

# INTERNATIONAL STANDARD



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

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## 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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**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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://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](http://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 knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

**NOTE 101**—Attention is drawn to the fact that

- 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).

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#### ~~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:

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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:

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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).

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#### 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.*