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.

5.4 *Addition:*

When testing a function of the appliance, the influence of another function that can be applied simultaneously is taken into account.

5.6 *Addition:*

Sensing elements located in the air intake to the heater are short-circuited or otherwise rendered inoperative.

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 *Addition:*

Multifunctional shower cabinets and **separate multifunctional shower units** shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 *Addition:*

Appliances with an air-heating function, other than those having the air outlet located at a height at least 1,8 m above the floor or those that cannot be covered, shall be marked near the air outlet with symbol IEC 60417-6096 (2012-01) or with the substance of the following:

WARNING: Do not cover

Appliances shall be marked on or near the lampholder with the maximum power input of replaceable lamps as follows:

Lamp max .... W

The word "lamp" may be replaced by symbol IEC 60417-5012 (2002-10).

If the temperature of a water or steam outlet, excluding the shower head and the water outlets when the water is not heated by the **multifunctional shower cabinet** or **separate multifunctional shower unit** itself, exceeds 60 °C, the appliance shall be marked near the outlet with the symbol IEC 60417-5041 (2002-10) or with the substance of the following:

CAUTION: Hot surface

7.6 *Addition:*

[symbol IEC 60417-5041 (2002-10)] caution, hot surface

[symbol IEC 60417-6096 (2012-01)] do not cover

7.12 *Addition:*

The instructions shall provide details concerning cleaning to ensure hygienic conditions.

The instructions shall state that separate electrical appliances producing steam or humidity are not to be used inside the cabinet.

If symbol IEC 60417-5041 (2002-10) or symbol IEC 60417-6096 (2012-01) are marked on the appliance, their meaning shall be explained.

The instructions shall state the substance of the following:

WARNING: Only allow children to use the appliance without supervision when adequate instructions have been given so that the child is able to use the appliance in a safe way and understands the hazards of improper use.

7.12.1 *Addition:*

The instructions shall make reference to national wiring rules and state the substance of the following:

– earthed appliances must be permanently connected to fixed wiring;
– the appliance should be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

The instructions shall give details on how to follow the wiring rules, for example by ensuring that the installation is in the correct zone and that equipotential bonding is carried out.

7.14 *Addition:*

The height of symbol IEC 60417-5041 (2002-10) and symbol IEC 60417-6096 (2012-01) shall be at least 15 mm. The height of the uppercase letters in the words "CAUTION Hot surface" and "WARNING Do not cover" shall be at least 6 mm.

7.15 *Addition:*

Symbol IEC 60417-5041 (2002-10) shall be marked near the outlet for hot water or steam.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.4 *Modification:*

Replace the first paragraph including the two dashed items with the following:

Any energized part is considered to be a **live part** except water level sensors

– at **safety extra-low voltage** not exceeding 12 V;
– within an earthed metal enclosure; and
– in an appliance permanently connected to the fixed wiring.

9 Starting of motor-operated appliances

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.

11.4 *Addition:*

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or ***electronic circuits****, and the power input is lower than the* ***rated power input****, the test is repeated with the appliance supplied at 1,06 times* ***rated voltage****.*

11.6 *Addition:*

***Combined appliances** are operated as **heating appliances**.*

11.7 *Modification:*

Replace the first paragraph with the following:

Appliances are operated until steady conditions are established.

11.8 *Addition:*

*The temperature rises of warm air and external **accessible surfaces** within the shower cabinet that are likely to be in contact with the skin shall not exceed the values shown in Table 101.*

*The temperature rise of motors, transformers and components of **electronic circuits**, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times **rated power input**.*

Table 101 – Maximum temperature rises for air outlets and specified external accessible surfaces within the shower cabinet under normal operating conditions

Surface and air [a, b]	***Temperature rise*** *K*
Bare metal	*26*
Coated metal [c]	*26*
Glass and ceramic	*31*
Rubber, plastic and coating of rubber or plastic > 0,4 mm [d, e]	*35*
Warm air for warming parts of the human body [f]	*40*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.	
[a] *The temperature at the steam outlet is not measured.* [b] *Surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.* [c] *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.* [d] *When the thickness of plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limit for glass and ceramic material for underlying glass or ceramic apply.* [e] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.* [f] *The air temperature is measured 50 mm from the air outlet.*	

12 Charging of metal-ion batteries

This clause of Part 1 is applicable.

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.