

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Household and similar electrical appliances – Safety –  
Part 2-60: Particular requirements for whirlpool baths and whirlpool spas**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-60: Exigences particulières pour les baignoires et les spas à système  
de brassage d'eau**

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IEC 60335-2-60

Edition 5.0 2023-12

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## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	8
3 Terms and definitions .....	8
4 General requirement.....	9
5 General conditions for the tests .....	9
6 Classification.....	9
7 Marking and instructions.....	9
8 Protection against access to live parts.....	11
9 Starting of motor-operated appliances .....	11
10 Power input and current.....	11
11 Heating.....	11
12 Charging of metal-ion batteries.....	12
13 Leakage current and electric strength at operating temperature.....	12
14 Transient overvoltages .....	13
15 Moisture resistance .....	13
16 Leakage current and electric strength.....	13
17 Overload protection of transformers and associated circuits .....	14
18 Endurance .....	14
19 Abnormal operation .....	14
20 Stability and mechanical hazards.....	15
21 Mechanical strength .....	15
22 Construction .....	15
23 Internal wiring.....	17
24 Components .....	17
25 Supply connection and external flexible cords .....	17
26 Terminals for external conductors.....	18
27 Provision for earthing .....	18
28 Screws and connections .....	18
29 Clearances, creepage distances and solid insulation .....	18
30 Resistance to heat and fire .....	18
31 Resistance to rusting.....	18
32 Radiation, toxicity and similar hazards.....	18
Annexes .....	20
Bibliography.....	21
Figure 101 – Installation zone dimensions for transportable whirlpool spas.....	19
Figure 102 – Probe for measuring surface temperatures .....	19
Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions .....	12

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-60: Particular requirements for whirlpool baths  
and whirlpool spas**

## FOREWORD

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IEC 60335-2-60 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) alignment with IEC 60335-1:2020;
- b) conversion of some notes to normative text (Clause 1, 7.12.1);
- c) addition of hyperthermia instructions and installation instructions related to the wiring rules (7.12, 7.12.1);

- d) modifications related to IEC 60364-7-702 and transportable whirlpool spas (Clause 1, 5.101, 6.1, 6.2, 7.12.1, 7.15, 13.1, 13.2, 16.1, 16.2, 22.33, 22.107, 25.1);
- e) introduction of surface temperature limits (Clause 11);
- f) addition of water temperature limit at the suction/return openings (11.8, 11.101);
- g) modification to the tests of 19.2 and 19.3 specifying the types of devices that are rendered inoperative.
- h) addition of requirement for thermal cut-outs to be trip free (24.101).

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

Draft	Report on voting
61/7009/FDIS	61/7085/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 whirlpool baths and whirlpool spas.

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 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](https://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.

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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.

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 standards and group safety 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.

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 2-60: Particular requirements for whirlpool baths and whirlpool spas

#### 1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **whirlpool baths** for indoor use and **whirlpool spas**, for household and similar use, 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 and **battery-operated appliances**.

This standard also applies to appliances for circulating air or water in conventional baths.

This standard applies to factory-built self-contained **whirlpool baths** or **whirlpool spas** in which all controls and components are integral parts of the appliance and are located within or affixed to the **whirlpool bath** or **whirlpool spa** structure.

Appliances not intended for normal household use but that nevertheless can be a source of danger to the public, such as appliances intended to be used by laymen in hotels, fitness centres and similar places, 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.

Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can be necessary;
- in many countries additional requirements are specified by the national health authorities, the national water supply authorities, the national authorities responsible for the protection of labour and similar authorities.

This standard does not apply to

- equipment for water circulation in swimming and motion exercise pools;
- cleaning appliances for swimming pools;
- appliances intended for medical purposes (IEC 60601 series);
- field-engineered, non-self-contained permanently installed **whirlpool baths** or **whirlpool spas** custom designed to fit a specific location, being assembled or constructed at the final installation location;

- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

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

IEC 60364-7-701, *Low-voltage electrical installations – Requirements for special installations or locations – Locations containing a bath or shower*

IEC 60364-7-702, *Low voltage electrical installations – Part 7-702: Requirements for special installations or locations – Swimming pools and fountains*

## 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:*

Replace the first paragraph with the following:

operation of the appliance under the following conditions:

**Whirlpool baths** for indoor use and **whirlpool spas** are filled with water to the maximum level allowed by the construction.

For separate appliances intended to be used with a conventional bath, the bath is filled with water to a depth of approximately 200 mm or to the maximum level specified in the instructions, whichever is more unfavourable.

### 3.5 Definitions relating to types of appliances

#### 3.5.1 *Addition:*

Note 101 to entry: **Transportable whirlpool spas** are not considered **portable appliances**.

#### 3.5.101

##### **transportable whirlpool spa**

**whirlpool spa** that is intended to be set up and relocated from time to time for the purpose of moving it to different areas for use

#### 3.5.102

##### **whirlpool bath**

appliance used by persons to immerse themselves in water that incorporates provisions for blowing air or water circulation and can have provisions for water heating, the appliance intended to be drained after use

#### 3.5.103

##### **whirlpool spa**

appliance used by one or more persons at the same time to immerse themselves in water that incorporates provisions for blowing air or water circulation and provisions for water heating, the appliance not intended to be drained after use

### 3.6 Definitions relating to parts of an appliance

#### 3.6.4 Modification:

Replace Note 1 to entry with the following:

Note 1 to entry: Parts are considered to be **live parts** even if they comply with 8.1.4.

## 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.

#### 5.7 Addition:

*If the tests are influenced by the temperature of the water, it is maintained at 40 °C or at the maximum value allowed by the control, whichever is greater.*

## 6 Classification

This clause of Part 1 is applicable except as follows.

#### 6.1 Modification:

Replace the first paragraph with the following:

**Portable appliances** shall be **class II** or **class III**.

**Whirlpool spas** shall be **class I** or **class III**.

**Whirlpool baths** and other **stationary appliances** shall be **class I**, **class II** or **class III**.

#### 6.2 Addition:

**Whirlpool baths** and **whirlpool spas** shall be at least IPX5. Other appliances shall be at least IPX4. This does not apply to parts of appliances, other than **transportable whirlpool spas**, intended for mounting within the dwelling but outside the zones 0, 1 and 2 as specified in IEC 60364-7-701 and IEC 60364-7-702.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

#### 7.12 Addition:

The instructions shall provide details concerning cleaning and other maintenance.

The instructions for **portable appliances** shall state that no part of the appliance is to be located above the bath during use.

The instructions for **whirlpool spas** shall provide information concerning:

- maintenance of water purity, especially pH values and chlorine or other recommended sanitizer concentrations;
- cleaning and disinfection;
- use and installation of a cover;
- disposal of water;
- precautions to avoid damage due to water freezing;
- precautions to avoid damage when the appliance is left empty for an extended period.

For **whirlpool baths** with provision for water heating and **whirlpool spas**, other than those provided with a temperature control limiting the average temperature of the water to a value not exceeding 40 °C when measured in accordance with 11.101, the instructions shall contain the substance of the following:

In order to avoid the possibility of hyperthermia (heat stress) occurring it is recommended that the average water temperature should not exceed 40 °C.

#### 7.12.1 Addition:

The installation instructions shall state the substance of the following:

- parts containing live parts, except parts supplied with safety extra-low voltage not exceeding 12 V, must be inaccessible to a person in the bath or spa;
- earthed appliances must be permanently connected to fixed wiring except for transportable whirlpool spas with earthing, which must only be plugged directly into an earthed socket-outlet of the fixed wiring;
- parts incorporating electrical components, except remote control devices, must be located or fixed so that they cannot fall into the bath or spa;
- the appliance must be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

For appliances other than **transportable whirlpool spas**, the installation instructions shall provide details for the application of the wiring rules. This includes:

- for **whirlpool baths**, the applicability of IEC 60364-7-701;
- for **whirlpool spas**, the applicability of IEC 60364-7-702;
- specifying that parts must be installed in the correct zone; and
- installation details for protective equipotential bonding.

When placing a **transportable whirlpool spa**, ensure that all socket-outlets or other electrical equipment are at least 1,25 m from the internal rim of the water container as shown in Figure 101.

If the appliance is intended to be fixed by screws or other permanent fixing devices, the installation instructions shall give details on how to fix the appliance unless the method of fixing is obvious.

The installation instructions for **whirlpool spas** shall state that:

- the floor has to be capable of supporting the expected load;
- an adequate drainage system has to be provided to deal with overflow water.

#### 7.15 Modification:

Replace the second sentence of the second paragraph with the following:

For **portable appliances** and **transportable whirlpool spas**, it shall be possible to remove or open this cover without the aid of a **tool**.

## 8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

### 8.1.1 Addition:

*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.*

### 8.1.4 Modification:

Replace the first paragraph with the following:

Any energized part is considered to be a **live part**.

## 9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

## 10 Power input and current

This clause of Part 1 is applicable.

## 11 Heating

This clause of Part 1 is applicable except as follows.

### 11.3 Addition:

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 102 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of  $4\text{ N} \pm 1\text{ N}$  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.*

### 11.7 Modification:

Replace the first paragraph with the following:

*Appliances are operated until steady conditions are established.*

### 11.8 Modification:

Replace the first paragraph with the following:

*During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101.*

Addition:

If the appliance incorporates a heating element, the water temperature at the inlet of the **whirlpool bath** or **whirlpool spa** shall not exceed 50 °C and the water temperature at the suction opening/return point shall not exceed 43 °C.

**Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions**

Surface <sup>a</sup>	Temperature rise of accessible external surfaces K
Bare metal	38
Coated metal <sup>b</sup>	42
Glass and ceramic	51
Plastic and plastic coating > 0,4 mm <sup>c, d</sup>	58
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.	
<sup>a</sup> Temperature rises are not measured on: <ul style="list-style-type: none"> <li>– surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end;</li> <li>– the hot water supply fittings and hoses;</li> <li>– plumbing fittings, pressure relief valves and sight gauges;</li> <li>– surfaces that are submersed during <b>normal operation</b>.</li> </ul>	
<sup>b</sup> 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.	
<sup>c</sup> The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.	
<sup>d</sup> When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.	

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**11.101** For **whirlpool baths** with a water heating function and **whirlpool spas** having a control that limits the average temperature of the water to max 40 °C, the control shall be set to its maximum temperature. The water temperature shall be measured at each water inlet and at each suction opening in the basin.

The average of the maximum water temperatures at any inlet and the maximum water temperatures at any suction opening shall not be greater than 40 °C, unless the instructions in 7.12 regarding hyperthermia are provided.

## 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:

Replace the last paragraph with the following: