

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-53: Règles particulières pour les appareils de chauffage de saunas et
les cabines infrarouges**

60335-2-53-2011





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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-53: Particular requirements for sauna
heating appliances and infrared cabins**

FOREWORD

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This consolidated version of the official IEC Standard and its amendments has been prepared for user convenience.

IEC 60335-2-53 edition 4.2 contains the fourth edition (2011-04) [documents 61/4135/FDIS and 61/4157/RVD], its amendment 1 (2017-01) [documents 61/5310/FDIS and 61/5321/RVD] and its corrigendum (2017-03), and its amendment 2 (2021-03) [documents 61/6129/FDIS and 61/6180/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60335-2-53 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This fourth edition constitutes a technical revision.

The principal changes in this edition as compared with the third edition of IEC 60335-2-53 are as follows (minor changes are not listed):

- the scope is changed to cover infrared cabins;
- additional requirements for recessed sauna heaters are added;
- requirements of electronic interlocks are added (22.108).

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) 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: Safety requirements for electric sauna heating appliances and infrared cabins.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may 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.

The following differences exist in the countries indicated below.

- 6.1: Class 0I appliances are allowed (Japan).
- 11.2: The temperature rises in front of the sauna heater are not measured (USA).
- 11.8: The temperature rise limits are different (USA).
- 13.2: Leakage current tests are carried out on sauna heaters having a supply cord (USA).
- 16.2: Leakage current tests are carried out on sauna heaters having a supply cord (USA).
- 19.1: The volume of the sauna room is different (USA).
- 19.5: The test is also carried out on appliances intended to be permanently connected to fixed wiring (Norway).
- 19.101: Sauna heating appliances provided with a programmable timer are considered to be appliances that are used remotely (Finland);
- 19.102: The test is not applicable (USA).
- 22.101: The mass of rocks is different (USA).
- 22.103: The requirement is not applicable (USA).
- 24.102: The 125 °C limit is not applicable (USA).
- 25.7: The supply cords are different (USA).
- Annex AA: The sauna room is different (USA).

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INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

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 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.

NOTE 1 For example, if **sauna heating appliances** within the scope of this part 2 include a humidifier unit, then IEC 60335-2-98 is applicable as far as is reasonable.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 2 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 3 Horizontal and generic standards 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.

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.

Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-53: Particular requirements for sauna heating appliances and infrared cabins

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **sauna heating appliances** and **infrared emitting units** having a **rated power input** not exceeding 20 kW, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

The appliances covered by this standard are intended for use in the home and in public saunas located in blocks of flats, hotels and similar locations.

NOTE 101 **Sauna heating appliances** may be of the thermal storage type.

This standard also deals with the safety of electric **sauna heating appliances** provided with a humidifier unit, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances. The room air is humidified by evaporating or atomising water.

NOTE 102 A humidifier may be part of a **sauna heating appliance** or may be incorporated in the **sauna heater**. The **sauna heating appliance** or **sauna heater** may be operated with or without the humidifier.

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 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may 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 104 This standard does not apply to

- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- appliances intended to cause perspiration to only a part of the human body;
- sweating baths where the head of the user remains outside the heated space;
- tents and other collapsible sauna baths;
- room heaters (IEC 60335-2-30);
- humidifiers intended for use with heating, ventilation, or air-conditioning systems (IEC 60335-2-88);
- humidifiers (IEC 60335-2-98);
- appliances intended for medical purposes (IEC 60601).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

normal operation

operation of the appliance under the following conditions:

Sauna heating appliances, sauna heaters, infrared emitters and infrared emitting units are installed in the sauna room specified in Annex AA and in accordance with the instructions. The volume of the sauna room is the minimum value specified in the instructions.

The rock container is filled in accordance with the instructions. If the capacity of the rock container is adjustable, the container is filled with the most unfavourable quantity of rocks. If the rock container has a lid, the lid is positioned in accordance with the instructions.

Prefabricated saunas and prefabricated infrared cabins are installed in accordance with the instructions.

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3.101

sauna heater

appliance incorporating heating elements having a container filled with appropriate rocks

3.102

sauna heating appliance

appliance comprising a **sauna heater**, controls, **protective devices** and control board

3.103

prefabricated sauna

assembly comprising a sauna room and a **sauna heating appliance**

3.104

infrared emitter

assembly that emits infrared radiation

3.105

infrared emitting unit

appliance comprising at least one **infrared emitter**, controls, **protective devices** and control board

3.106

prefabricated infrared cabin

assembly comprising a cabin and at least one **infrared emitting unit**

3.107

fireguard

part of the enclosure of an **infrared emitter** through which the **infrared emitter** is normally visible and which is intended to guard against direct access to the **infrared emitter**

3.108

time pre-selection

switching on a sauna heater within a **prefabricated sauna** with a delay

3.109

control board

unit connected to a **sauna heater** or an **infrared emitter** and intended to control a **sauna heater** or an **infrared emitter**

Note 1 to entry: **Control boards** can include **protective devices**. **Control boards** can be integrated with a **sauna heater** or connected with a cable to a **sauna heater**. See Figure 103.

3.110

programmable timer

time-based control which continues with a subsequent cycle when the preceding one has been completed

3.111

supervised operation

supervision by monitoring person(s) who can be physically present to observe first-hand, or a combination of physical presence and remote viewing of data to indicate condition and operation of the appliance

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.

5.2 Addition:

*If the appliance comprises more than one **sauna heater** or more than one **infrared emitter**, these are tested together.*

5.3 Addition:

*For appliances where both **sauna** and **humidifying** operation is possible, the tests for **sauna** operation are made first, followed immediately by the tests for **humidifying**. The **thermostats** and **humidity** controls, if any, are initially set to their maximum setting.*

5.9 Addition:

***Sauna heaters** and **infrared emitters** shall be tested with the controls and **control boards** specified in the instructions that give the most unfavourable results.*

5.101 *If a ventilating fan operates independently of the heating element, the tests are carried out with or without the fan in operation, whichever is more unfavourable.*