IEC 60335-2-73

Edition 3.0 2024-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety – Part 2-73: Particular requirements for fixed immersion heaters

Appareils électrodomestiques et analogues – Sécurité – Partie 2-73: Règles particulières pour les thermoplongeurs installés à poste fixe



IEC 60335-2-73:2024-03(en-fr)



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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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CONTENTS

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

Figure 101 – Probe for measuring surface temperatures 13

Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions 10

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-73: Particular requirements for fixed immersion heaters

FOREWORD

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IEC 60335-2-73 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: 2006 and Amendment 2: 2009. This edition constitutes a technical revision.

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

a) the text has been aligned with IEC 60335-1:2020;
b) some notes have been converted to normative text (Clause 1, 19.2);
c) addition of external accessible surface temperatures (Clause 11).

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

Draft	Report on voting
61/6954/CDV	61/7055A/RVC

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 fixed immersion 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 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 the amendment 2 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 2-73: Particular requirements for fixed immersion heaters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of **fixed electric immersion heaters** for household and similar purposes that are intended for installation in a water tank open to the atmosphere for heating water to a temperature below its boiling point with a **rated voltage** of not more than 250 V for single-phase appliances and 480 V for other appliances including direct current (DC) supplied appliances.

NOTE 101 The water tank can have alternative means for heating water, such as the circulation of hot water supplied from a separate boiler.

Immersion heaters having a **rated power input** up to 25 kW for incorporation as an alternative heating source in central heating boilers are also within the scope of this standard.

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

– 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 authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to

– appliances intended exclusively for industrial purposes;
– appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
– heating elements incorporated in appliances such as
  - appliances for heating liquids (IEC 60335-2-15);
  - storage water heaters (IEC 60335-2-21);
  - instantaneous water heaters (IEC 60335-2-35);

– aquarium heaters (IEC 60335-2-55);
– portable immersion heaters (IEC 60335-2-74);
– engine preheaters such as those for cars and buses.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

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 after installation in the smallest tank specified, the tank being thermally insulated and filled with water

NOTE 101 to entry **Accessible parts** of the appliance are not thermally insulated.

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:*

NOTE 101 Additional appliances can be required for the tests of Clause 19.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Addition:*

Immersion heaters shall be **class I**, **class II** or **class III**.