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Edition 3.0 2024-09
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

Household and similar electrical appliances – Safety – Part 2-61: Particular requirements for thermal storage room heaters

IEC 60335-2-61:2024-09 CMV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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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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 60335-2-61:2024 edition 3.0 allows the user to identify the changes made to the previous IEC 60335-2-61:2002+AMD1:2005+AMD2:2008 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 60335-2-61 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 1:2005 and Amendment 2:2008. 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 of some notes to normative text (Clause 1, 7.1, 10.1, 19.3.102, 24.101);
c) application of test probe 19 has been introduced (8.1.1, 20.2);
d) temperature limits have been updated and requirements for measurement were defined (Clause 11.3, 11.8, Table 101);
e) implementation of Figure 101 with the probe for measuring surface temperatures.

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

Draft	Report on voting
61/7268/FDIS	61/7291/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.

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.

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 thermal-storage room heaters.

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 differing practices, of a less permanent nature exist in the countries indicated below.

– 7.1: All thermal-storage room heaters have to be marked with a warning against covering (Sweden).

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.

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.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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 2-61: Particular requirements for thermal-storage room heaters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **thermal-storage room heaters** for household and similar purposes that are intended to heat the room in which they are located, 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. 3

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~~ laypersons 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 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

– this standard only applies to self-contained **thermal-storage room heaters**. However, it ~~may~~ can be used as a guide, in so far as it reasonably applies, to determine the requirements and test specifications for other **thermal-storage room heaters**;
– for heaters incorporating direct-acting heating elements, IEC 60335-2-30 is also applicable;
– for heaters 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

– appliances intended exclusively for industrial purposes;
– heaters incorporated in the building structure;
– central heating systems;
– heaters for saunas (IEC 60335-2-53);
– flexible sheet heating elements for room heating (IEC 60335-2-96);
– heaters 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:

IEC 60335-2-30, *Household and similar electrical appliances – Safety – Part 2-30: Particular requirements for room heaters*

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

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs ~~in workplaces~~ and ~~public areas~~ safety markings*

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:*
normal operation

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

The heater is operated in cycles, each cycle having a duration of 24 h and consisting of a charging period and a discharging period. The charging period is terminated when all heating elements are disconnected for the first time by the devices controlling the temperature of the core (charge controls).

~~3.104~~3.1.101
rated charging period
longest uninterrupted charging period assigned to the heater by the manufacturer

~~3.105~~3.1.102
rated charge
energy consumption assigned to the heater by the manufacturer for a **rated charging period**

3.5 Definitions relating to types of appliances

3.5.101
thermal-storage room heater
heater constructed to store heat obtained from electrical energy in a heat-accumulating core and to discharge it at any time

3.5.102
controlled-output heater
thermal-storage room heater, the heat output of which can be controlled by means such as fans, shutters or flaps

3.5.103
free-output heater
thermal-storage room heater, the heat output of which is discharged by natural convection and radiation and can only be varied by adjusting the charge

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.

5.5 *Addition:*

*For **controlled-output heaters** having auxiliary air-outlets, air is discharged only through the main outlet into the room where the heater is situated.*

NOTE 101 Movable parts include accessories supplied with the heater, such as shelves and humidifiers.

5.6 *Addition:*

***Thermostats** sensitive to the room air temperature, such as those having a sensing element located in the air-inlet, are short-circuited.*

5.9 *Addition:*

When it is specified that direct-acting heating elements are operated together with the storage heating elements, this only applies if allowed by the construction.

6 Classification

The clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Replace the first paragraph with the following:

Thermal-storage room heaters shall be **class I**, **class II** or **class III**.

7 Marking and instructions

The clause of Part 1 is applicable except as follows.

7.1 *Modification:*

Appliances shall be marked with **rated power input**.

Addition:

Appliances shall be marked with

– the **rated charging period**, in hours;
– the mass of the assembled appliance, in kilograms.

For appliances provided with more than one means of connection to the supply, each supply circuit shall be marked with **rated voltage**, **rated power input** and the symbol for nature of supply.

If the temperature rises determined during the tests of Clause 19 exceed the limits specified in Clause 11, appliances shall be marked with symbol ~~IEC 60417-5641 (DB:2002-10) combined with the prohibition sign of ISO 3864-1, except for colours~~ IEC 60417-6096 (2012-01) **4**, or with the substance of the following:

– WARNING: Do not cover.

~~NOTE 101 This marking may be on a label that is permanently attached to the appliance.~~

7.6 *Addition:*

~~Do not cover~~

~~NOTE This symbol incorporates symbol IEC 60417-5641(DB:2002-10) combined with the prohibition sign of ISO 3864-1, except for colours.~~

[symbol IEC 60417-6096 (2012-01)] do not cover **5**

7.10 *Addition:*

Charging controls shall not be marked with the **off position** unless they have a contact separation in all poles to provide full disconnection under overvoltage category III conditions. However, disconnection of the neutral pole is not required for single phase appliances permanently connected to a system with an earthed neutral (TN-S-C system).

7.12 *Addition:*

The instructions shall be given on a durable card or in a booklet and shall include the substance of the following:

– these instructions should be retained for future reference;

– fumes may be emitted during the first few operations of the heater and the room should be kept well ventilated.

The instructions shall also include

– the **rated charge**;

– the minimum distance to be maintained between the heater and combustible materials, such as furniture and curtains.

If the temperature rises determined during the tests of Clause 19 exceed the limits specified in Clause 11, the instructions shall include the substance of the following:

– do not cover;

– do not place objects in contact with the heater.

If ~~the "Do not cover"~~ symbol IEC 60417-6096 (2012-01) **6** is marked on the appliance, its meaning shall be explained.

7.12.1 *Addition:*

The installation instructions shall include the substance of the following:

– the installation of the heater should be carried out by trained personnel;
– if, during reassembly of the heater, a part of the thermal insulation shows damage or deterioration, it should be replaced by an identical part;
– to maintain stability, it is essential that the heater is placed on a level surface and care should be taken to avoid irregular surfaces, such as may result from carpets or tiled surrounds partially protruding under the heater.

The installation instructions shall also include

– a circuit diagram with a clear indication of the terminals;
– details for fixing the heater to the floor or for fixing the heater to the wall, including the minimum mounting height (if applicable).

7.14 *Addition:*

The height of ~~the "Do not cover"~~ symbol IEC 60417-6096 (2012-01) **7** shall be at least 15 mm.

The height of the words "Do not cover" shall be at least 3 mm.

Compliance is checked by measurement.

7.15 *Addition:*

The marking concerning covering shall be visible after the heater has been installed.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

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 wherever test probe 18 is used and with the same test conditions used for test probe 18. **8**

8.1.3 *Addition:*

Test probe 19 is not applied.

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 except as follows.

10.1 *Addition:*

Heaters are installed as specified in 11.2.

The power input of the storage heating elements is measured during the charging period, any fans, shutters, flaps and similar devices being adjusted to cause minimum heat discharge.

The power input of direct-acting heating elements is measured during a discharge period, any fans, shutters, flaps and similar devices being adjusted to cause maximum heat discharge.

The total power input for each means of connection to the supply is measured with all controls adjusted to the position resulting in the highest power input.

~~NOTE 101~~ *For heaters incorporating motors, the tolerances specified for heating appliances apply.*

10.101 The heater shall accept at least 100 % of the **rated charge.**

*Compliance is checked by measuring the energy consumption for one **rated charging period**. The heater is initially at room temperature and is operated at **rated power input**. Charge controls, if adjustable by the user, are placed at the maximum setting. Any fans, shutters, flaps and similar devices are adjusted to cause minimum heat discharge.*

11 Heating

The clause of Part 1 is applicable except as follows.

11.2 *Replacement:*

***Built-in appliances** are built in.*

Other heaters are placed in a test corner.

Dull black-painted plywood approximately 20 mm thick is used for the test corner and for the installation of built-in heaters. The test corner extends at least 300 mm beyond the heater. A wooden board, having a height of 120 mm and a thickness of 15 mm, is fixed along the full length of the walls of the test corner and in contact with the floor.

Apertures on the underside of the heater that are within 25 mm of the floor are blocked.

Heaters are positioned in the test corner as follows:

- *heaters normally used on a floor are placed on the floor as near to the walls as possible;*
- *heaters normally fixed to a wall are mounted on one of the walls, as near to the other wall and to the floor as is likely, unless otherwise stated in the installation instructions.*

*If a **stationary heater** has an opening at floor level, a felt pad 20 mm thick is placed on the floor and pushed without appreciable force into the opening as far as the construction will permit. If a guard is provided or if the opening is too small to permit the entry of the pad, the pad is pushed as close as possible against the opening.*

NOTE The purpose of the felt pad is to simulate a carpet that might restrict the airflow.

A dull black-painted plywood block having dimensions of 75 mm × 75 mm × 20 mm is placed on the floor of the test corner under the hottest part of the heater, if possible.

11.3 *Addition:*

The temperature rises of the felt pad and the plywood block are also determined by means of thermocouples attached to the small blackened disks.

Thermocouples are placed on the surface of the felt pad and on the centre of the plywood block.

*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 N ± 1 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. **9**

11.6 Replacement:

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

11.7 ~~*Replacement*~~ *Modification:*

Replace the first paragraph with the following:

***Controlled-output heaters** are subjected to three cycles of **normal operation** and **free-output heaters** are subjected to two cycles of **normal operation**.*

The heater is charged until the charge control operates for the first time.

*For **controlled-output heaters**, during the discharge period for the first and third cycles of operation, shutters, flaps and similar devices are adjusted to cause minimum heat discharge. During this period, fans are operated at minimum speed or are switched off, if possible. For the second cycle of operation, fans, shutters and similar devices are adjusted to cause maximum heat discharge during the discharge period and are operated 15 min after the end of the charging period.*

*If it is likely that higher temperature rises will result if fans, shutters, flaps and similar devices are adjusted to cause intermediate heat discharge, an additional cycle of **normal operation** is carried out under these conditions.*

If direct-acting heating elements can be operated simultaneously, they are energised during the test.

11.8 *Modification:*

In Part 1, add the following to footnote "k" of Table 3: "*Similar parts held for short periods include handles or grips of vents and air shutters*." **10**

Addition:

In Table 3, heaters are considered liable to be operated continuously for long periods.

The temperature rises of surfaces of heaters shall not exceed the values shown in Table 101, the measurements commencing 20 min after the end of the charging period.

Table 101 – Temperature rises ~~of surfaces~~ for specified external accessible surfaces under normal operating conditions 11

Surface [a]	*Temperature rise* *K*
Heaters for mounting at high level	*No limit*
Fireguards and their immediate surrounds [f]	*No limit*
Air-outlet grilles [d] *and their immediate surrounds* [f] *that are accessible to the test ~~rod~~ probe* [e]*:*	
– *for heaters incorporating fans, having the air outlet grille* [d] *located on the sides or front of the heater;*	*175*
– *for other heaters.*	*130*
Other surfaces that are accessible to the test ~~rod~~ probe [e]*:*	~~*85*~~
– *of bare metal*	*85*
– *of glass, ceramic, plastic* [c] *or coated metal* [b]	*100*
Surface of the felt pad or plywood block	*60*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.	
[a] *Temperature rises are not measured on:* – *the underside/base of appliances intended to be used on a working surface or floor provided that the clearance from the floor is less than 30 mm;* – *the rear/back surface of wall-mounted appliances that is parallel to the wall when according to the instructions, shall be placed against a wall or have a wall clearance less than 30 mm when wall-mounted;* – *surfaces that are not accessible with test probe 41 of IEC 61032;* – *surfaces which are not accessible to the test probe e and which are intentionally heated by an internal heat source and which have to be hot to carry out the intended function of the appliance.* [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] *If the air-outlet grille cannot be identified and the air is emitted through a substantial part of the enclosure, the temperature rise limits for surfaces that are accessible to the test probe e apply.* [e] *The test ~~rod~~ probe is 75 mm in diameter, of unrestricted length and with a hemispherical end.* [f] *Immediate surrounds are the surfaces within a distance of 100 mm from the air-outlet grille measured vertically above the openings and within a distance of 25 mm in the other directions. See informative Annex AA for typical cross-sections of immediate surrounds of air-outlets.*	

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

This clause of Part 1 is applicable. 12

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.1 *Modification:*

The tests are carried out at the end of the charging period of the last cycle of operation specified in 11.7, before operation of the charge control.

The tests are also carried out with motors and direct-acting heating elements operating during the discharge period.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 *Addition:*

For appliances having a horizontal surface at the top, 0,25 l of ~~water containing approximately 1 % NaCl~~ the spillage solution **13** *is poured over the top of the appliance during a period of 5 s.*

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 *Modification:*

Instead of the tests specified, appliances are subjected to the tests of 19.3, 19.11, 19.12 and 19.101.

Appliances incorporating motors are also subjected to the test of 19.7.

19.3 *Replacement:*

Appliances are operated as specified in Clause 11 but under the conditions of 19.3.101 to 19.3.104, the power input being 1,24 times ***rated power input****.*

19.3.101 ***Controlled-output heaters*** *are subjected to one cycle of* ***normal operation*** *under conditions of minimum heat discharge.*

19.3.102 *Heaters are subjected to one cycle of* ***normal operation*** *under conditions of maximum heat discharge.*

During the discharge period, a woollen blanket having a specific mass of approximately 470 g/m^2 and having the same width as the heater is placed from the wall, over the top and down the front of the heater.

~~NOTE~~ *The blanket between the wall and the heater is allowed to drop behind the heater. Care is to be taken to ensure that the blanket is not held away from the front of the heater.*

The temperature rise of the surface of the heater under the blanket is determined.

19.3.103 *Heaters are subjected to one cycle of **normal operation** under conditions of maximum heat discharge.*

During the discharge period, a black-painted plywood board is placed in the most unfavourable position against the front surface of the heater. The board has a thickness of 13 mm, its height is at least equal to the height of the heater and its width equal to 75 % of the width of the heater or 60 cm, whichever is greater.

Direct-acting heating elements are in operation.

The temperature rise of the board is determined by means of thermocouples attached to the back of small blackened disks of copper or brass 15 mm in diameter and 1 mm thick. The front of the disk is flush with the surface of the board.

19.3.104 *Heaters are subjected to one cycle of **normal operation** under conditions of maximum heat discharge.*

During the discharge period, a folded woollen blanket having a specific mass of approximately 470 g/m^2 is placed on top of the heater. The blanket has the same width as the length of the heater and is folded into six thicknesses, each fold being equal in width to the distance from the front of the heater to the wall.

The temperature rise of the surface of the heater under the blanket is determined.

The temperature rise of the air is determined, commencing 20 min after the end of the charging period. The measurement is made at a distance of 10 mm from the air-outlet grille using the device shown in ~~Figure 101~~ Figure 102.

19.13 *Addition:*

During the tests of 19.3, the temperature rises of the plywood board and the surfaces of the heater under the blanket shall not exceed 180 K.

The temperature rise of the air shall not exceed 180 K.

19.101 *Appliances are operated under **normal operation** and supplied at **rated voltage**. The following fault conditions are introduced one at a time for one cycle of operation, fans, shutters, flaps and similar devices being adjusted to cause the most unfavourable conditions:*

– *interrupting one of the phases of the supply;*
– *short-circuiting any control that operates during the test of Clause 11;*
– *simulating failure of the air-mixing device in the most unfavourable position, unless it can only fail in a safe position.*

NOTE 1 Failure of the air-mixing device can be simulated by rendering the control inoperative.

NOTE 2 The tests ~~are~~ can be limited to those conditions that ~~may be~~ are expected to give the most unfavourable results.

If the air-mixing device is provided with more than one control, these are rendered inoperative in turn.

During the test simulating failure of the air-mixing device, temperature rises shall not exceed

– *for air-outlet grilles and immediate surrounds*
  - *180 K, for heaters incorporating fans and having the air-outlet grille located on the front or sides,*
  - *180 K, for other heaters during the first 5 min and 155 K after this period;*
– *140 K, for other external surfaces of the heater;*
– *100 K, for the floor of the test corner.*

19.102 Appliances provided with outlets to supply air to more than one room shall not be damaged by a reverse airflow in any of the outlets or ducts.

The appliance is operated as specified for the first cycle of operation in 11.7 and supplied at ***rated voltage****. Air is injected at a pressure of 25 Pa to each air-outlet in turn, all other outlets being closed and fans switched off. The test is carried out until steady conditions are established.*

The temperature rises shall not exceed

– *150 K, for surfaces of the heater;*
– *60 K, for walls and floor of the test corner.*

The heater shall not be damaged to such an extent that compliance with this standard is impaired.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Modification:*

Instead of the test on the plane inclined at an angle of 15°, the appliance is placed on a horizontal surface and a force of 200 N is applied to the top of the heater in the most unfavourable horizontal direction.

The heater shall not overturn.

NOTE 101 Suitable means ~~may~~ can be used to prevent the heater from sliding.

20.2 *Addition:*

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 wherever test probe 18 is used and with the same test conditions used for test probe 18. **14**

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

A mass of 80 kg is placed gently on the top of the heater over an area of 230 mm diameter. There shall be no distortion of the enclosure to such an extent that compliance with this standard is impaired.

22 Construction

This clause of Part 1 is applicable except as follows.

22.17 *Addition:*

NOTE 101 The requirement only applies after the appliance has been installed.

22.101 Appliances shall be constructed so that compliance with this standard is not impaired if objects are inserted through air-outlet grilles or heated particles from the heat-accumulating core, thermal insulation or other material penetrates into air ducts within the heater.

Compliance is checked by inspection.

22.102 Appliances shall be constructed so that heating elements maintain their original position during normal use. It shall not be possible for parts of a broken heating element to fall out of the appliance or be blown through air-outlet grilles.

Compliance is checked by inspection.

22.103 Appliances shall be constructed so that it is not possible for molten or flaming material to fall through the base of the heater.

Compliance is checked by inspection.

NOTE This requirement is considered to be met if the heating element cannot be seen through the base of the heater.

22.104 Appliances shall be constructed so that the components can be easily assembled during installation. The heat-accumulating core and the heating elements shall be arranged so that they can be placed in position before making the internal connections.

Internal wiring and terminals shall be arranged and marked so that incorrect connections are unlikely. If the internal connections are made by means of multiple-pin connectors, they shall be polarized.

Compliance is checked by inspection and, if necessary, by assembling the heater.

22.105 Appliances shall be constructed to allow the resetting of **thermal cut-outs** and the replacement of controls and heating elements without damaging thermal insulation.

Compliance is checked by inspection.

22.106 Appliances shall be constructed so that objects are prevented from falling or being inserted behind the heater. Guards provided for this purpose shall not be more than 50 mm below the top of the heater and not more than 50 mm from the sides.

These requirements do not apply if the heater is provided with spacers ensuring a distance of at least 75 mm between the rear face of the heater and the wall.

The height of any recess provided for a skirting board shall not exceed 250 mm.

Compliance is checked by inspection and by measurement.

22.107 The mass of the appliance in the dry condition shall not exceed 1,1 times the marked mass.

Compliance is checked by measurement.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.101 At least one **thermal cut-out** that limits the temperature of the heat-accumulating core shall be a **non-self-resetting thermal cut-out**. The use of a **tool** shall be necessary to reset it or to gain access to it.

This requirement is not applicable if the appliance fulfils the tests of 19.3 with all thermal controls that limit the temperature of the heat-accumulating core short-circuited. During the tests, failure of one or more heating elements is allowed. In this case, the heating elements that failed are considered to be intentionally weak parts.

Thermal cut-outs shall operate independently from any control limiting the temperature during the tests of Clause 11.

Compliance is checked by inspection and by manual test.

When carrying out the tests of 19.3 with all thermal controls that limit the temperature of the heat-accumulating core short-circuited, the charging period is terminated after thermal stabilisation of the temperature rise of the top surface of the appliance.

~~NOTE During the tests of 19.3 with all thermal controls that limit the temperature of the heat-accumulating core short-circuited, failure of one or more heating elements is allowed. In this case, the heating elements that failed are considered to be intentionally weak parts.~~

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.1 Not applicable.

25.3 *Addition:*

Appliances shall have means for permanent connection to fixed wiring.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

For appliances incorporating a fan, the microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

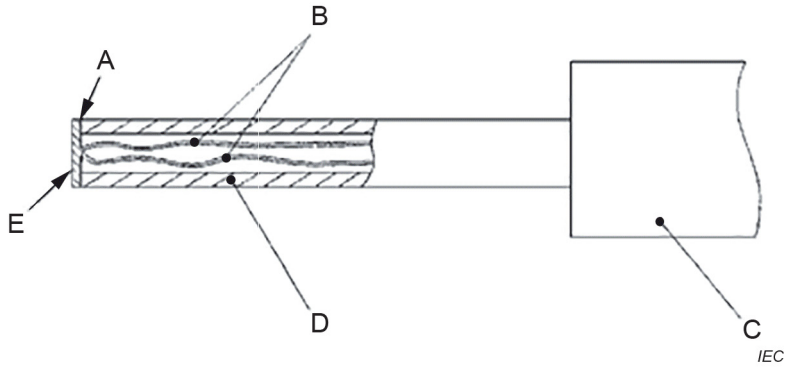
30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

A adhesive

B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

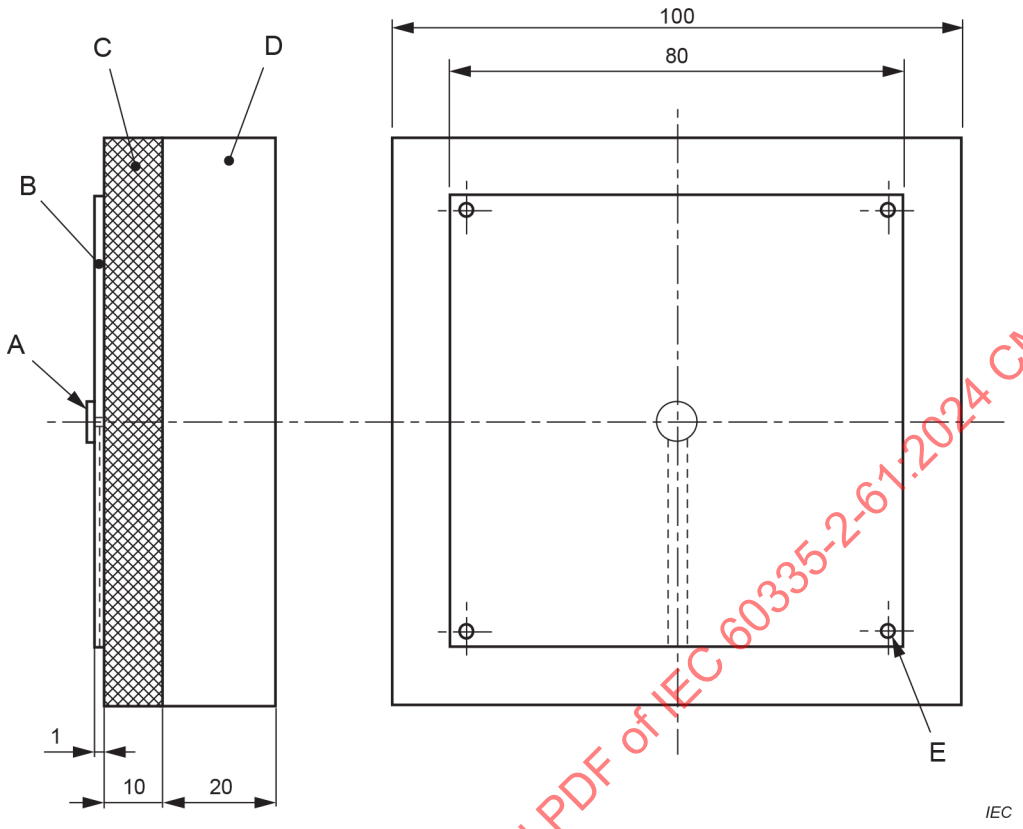
C handle arrangement permitting a contact force of 4 N ± 1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures

Dimensions in millimetres



Key

A thermocouple fixed to the centre of the copper plate

B square copper plate

C thermal insulating material

D square block of hardwood

E location of fixing holes

NOTE 1 The thermal insulating material is not compressed between the copper plate and the hardwood.

NOTE 2 The thermocouple wires are positioned between the copper plate and the thermal insulating material.

Figure ~~101~~ 102 – Device for determining the air temperature rise

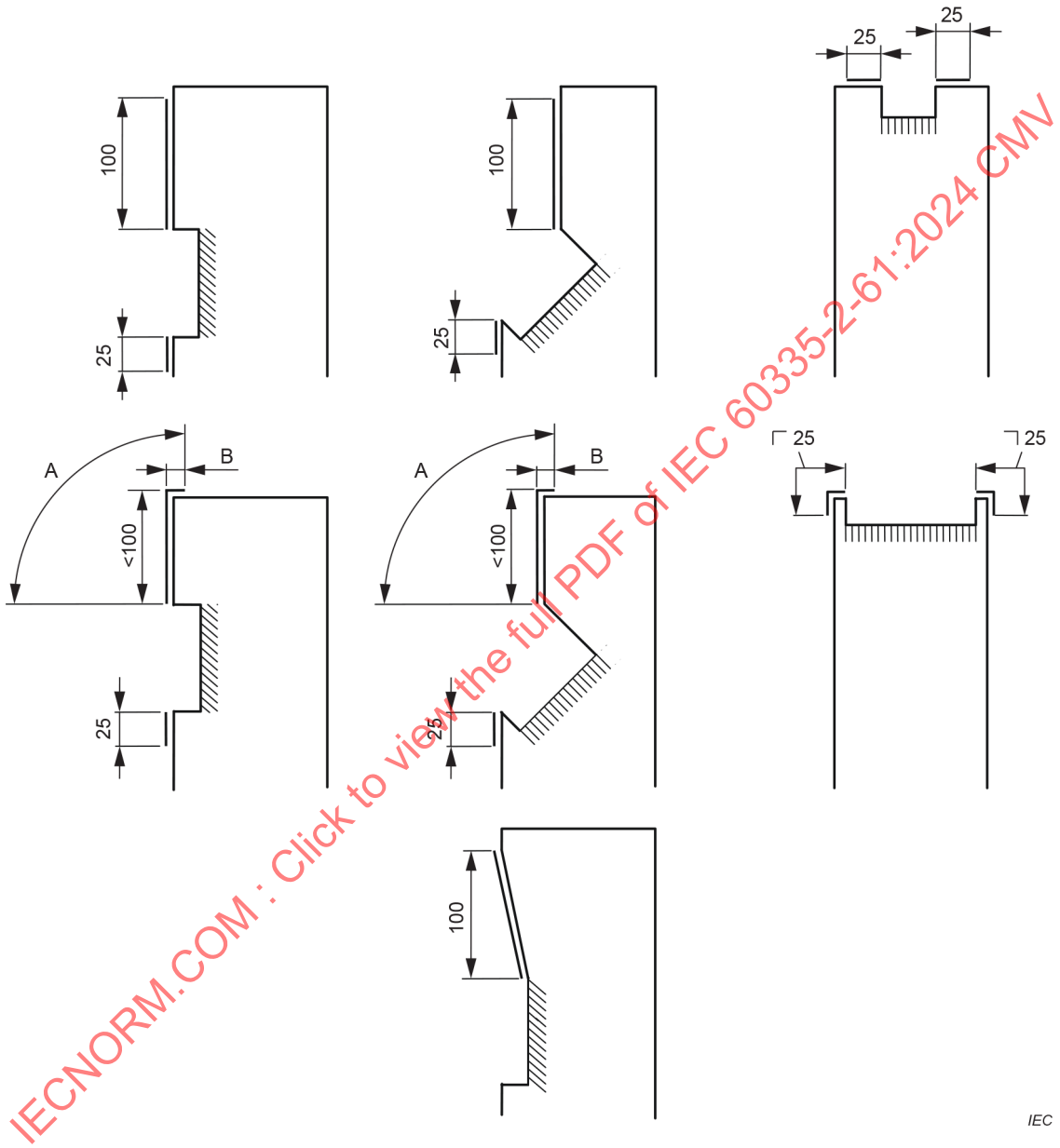
Annexes

The annexes of Part 1 are applicable except as follows.

Annex AA
(informative)

Immediate surrounds of air-outlet grilles

Dimensions in millimetres



Key

A 100 mm maximum

B 25 mm maximum

NOTE These sketches show a cross-section of immediate surrounds of air-outlets of typical thermal storage room heaters.

Figure AA.1 – Typical cross-sections of immediate surrounds of air-outlet grilles

Bibliography

The Bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-53, *Household and similar electrical appliances – Safety – Part 2-53: Particular requirements for sauna heating appliances and infrared cabins*

IEC 60335-2-96, *Household and similar electrical appliances – Safety – Part 2-96: Particular requirements for flexible sheet heating elements for room heating*

ISO 13732-1, *Ergonomics of the thermal environment – Methods for the assessment of human responses to contact with surfaces – Part 1: Hot surfaces*

List of comments

1 This revision is for alignment with IEC 60335-1:2020.

2 This revision is for alignment with IEC 60335-1:2020.

3 This revision is for alignment with IEC 60335-1:2020.

4 The “do not cover” symbol is now standardized as IEC 60417-6096.

5 The “do not cover” symbol is now standardized as IEC 60417-6096.

6 The “do not cover” symbol is now standardized as IEC 60417-6096.

7 The “do not cover” symbol is now standardized as IEC 60417-6096.

8 Appliance can be located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applicable. However, appliances and parts of appliances located above 850 mm from the floor are not considered to be within reach of these children, so test probe 19 is not applied.

9 Limits on the temperature rise of external accessible surfaces are introduced to address the risk of thermal injury from contact with external accessible surfaces based on IEC Guide 117 for Temperatures of touchable hot surfaces.

10 This addition clarifies that these parts are considered to be held for short periods only.

11 Table 101 is updated to include the surface temperature limits based on the material of the surface and footnotes are added to specify which surfaces are and are not to be measured.

12 This revision is for alignment with IEC 60335-1:2020.

13 This revision is for alignment with IEC 60335-1:2020.

14 Appliance can be located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applicable. However, appliances and parts of appliances located above 850 mm from the floor are not considered to be within reach of these children, so test probe 19 is not applied.

IEC 60335-2-61

Edition 3.0 2024-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-61: Particular requirements for thermal storage room heaters

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-61: Exigences particulières pour les appareils de chauffage à accumulation

IEC 60335-2-61:2024-09(en-fr)

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-61: Particular requirements for thermal-storage room heaters

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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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.

IEC 60335-2-61 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 1:2005 and Amendment 2:2008. 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 of some notes to normative text (Clause 1, 7.1, 10.1, 19.3.102, 24.101);
c) application of test probe 19 has been introduced (8.1.1, 20.2);

d) temperature limits have been updated and requirements for measurement were defined (Clause 11.3, 11.8, Table 101);

e) implementation of Figure 101 with the probe for measuring surface temperatures.

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

Draft	Report on voting
61/7268/FDIS	61/7291/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.

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.

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 thermal-storage room heaters.

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 differing practices, of a less permanent nature exist in the countries indicated below.

– 7.1: All thermal-storage room heaters have to be marked with a warning against covering (Sweden).

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.

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.

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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-61: Particular requirements for thermal-storage room heaters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **thermal-storage room heaters** for household and similar purposes that are intended to heat the room in which they are located, 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.

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, 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 knowledge

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

Attention is drawn to the fact that

– this standard only applies to self-contained **thermal-storage room heaters**. However, it can be used as a guide, in so far as it reasonably applies, to determine the requirements and test specifications for other **thermal-storage room heaters**;
– for heaters incorporating direct-acting heating elements, IEC 60335-2-30 is also applicable;
– for heaters 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 and similar authorities.

This standard does not apply to

– appliances intended exclusively for industrial purposes;
– heaters incorporated in the building structure;
– central heating systems;
– heaters for saunas (IEC 60335-2-53);
– flexible sheet heating elements for room heating (IEC 60335-2-96);
– heaters 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:

IEC 60335-2-30, *Household and similar electrical appliances – Safety – Part 2-30: Particular requirements for room heaters*

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

ISO 3864-1, *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.

3.1 Definitions relating to physical characteristics

3.1.9 *Modification:*
normal operation

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

The heater is operated in cycles, each cycle having a duration of 24 h and consisting of a charging period and a discharging period. The charging period is terminated when all heating elements are disconnected for the first time by the devices controlling the temperature of the core (charge controls).

3.1.101
rated charging period
longest uninterrupted charging period assigned to the heater by the manufacturer

3.1.102
rated charge
energy consumption assigned to the heater by the manufacturer for a **rated charging period**

3.5 Definitions relating to types of appliances

3.5.101
thermal-storage room heater
heater constructed to store heat obtained from electrical energy in a heat-accumulating core and to discharge it at any time

3.5.102
controlled-output heater
thermal-storage room heater, the heat output of which can be controlled by means such as fans, shutters or flaps

3.5.103
free-output heater
thermal-storage room heater, the heat output of which is discharged by natural convection and radiation and can only be varied by adjusting the charge

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.

5.5 *Addition:*

*For **controlled-output heaters** having auxiliary air-outlets, air is discharged only through the main outlet into the room where the heater is situated.*

NOTE 101 Movable parts include accessories supplied with the heater, such as shelves and humidifiers.

5.6 *Addition:*

***Thermostats** sensitive to the room air temperature, such as those having a sensing element located in the air-inlet, are short-circuited.*

5.9 *Addition:*

When it is specified that direct-acting heating elements are operated together with the storage heating elements, this only applies if allowed by the construction.

6 Classification

The clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Replace the first paragraph with the following:

Thermal-storage room heaters shall be **class I**, **class II** or **class III**.

7 Marking and instructions

The clause of Part 1 is applicable except as follows.

7.1 *Modification:*

Appliances shall be marked with **rated power input**.

Addition:

Appliances shall be marked with

– the **rated charging period**, in hours;
– the mass of the assembled appliance, in kilograms.

For appliances provided with more than one means of connection to the supply, each supply circuit shall be marked with **rated voltage**, **rated power input** and the symbol for nature of supply.

If the temperature rises determined during the tests of Clause 19 exceed the limits specified in Clause 11, appliances shall be marked with symbol IEC 60417-6096 (2012-01), or with the substance of the following:

– WARNING: Do not cover.

7.6 *Addition:*

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

7.10 *Addition:*

Charging controls shall not be marked with the **off position** unless they have a contact separation in all poles to provide full disconnection under overvoltage category III conditions. However, disconnection of the neutral pole is not required for single phase appliances permanently connected to a system with an earthed neutral (TN-S-C system).

7.12 *Addition:*

The instructions shall be given on a durable card or in a booklet and shall include the substance of the following:

– these instructions should be retained for future reference;

– fumes may be emitted during the first few operations of the heater and the room should be kept well ventilated.

The instructions shall also include

– the **rated charge**;

– the minimum distance to be maintained between the heater and combustible materials, such as furniture and curtains.

If the temperature rises determined during the tests of Clause 19 exceed the limits specified in Clause 11, the instructions shall include the substance of the following:

– do not cover;

– do not place objects in contact with the heater.

If symbol IEC 60417-6096 (2012-01) is marked on the appliance, its meaning shall be explained.

7.12.1 *Addition:*

The installation instructions shall include the substance of the following:

– the installation of the heater should be carried out by trained personnel;

– if, during reassembly of the heater, a part of the thermal insulation shows damage or deterioration, it should be replaced by an identical part;

– to maintain stability, it is essential that the heater is placed on a level surface and care should be taken to avoid irregular surfaces, such as may result from carpets or tiled surrounds partially protruding under the heater.

The installation instructions shall also include

– a circuit diagram with a clear indication of the terminals;
– details for fixing the heater to the floor or for fixing the heater to the wall, including the minimum mounting height (if applicable).

7.14 *Addition:*

The height of symbol IEC 60417-6096 (2012-01) shall be at least 15 mm.

The height of the words "Do not cover" shall be at least 3 mm.

Compliance is checked by measurement.

7.15 *Addition:*

The marking concerning covering shall be visible after the heater has been installed.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

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 wherever test probe 18 is used and with the same test conditions used for test probe 18.

8.1.3 *Addition:*

Test probe 19 is not applied.

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 except as follows.

10.1 *Addition:*

Heaters are installed as specified in 11.2.

The power input of the storage heating elements is measured during the charging period, any fans, shutters, flaps and similar devices being adjusted to cause minimum heat discharge.

The power input of direct-acting heating elements is measured during a discharge period, any fans, shutters, flaps and similar devices being adjusted to cause maximum heat discharge.

The total power input for each means of connection to the supply is measured with all controls adjusted to the position resulting in the highest power input.

For heaters incorporating motors, the tolerances specified for heating appliances apply.

10.101 The heater shall accept at least 100 % of the **rated charge.**

*Compliance is checked by measuring the energy consumption for one **rated charging period**. The heater is initially at room temperature and is operated at **rated power input**. Charge controls, if adjustable by the user, are placed at the maximum setting. Any fans, shutters, flaps and similar devices are adjusted to cause minimum heat discharge.*

11 Heating

The clause of Part 1 is applicable except as follows.

11.2 *Replacement:*

***Built-in appliances** are built in.*

Other heaters are placed in a test corner.

Dull black-painted plywood approximately 20 mm thick is used for the test corner and for the installation of built-in heaters. The test corner extends at least 300 mm beyond the heater. A wooden board, having a height of 120 mm and a thickness of 15 mm, is fixed along the full length of the walls of the test corner and in contact with the floor.

Apertures on the underside of the heater that are within 25 mm of the floor are blocked.

Heaters are positioned in the test corner as follows:

- *heaters normally used on a floor are placed on the floor as near to the walls as possible;*
- *heaters normally fixed to a wall are mounted on one of the walls, as near to the other wall and to the floor as is likely, unless otherwise stated in the installation instructions.*

*If a **stationary heater** has an opening at floor level, a felt pad 20 mm thick is placed on the floor and pushed without appreciable force into the opening as far as the construction will permit. If a guard is provided or if the opening is too small to permit the entry of the pad, the pad is pushed as close as possible against the opening.*

NOTE The purpose of the felt pad is to simulate a carpet that might restrict the airflow.

A dull black-painted plywood block having dimensions of 75 mm × 75 mm × 20 mm is placed on the floor of the test corner under the hottest part of the heater, if possible.

11.3 *Addition:*

The temperature rises of the felt pad and the plywood block are also determined by means of thermocouples attached to the small blackened disks.

Thermocouples are placed on the surface of the felt pad and on the centre of the plywood block.

*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 N ± 1 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.

11.6 Replacement:

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

11.7 *Modification:*

Replace the first paragraph with the following:

Controlled-output heaters *are subjected to three cycles of* ***normal operation*** *and* ***free-output heaters*** *are subjected to two cycles of* ***normal operation****.*

The heater is charged until the charge control operates for the first time.

For ***controlled-output heaters****, during the discharge period for the first and third cycles of operation, shutters, flaps and similar devices are adjusted to cause minimum heat discharge. During this period, fans are operated at minimum speed or are switched off, if possible. For the second cycle of operation, fans, shutters and similar devices are adjusted to cause maximum heat discharge during the discharge period and are operated 15 min after the end of the charging period.*

If it is likely that higher temperature rises will result if fans, shutters, flaps and similar devices are adjusted to cause intermediate heat discharge, an additional cycle of ***normal operation*** *is carried out under these conditions.*

If direct-acting heating elements can be operated simultaneously, they are energised during the test.

11.8 *Modification:*

In Part 1, add the following to footnote "k" of Table 3: "*Similar parts held for short periods include handles or grips of vents and air shutters*."

Addition:

In Table 3, heaters are considered liable to be operated continuously for long periods.

The temperature rises of surfaces of heaters shall not exceed the values shown in Table 101, the measurements commencing 20 min after the end of the charging period.

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

Surface [a]	*Temperature rise* *K*
Heaters for mounting at high level	*No limit*
Fireguards and their immediate surrounds [f]	*No limit*
Air-outlet grilles [d] *and their immediate surrounds* [f] *that are accessible to the test probe* [e]*:*	
– *for heaters incorporating fans, having the air outlet grille* [d] *located on the sides or front of the heater;*	*175*
– *for other heaters.*	*130*
Other surfaces that are accessible to the test probe [e]*:*	
– *of bare metal*	*85*
– *of glass, ceramic, plastic* [c] *or coated metal* [b]	*100*
Surface of the felt pad or plywood block	*60*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.	

[a] *Temperature rises are not measured on:*

- *the underside/base of appliances intended to be used on a working surface or floor provided that the clearance from the floor is less than 30 mm;*
- *the rear/back surface of wall-mounted appliances that is parallel to the wall when according to the instructions, shall be placed against a wall or have a wall clearance less than 30 mm when wall-mounted;*
- *surfaces that are not accessible with test probe 41 of IEC 61032;*
- *surfaces which are not accessible to the test probe e and which are intentionally heated by an internal heat source and which have to be hot to carry out the intended function of the appliance.*

[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] *If the air-outlet grille cannot be identified and the air is emitted through a substantial part of the enclosure, the temperature rise limits for surfaces that are accessible to the test probe e apply.*

[e] *The test probe is 75 mm in diameter, of unrestricted length and with a hemispherical end.*

[f] *Immediate surrounds are the surfaces within a distance of 100 mm from the air-outlet grille measured vertically above the openings and within a distance of 25 mm in the other directions. See informative Annex AA for typical cross-sections of immediate surrounds of air-outlets.*

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 except as follows.

13.1 *Modification:*

The tests are carried out at the end of the charging period of the last cycle of operation specified in 11.7, before operation of the charge control.

The tests are also carried out with motors and direct-acting heating elements operating during the discharge period.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 *Addition:*

For appliances having a horizontal surface at the top, 0,25 l of the spillage solution is poured over the top of the appliance during a period of 5 s.

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 *Modification:*

Instead of the tests specified, appliances are subjected to the tests of 19.3, 19.11, 19.12 and 19.101.

Appliances incorporating motors are also subjected to the test of 19.7.

19.3 *Replacement:*

Appliances are operated as specified in Clause 11 but under the conditions of 19.3.101 to 19.3.104, the power input being 1,24 times ***rated power input****.*

19.3.101 ***Controlled-output heaters*** *are subjected to one cycle of* ***normal operation*** *under conditions of minimum heat discharge.*

19.3.102 *Heaters are subjected to one cycle of* ***normal operation*** *under conditions of maximum heat discharge.*

During the discharge period, a woollen blanket having a specific mass of approximately 470 g/m^2 and having the same width as the heater is placed from the wall, over the top and down the front of the heater.

The blanket between the wall and the heater is allowed to drop behind the heater. Care is to be taken to ensure that the blanket is not held away from the front of the heater.

The temperature rise of the surface of the heater under the blanket is determined.

19.3.103 *Heaters are subjected to one cycle of **normal operation** under conditions of maximum heat discharge.*

During the discharge period, a black-painted plywood board is placed in the most unfavourable position against the front surface of the heater. The board has a thickness of 13 mm, its height is at least equal to the height of the heater and its width equal to 75 % of the width of the heater or 60 cm, whichever is greater.

Direct-acting heating elements are in operation.

The temperature rise of the board is determined by means of thermocouples attached to the back of small blackened disks of copper or brass 15 mm in diameter and 1 mm thick. The front of the disk is flush with the surface of the board.

19.3.104 *Heaters are subjected to one cycle of **normal operation** under conditions of maximum heat discharge.*

During the discharge period, a folded woollen blanket having a specific mass of approximately 470 g/m^2 is placed on top of the heater. The blanket has the same width as the length of the heater and is folded into six thicknesses, each fold being equal in width to the distance from the front of the heater to the wall.

The temperature rise of the surface of the heater under the blanket is determined.

The temperature rise of the air is determined, commencing 20 min after the end of the charging period. The measurement is made at a distance of 10 mm from the air-outlet grille using the device shown in Figure 102.

19.13 *Addition:*

During the tests of 19.3, the temperature rises of the plywood board and the surfaces of the heater under the blanket shall not exceed 180 K.

The temperature rise of the air shall not exceed 180 K.

19.101 *Appliances are operated under **normal operation** and supplied at **rated voltage**. The following fault conditions are introduced one at a time for one cycle of operation, fans, shutters, flaps and similar devices being adjusted to cause the most unfavourable conditions:*

– *interrupting one of the phases of the supply;*
– *short-circuiting any control that operates during the test of Clause 11;*
– *simulating failure of the air-mixing device in the most unfavourable position, unless it can only fail in a safe position.*

NOTE 1 Failure of the air-mixing device can be simulated by rendering the control inoperative.

NOTE 2 The tests can be limited to those conditions that are expected to give the most unfavourable results.

If the air-mixing device is provided with more than one control, these are rendered inoperative in turn.

During the test simulating failure of the air-mixing device, temperature rises shall not exceed

– *for air-outlet grilles and immediate surrounds*
  - *180 K, for heaters incorporating fans and having the air-outlet grille located on the front or sides,*
  - *180 K, for other heaters during the first 5 min and 155 K after this period;*
– *140 K, for other external surfaces of the heater;*
– *100 K, for the floor of the test corner.*

19.102 Appliances provided with outlets to supply air to more than one room shall not be damaged by a reverse airflow in any of the outlets or ducts.

The appliance is operated as specified for the first cycle of operation in 11.7 and supplied at ***rated voltage****. Air is injected at a pressure of 25 Pa to each air-outlet in turn, all other outlets being closed and fans switched off. The test is carried out until steady conditions are established.*

The temperature rises shall not exceed

– *150 K, for surfaces of the heater;*
– *60 K, for walls and floor of the test corner.*

The heater shall not be damaged to such an extent that compliance with this standard is impaired.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Modification:*

Instead of the test on the plane inclined at an angle of 15°, the appliance is placed on a horizontal surface and a force of 200 N is applied to the top of the heater in the most unfavourable horizontal direction.

The heater shall not overturn.

NOTE 101 Suitable means can be used to prevent the heater from sliding.

20.2 *Addition:*

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 wherever test probe 18 is used and with the same test conditions used for test probe 18.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

A mass of 80 kg is placed gently on the top of the heater over an area of 230 mm diameter. There shall be no distortion of the enclosure to such an extent that compliance with this standard is impaired.

22 Construction

This clause of Part 1 is applicable except as follows.

22.17 *Addition:*

NOTE 101 The requirement only applies after the appliance has been installed.

22.101 Appliances shall be constructed so that compliance with this standard is not impaired if objects are inserted through air-outlet grilles or heated particles from the heat-accumulating core, thermal insulation or other material penetrates into air ducts within the heater.

Compliance is checked by inspection.

22.102 Appliances shall be constructed so that heating elements maintain their original position during normal use. It shall not be possible for parts of a broken heating element to fall out of the appliance or be blown through air-outlet grilles.

Compliance is checked by inspection.

22.103 Appliances shall be constructed so that it is not possible for molten or flaming material to fall through the base of the heater.

Compliance is checked by inspection.

NOTE This requirement is considered to be met if the heating element cannot be seen through the base of the heater.

22.104 Appliances shall be constructed so that the components can be easily assembled during installation. The heat-accumulating core and the heating elements shall be arranged so that they can be placed in position before making the internal connections.

Internal wiring and terminals shall be arranged and marked so that incorrect connections are unlikely. If the internal connections are made by means of multiple-pin connectors, they shall be polarized.

Compliance is checked by inspection and, if necessary, by assembling the heater.

22.105 Appliances shall be constructed to allow the resetting of **thermal cut-outs** and the replacement of controls and heating elements without damaging thermal insulation.

Compliance is checked by inspection.

22.106 Appliances shall be constructed so that objects are prevented from falling or being inserted behind the heater. Guards provided for this purpose shall not be more than 50 mm below the top of the heater and not more than 50 mm from the sides.

These requirements do not apply if the heater is provided with spacers ensuring a distance of at least 75 mm between the rear face of the heater and the wall.

The height of any recess provided for a skirting board shall not exceed 250 mm.

Compliance is checked by inspection and by measurement.

22.107 The mass of the appliance in the dry condition shall not exceed 1,1 times the marked mass.

Compliance is checked by measurement.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.101 At least one **thermal cut-out** that limits the temperature of the heat-accumulating core shall be a **non-self-resetting thermal cut-out**. The use of a **tool** shall be necessary to reset it or to gain access to it.

This requirement is not applicable if the appliance fulfils the tests of 19.3 with all thermal controls that limit the temperature of the heat-accumulating core short-circuited. During the tests, failure of one or more heating elements is allowed. In this case, the heating elements that failed are considered to be intentionally weak parts.

Thermal cut-outs shall operate independently from any control limiting the temperature during the tests of Clause 11.

Compliance is checked by inspection and by manual test.

When carrying out the tests of 19.3 with all thermal controls that limit the temperature of the heat-accumulating core short-circuited, the charging period is terminated after thermal stabilisation of the temperature rise of the top surface of the appliance.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.1 Not applicable.

25.3 *Addition:*

Appliances shall have means for permanent connection to fixed wiring.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

For appliances incorporating a fan, the microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

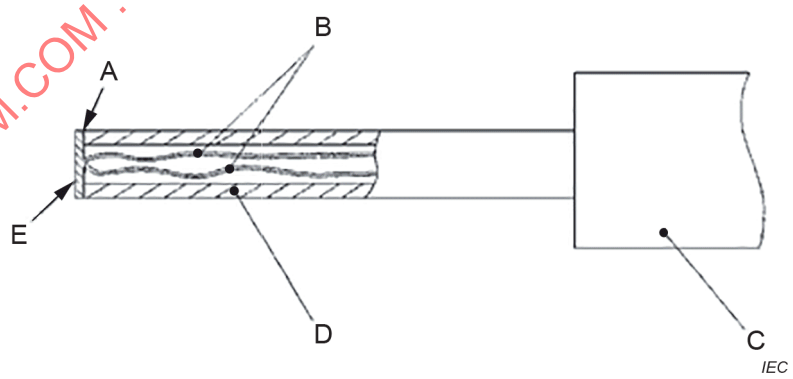
30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

A adhesive

B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

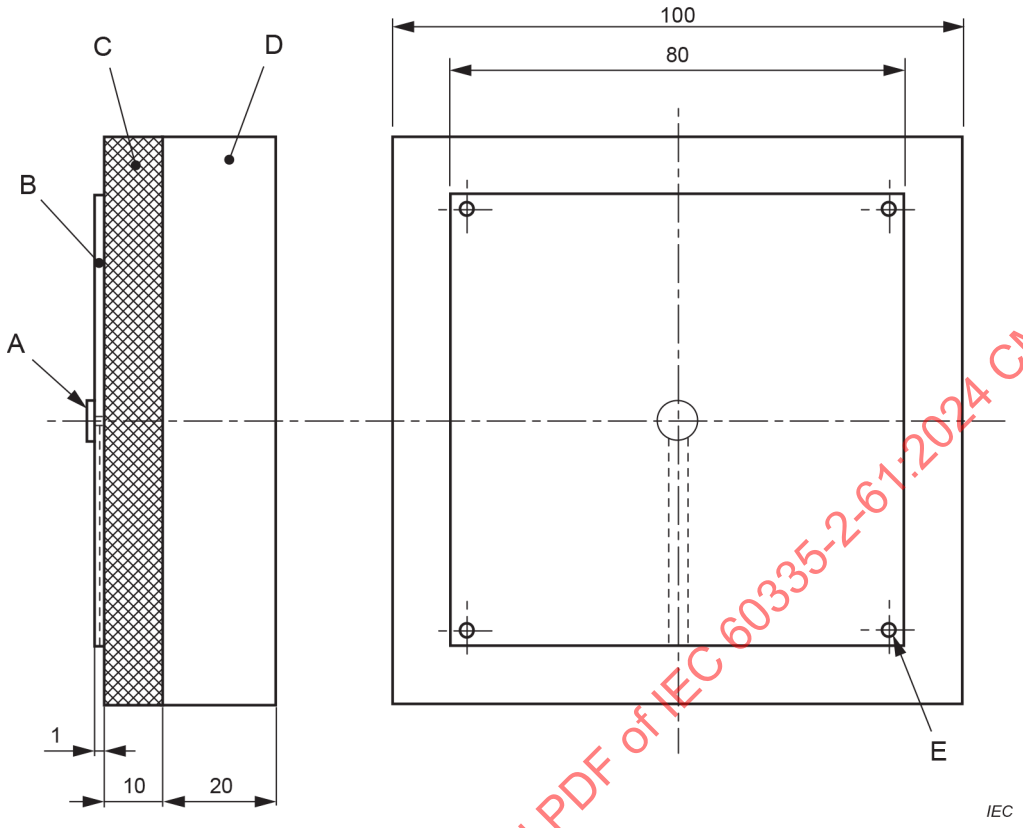
C handle arrangement permitting a contact force of 4 N ± 1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures

Dimensions in millimetres



Key

A thermocouple fixed to the centre of the copper plate

B square copper plate

C thermal insulating material

D square block of hardwood

E location of fixing holes

NOTE 1 The thermal insulating material is not compressed between the copper plate and the hardwood.

NOTE 2 The thermocouple wires are positioned between the copper plate and the thermal insulating material.

Figure 102 – Device for determining the air temperature rise

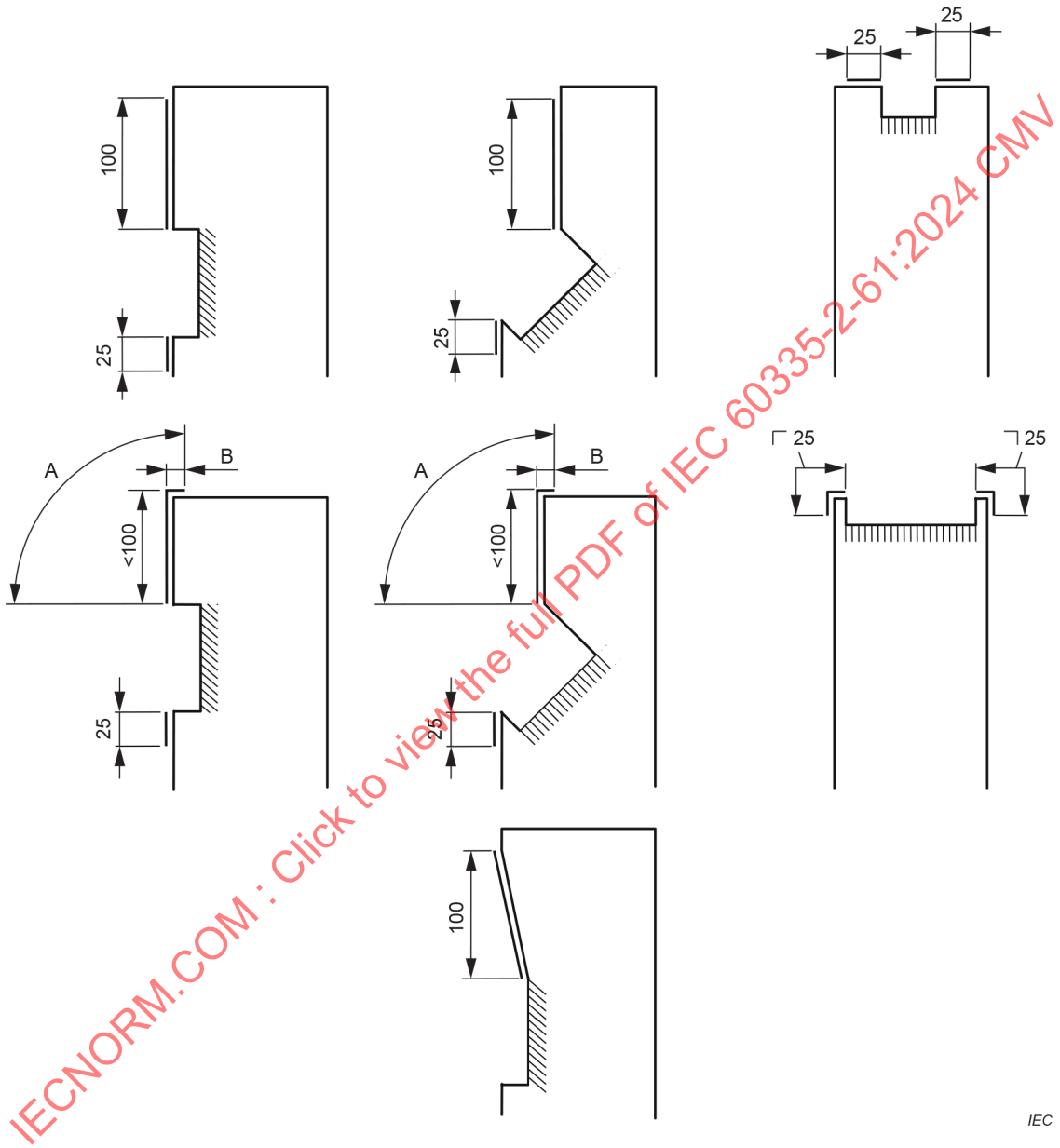
Annexes

The annexes of Part 1 are applicable except as follows.

Annex AA
(informative)

Immediate surrounds of air-outlet grilles

Dimensions in millimetres



Key

A 100 mm maximum

B 25 mm maximum

NOTE These sketches show a cross-section of immediate surrounds of air-outlets of typical thermal storage room heaters.

Figure AA.1 – Typical cross-sections of immediate surrounds of air-outlet grilles

Bibliography

The Bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-53, *Household and similar electrical appliances – Safety – Part 2-53: Particular requirements for sauna heating appliances and infrared cabins*

IEC 60335-2-96, *Household and similar electrical appliances – Safety – Part 2-96: Particular requirements for flexible sheet heating elements for room heating*

ISO 13732-1, *Ergonomics of the thermal environment – Methods for the assessment of human responses to contact with surfaces – Part 1: Hot surfaces*

SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-61: Exigences particulières pour les appareils de chauffage à accumulation

AVANT-PROPOS

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9) L'IEC attire l'attention sur le fait que la mise en application du présent document peut entraîner l'utilisation d'un ou de plusieurs brevets. L'IEC ne prend pas position quant à la preuve, à la validité et à l'applicabilité de tout droit de brevet revendiqué à cet égard. À la date de publication du présent document, l'IEC n'a pas reçu notification qu'un ou plusieurs brevets pouvaient être nécessaires à sa mise en application. Toutefois, il y a lieu d'avertir les responsables de la mise en application du présent document que des informations plus récentes sont susceptibles de figurer dans la base de données de brevets, disponible à l'adresse https://patents.iec.ch. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-61 a été établie par le comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette troisième édition annule et remplace la deuxième édition publiée en 2002, son amendement 1 (2005) et son amendement 2 (2008). Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) texte aligné sur l'IEC 60335-1:2020;
b) suppression et transformation de certaines notes en texte normatif (Article 1 et paragraphes, 7.1, 10.1, 19.3.102, 24.101);
c) introduction de l'application du calibre d'essai 19 (8.1.1, 20.2);
d) les limites de température ont été mises à jour et des exigences de mesure ont été définies (11.3, 11.8, Tableau 101);
e) introduction de la Figure 101 qui représente le dispositif de mesure des températures de surface.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
61/7268/FDIS	61/7291/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général: *Appareils électrodomestiques et analogues – Sécurité* se trouve sur le site web de l'IEC.

La présente partie 2 doit être utilisée conjointement avec la dernière édition de l'IEC 60335-1 et ses amendements sauf si cette édition l'exclut. Dans ce cas, la dernière édition qui n'exclut pas la présente partie 2 est utilisée. Elle a été établie sur la base de la sixième édition (2020) de cette norme.

NOTE 1 L'expression "la Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les appareils de chauffage à accumulation.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme mentionne "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

– les paragraphes, tableaux et figures qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101;
– notes: à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont modifiés ou remplacés;
– les annexes qui sont ajoutées sont désignées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

– exigences: caractères romains;
– *modalités d'essais: caractères italiques*;
– notes: petits caractères romains;

Les mots en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Les différentes pratiques suivantes, à caractère moins permanent, existent dans les pays indiqués ci-après.

– 7.1: Tous les appareils de chauffage à accumulation doivent porter un marquage d'avertissement contre le recouvrement (Suède).

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé, ou
- révisé.

NOTE 4 L'attention des Comités nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication IEC, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit adopté pour application nationale au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

INTRODUCTION

Il a été admis par hypothèse, en établissant la présente Norme internationale, que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant la qualification appropriée.

Les documents de recommandations concernant l'application des exigences de sécurité pour les appareils peuvent être obtenus par le biais des documents d'accompagnement du comité d'études 61 sur le site web de l'IEC:

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

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et ne constitue nullement un remplacement du texte normatif de la présente norme.

La présente norme reconnaît le niveau de protection internationalement accepté contre les risques électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales qui peuvent être attendues dans la pratique et elle tient compte de la façon dont les phénomènes électromagnétiques peuvent altérer le fonctionnement sûr des appareils.

Cette norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, les règles nationales d'installation peuvent être différentes.

Si un appareil relevant du domaine d'application de cette norme comporte également des fonctions qui sont couvertes par une autre partie 2 de l'IEC 60335, la partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela s'applique, l'influence d'une fonction sur les autres fonctions est prise en compte.

Lorsqu'une partie 2 ne comporte pas d'exigences complémentaires pour couvrir les dangers traités dans la Partie 1, la Partie 1 s'applique.

NOTE1 Cela signifie que les comités d'études responsables pour les parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et prévaut sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les publications horizontales, les publications fondamentales de sécurité et les publications groupées de sécurité couvrant un danger ne s'appliquent pas, parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les exigences de la présente norme peut être examiné et soumis aux essais en fonction de l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la présente norme.

NOTE 3 Les normes traitant d'aspects autres que la sécurité des appareils électrodomestiques sont:

– les normes IEC publiées par le comité d'études 59 concernant les méthodes de mesure de l'aptitude à la fonction;
– les normes CISPR 11, CISPR 14-1 et les normes applicables de la série IEC 61000-3 concernant les émissions électromagnétiques;
– la norme CISPR 14-2 concernant l'immunité électromagnétique;
– les normes IEC publiées par le comité d'études 111 concernant l'environnement.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-61: Exigences particulières pour les appareils de chauffage à accumulation

1 Domaine d'application

L'article de la Partie 1 est remplacé par le texte suivant.

La présente partie de l'IEC 60335 traite de la sécurité des **appareils de chauffage à accumulation** électriques à usage domestique et analogue, destinés au chauffage de la pièce dans laquelle ils se trouvent, dont la **tension assignée** est inférieure ou égale à 250 V pour les appareils monophasés et à 480 V pour les autres appareils, y compris les appareils alimentés en courant continu.

Les appareils non destinés à un usage domestique normal mais qui néanmoins peuvent constituer une source de danger pour le public, tels que les appareils destinés à être utilisés par des usagers non avertis dans des magasins, chez des artisans et dans des fermes, sont compris dans le domaine d'application de la présente norme.

Dans la mesure du possible, la présente norme traite des dangers courants que présentent les appareils, encourus par tous les individus à l'intérieur et autour de l'habitation. Cependant, elle ne tient en général pas compte

– des personnes (y compris des enfants) dont
  - les capacités physiques, sensorielles ou mentales; ou
  - le manque d'expérience et de connaissance

  les empêche d'utiliser l'appareil en toute sécurité sans surveillance ou instruction;
– de l'utilisation de l'appareil comme jouet par des enfants.

L'attention est attirée sur le fait que

– la présente norme ne s'applique qu'aux **appareils de chauffage à accumulation** autonomes. Toutefois, elle peut être utilisée comme un guide, pour autant qu'elle s'applique raisonnablement, pour déterminer les exigences et les spécifications d'essais applicables aux autres **appareils de chauffage à accumulation**;
– pour les appareils qui comportent des éléments de chauffage direct, l'IEC 60335-2-30 s'applique également;
– pour les appareils de chauffage destinés à être utilisés dans des véhicules ou à bord de navires ou d'aéronefs, des exigences supplémentaires peuvent être nécessaires;
– dans de nombreux pays, des exigences supplémentaires sont spécifiées par les organismes nationaux de la santé publique, par les organismes nationaux responsables de la protection des travailleurs et par des organismes analogues.

La présente norme ne s'applique pas:

– aux appareils destinés exclusivement à des usages industriels;
– aux appareils de chauffage incorporés dans la structure des bâtiments;
– aux systèmes de chauffage central;
– aux appareils de chauffage pour saunas (IEC 60335-2-53);

– aux films souples chauffants pour le chauffage des locaux (IEC 60335-2-96);
– aux appareils de chauffage destinés à être utilisés dans des locaux qui présentent des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz).

2 Références normatives

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

Addition:

IEC 60335-2-30, *Appareils électrodomestiques et analogues – Sécurité – Partie 2-30: Exigences particulières pour les appareils de chauffage des locaux*

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

ISO 3864-1, *Symboles graphiques – Couleurs de sécurité et signaux de sécurité — Partie 1: Principes de conception pour les signaux de sécurité et les marquages de sécurité*

3 Termes et définitions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

3.1 Définitions relatives aux caractéristiques physiques

3.1.9 *Modification:*
conditions de fonctionnement normal

Remplacer le premier alinéa par ce qui suit:

fonctionnement de l'appareil dans les conditions suivantes:

L'appareil de chauffage est mis en fonctionnement en cycles, chaque cycle étant d'une durée de 24 h et constitué d'une période de charge et d'une période de décharge. La période de charge est terminée lorsque tous les éléments chauffants sont déconnectés pour la première fois par les dispositifs qui commandent la température du noyau (dispositifs de commande de charge).

3.1.101
durée de charge assignée
période de charge ininterrompue la plus longue assignée à l'appareil de chauffage par le fabricant

3.1.102
charge assignée
consommation d'énergie électrique assignée à l'appareil de chauffage par le fabricant pour une **durée de charge assignée**

3.5 Définitions relatives aux types d'appareils

3.5.101
appareil de chauffage à accumulation
appareil de chauffage construit pour accumuler de la chaleur obtenue à partir de l'énergie électrique dans un noyau accumulateur de chaleur et pour la restituer à tout moment

3.5.102
appareil à décharge réglable
appareil de chauffage à accumulation dont le flux thermique peut être commandé par des moyens tels que des ventilateurs, des volets ou des lamelles

3.5.103
appareil à décharge non réglable
appareil de chauffage à accumulation dont le flux thermique est dégagé par convection naturelle et par rayonnement et ne peut être modifié que par un réglage de la charge

4 Exigence générale

L'article de la Partie 1 s'applique.

5 Conditions générales d'essai

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

5.5 *Addition:*

*Pour les **appareils à décharge réglables** équipés de sorties d'air auxiliaires, l'air est dégagé uniquement par la sortie principale dans la pièce où se trouve l'appareil de chauffage.*

NOTE 101 Les parties mobiles comprennent les accessoires fournis avec l'appareil de chauffage, tels que les étagères et les humidificateurs.

5.6 *Addition:*

*Les **thermostats** sensibles à la température ambiante de la pièce, tels que ceux dont l'élément sensible se trouve dans l'entrée d'air, sont court-circuités.*

5.9 *Addition:*

Lorsqu'il est spécifié que des éléments de chauffage direct sont mis en fonctionnement en même temps que des éléments de chauffage à accumulation, cela ne s'applique que si la construction le permet.

6 Classification

L'article de la Partie 1 s'applique, avec l'exception suivante.

6.1 *Modification:*

Remplacer le premier alinéa par ce qui suit:

Les **appareils de chauffage à accumulation** doivent être de la **classe I**, de la **classe II** ou de la **classe III**.

7 Marquage et instructions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

7.1 *Modification:*

Les appareils doivent porter le marquage de leur **puissance assignée**.

Addition:

Les appareils doivent porter les marquages suivants:

– la **durée de charge assignée**, en heures;
– la masse de l'appareil assemblé, en kilogrammes.

Pour les appareils équipés de plusieurs moyens de raccordement à l'alimentation, chaque circuit d'alimentation doit porter le marquage de la **tension assignée**, de la **puissance assignée** et le symbole de la nature du courant.

Si les échauffements déterminés au cours des essais de l'Article 19 dépassent les limites spécifiées à l'Article 11, les appareils doivent porter le symbole IEC 60417-6096 (2002-10) ou ils doivent porter, en substance, la mise en garde suivante:

– AVERTISSEMENT: Ne pas couvrir.

7.6 *Addition:*

[symbole IEC 60417-6096 (2012-01)] Ne pas couvrir

7.10 *Addition:*

Les dispositifs de commande de charge ne doivent pas porter le marquage de la **position arrêt** à moins qu'ils ne comportent une séparation des contacts sur tous les pôles pour assurer une coupure totale dans des conditions de surtension de la catégorie III. Toutefois, la déconnexion du neutre n'est pas exigée pour les appareils monophasés raccordés de façon permanente à un réseau avec neutre mis à la terre (réseau TN-S-C).

7.12 *Addition:*

Les instructions doivent figurer sur une fiche durable ou dans une notice et comporter, en substance, les indications suivantes:

– il convient de conserver ces instructions pour s'y référer ultérieurement;
– lors des premières mises en fonctionnement de l'appareil de chauffage, celui-ci peut émettre de la fumée; il convient de bien aérer la pièce.

Les instructions doivent également indiquer:

– la **charge assignée**;
– la distance minimale à respecter entre l'appareil de chauffage et des matières combustibles telles que des meubles ou des rideaux.