



INTERNATIONAL STANDARD

COMMENTED VERSION

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

Sample Document

get full document from standards.iteh.ai



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 Varembe
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 It also gives information on projects, replaced and withdrawn publications.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.

CONTENTS

FOREWORD	3
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General requirement.....	8
5 General conditions for the tests	8
6 Classification.....	8
7 Marking and instructions.....	9
8 Protection against access to live parts.....	10
9 Starting of motor-operated appliances	10
10 Power input and current.....	10
11 Heating.....	11
12 Void Charging of metal-ion batteries.....	12
13 Leakage current and electric strength at operating temperature.....	12
14 Transient overvoltages	12
15 Moisture resistance	12
16 Leakage current and electric strength.....	12
17 Overload protection of transformers and associated circuits	12
18 Endurance	13
19 Abnormal operation	13
20 Stability and mechanical hazards.....	13
21 Mechanical strength	13
22 Construction	14
23 Internal wiring.....	15
24 Components	15
25 Supply connection and external flexible cords	15
26 Terminals for external conductors	15
27 Provision for earthing	15
28 Screws and connections	15
29 Clearances, creepage distances and solid insulation	15
30 Resistance to heat and fire	15
31 Resistance to rusting	16
32 Radiation, toxicity and similar hazards.....	16
Annexes	17
Annex R (normative) Software evaluation	18
Annex AA (informative) Example of a multifunctional shower cabinet.....	19
Annex BB (informative) Example of a separate multifunctional shower unit.....	20
Bibliography.....	21
List of comments.....	22

Figure AA.1 – Example of a multifunctional shower cabinet	19
Figure BB.1 – Example of a separate multifunctional shower unit	20
Table 101 – Maximum temperature rises for air outlets and specified external accessible surfaces within the shower cabinet under normal operating conditions	11

Sample Document

get full document from standards.iteh.ai

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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>. IEC shall not be held responsible for identifying any or all such patent rights.

This commented version (CMV) of the official standard IEC 60335-2-105:2026 edition 3.0 allows the user to identify the changes made to the previous IEC 60335-2-105:2016+AMD1:2019 CSV edition 2.1. 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 60335-2-105 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.

Sample Document

get full document from standards.iteh.ai

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**

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 **3** appliances.

Appliances not intended for normal household use but which nevertheless ~~may~~ 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.

~~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 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.

~~NOTE 102~~—If an appliance incorporates a part that is within the scope of ~~IEC 60065~~, IEC 60598 series or ~~IEC 60950~~ IEC 62368 series, the part is tested in accordance with the relevant standard as far as reasonable.

~~NOTE 103~~—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 ~~except as follows~~.

~~Addition:~~

~~ISO 3864 1:2011, Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings~~

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:

~~For~~ 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 60417-5641 (2002-10) combined with the prohibition sign in ISO 3864-1, except for colours,~~ IEC 60417-6096 (2012-01) **4** 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



~~do not cover~~



[symbol IEC 60417-6096
(2012-01)]

do not cover

~~NOTE 101 The "Do not cover" symbol incorporates symbol IEC 60417-5641 (2002-10) combined with the prohibition sign of ISO 3864-1, except for colours.~~

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 ~~“Do not cover”~~ 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 ~~“Do not cover”~~ 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 ~~air~~ 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: **5**

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 ~~Replacement~~ Modification:

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

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 **7** 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 **8**

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
Accessible surfaces within the shower cabinet likely to be in contact with the skin, ^{a, b}	
— if of metal	26
— if of coated metal ^c	26
— if of porcelain or vitreous material	31
— if of rubber or of plastic having a thickness exceeding 0,4 mm ^d	35
Warm air for warming parts of the human body ^{e, f}	40
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.	

Surface and air ^{a, b}	Temperature rise K
<p>^a The temperature at the steam outlet is not measured.</p> <p>^b Surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.</p> <p>^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.</p> <p>^d When the thickness of plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal or ^{of} for underlying metal apply or the temperature rise limit for glass and ceramic material for underlying glass or ceramic apply.</p> <p>^{d_e} The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.</p> <p>^{e_f} The air temperature is measured 50 mm from the air outlet.</p>	

12 ~~Void~~ Charging of metal-ion batteries

This clause of Part 1 is applicable. **9**

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.1 Addition:

*Traces of water on insulation in components operating at **safety extra-low voltage** not exceeding 12 V are ignored.*

15.1.1 Addition:

The inside of the shower cabinet is subjected to the test described in IEC 60529:1989, 14.2.5.

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 Addition:

Appliances having an air-heating function are also subjected to the test of 19.101.

19.2 Addition:

For appliances having a steam bath function, the test is carried out without water being supplied.

Appliances incorporating a fan are also tested without the motor operating, air inlets and guards not being covered.

19.101 *Appliances having an air-heating function with a heater having an enclosure substantially made of non-metallic material are operated as specified in Clause 11, except that the motor is supplied separately at its **working voltage**. Thermal controls that operate during the test of Clause 11 are short-circuited.*

*When steady conditions are established, the voltage applied to the motor is reduced until the running speed of the motor is just sufficient to prevent a **thermal cut-out** from operating, the voltage applied to the heating elements being maintained at the value used for 11.4.*

*To determine the minimum voltage without the **thermal cut-out** operating, the voltage of the motor is reduced by 5 % and the motor is operated for 5 minutes. This procedure is repeated until a **thermal cut-out** operates. The voltage is then increased by 5 %, this being considered the voltage just sufficient to prevent a **thermal cut-out** from operating.*

Under these conditions, the heater is again operated until steady conditions are established or for 1 h, whichever is longer.

*After this period, the airflow is further restricted to verify that a **thermal cut-out** operates.*

~~NOTE—The reduced voltage applied to the motor may be determined as follows. The voltage is reduced by 5 % and the motor is operated under this condition for 5 min. This procedure is repeated until a **thermal cut-out** operates. The voltage is then increased by 5 %, this being the reduced voltage to be used for the test. 10~~

20 Stability and mechanical hazards

This clause of Part 1 is applicable.

21 Mechanical strength

This clause of Part 1 is applicable.