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Responsible committee: CPL/61/7 Safety of electrical appliances - Heated appliance group

Interested committees:

Title: Draft BS EN 60335-2-21 Ed.7.0 Household and similar electrical appliances - Safety. Part 2-21: Particular requirements for storage water heaters.

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



61/6446/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC 60335-2-21 ED7

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2022-01-21

CLOSING DATE FOR VOTING:

2022-04-15

SUPERSEDES DOCUMENTS:

61/6358/RR

IEC TC 61 : SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES	
SECRETARIAT: United States of America	SECRETARY: Ms Randi Myers
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
☐ SUBMITTED FOR CENELEC PARALLEL VOTING	☒ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for storage water heaters

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

This document is circulated according to the decisions taken at the TC 61 meetings for the 2020 Web meetings – see 61/6183/RM

History refer to:

61/5963/DC and 61/6039A/INF in 61/6183/RM, item 42.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-21: Particular requirements for storage water 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) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60335-2-21 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This seventh edition cancels and replaces the sixth edition published in 2012 and Amendment 1:2018. This edition constitutes a technical revision.

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

- the text has been aligned with IEC 60335-1:2020;
- some notes have been converted to normative text (Clause 1, 5.2, 19.1, 19.2, 19.3, 19.4, 22.47, 22.104, 22.110, Annex AA Introduction);
- updated requirement restricting use of appliance inlets (25.1)

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

Draft	Report on voting
61/XX/FDIS	61/XX/RVD

108
109 Full information on the voting for its approval can be found in the report on voting
110 indicated in the above table.

111 The language used for the development of this International Standard is English.

112 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed
113 in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement,
114 available at www.iec.ch/members_experts/refdocs. The main document types developed
115 by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

118 This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its
119 amendments unless that edition precludes it; in that case, the latest edition that does not
120 preclude it is used. It was established on the basis of the sixth edition (2020) of that
121 standard.

122 NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

123 This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to
124 convert that publication into the IEC standard: Safety requirements for storage water
125 heaters.

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

129 NOTE 2 The following numbering system is used:

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

134 NOTE 3 The following print types are used:

- 135 – requirements: in roman type;
136 – *test specifications: in italic type*;
137 – notes: in small roman type.

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

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

- 144 • reconfirmed,
145 • withdrawn,
146 • replaced by a revised edition, or
147 • 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.

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 following differences exist in the countries indicated below.

– 1: Immersion heater units intended to be retrofitted in a heat exchange closed water heater are not allowed unless:

- the immersion heater unit has been tested with the tank models and brands listed in the instructions of the immersion heater unit;

- the tank models and brands list the models of the immersion heater units that can be retrofitted. (Australia, Netherlands, New Zealand)

– 6.1: Class 0I appliances are allowed (Japan).

– 6.2: IPX0 water heaters are allowed (France, United Kingdom and USA).

– 7.1: Additional markings are required (Australia, New Zealand and South Africa).

– 7.1: The rated pressure is to be marked in pounds per square inch (USA).

– 7.1: Open outlet water heaters are not required to be marked with rated pressure (USA).

– 7.12.1: Additional instructions are required (South Africa).

– 11.7: The test is different (USA).

– 13.2: An additional leakage current test is required (China).

– 19.1: Appliances incorporating sheathed heating elements are not required to have an outer enclosure of metal but their rated power input is limited to 12 kW (USA).

– 19.101: The test is different (USA).

– 22.47: The minimum pressure is 2,1 MPa. The test is not carried out on water heaters having a capacity less than 2 l or on appliances having containers open to the atmosphere (USA).

– 22.101: Pressure reducing valves have to be designed for an inlet pressure of 2 MPa (South Africa).

– 22.102: The temperature limit is 95 °C (South Africa).

– 22.102: The temperature limit is 85 °C (USA).

– 22.101: The minimum rated pressure is 1,0 MPa (Denmark, Finland, Norway and Sweden).

– 22.103: Closed water heaters having a capacity exceeding 50 l or a rated power input exceeding 2 kW have to incorporate a pressure-relief device sensitive to both pressure and temperature that operates before the water temperature reaches 99 °C (South Africa).

– 22.103: Closed water heaters have to incorporate a temperature relief valve or a combined temperature and pressure-relief valve that operates before the water temperature reaches 100 °C (United Kingdom).

– 22.106: The thermal cut-out of single-phase closed water heaters need only provide single-pole disconnection (Japan).

– 22.106: For all closed water heaters, the thermal cut-out is to provide all-pole disconnection (France, Netherlands,).

– 22.109: A tool is not required for draining the appliance (USA).

– 22.110: Additional requirements apply to plastic or resin-based containers for open outlet, cistern type and low pressure type (South Africa).

– 24.1.4 Additional requirements apply to Thermal cut-outs (South Africa)

– 24.101: Thermal cut-outs are required to have a trip-free switching mechanism (USA).

– 24.102: The maximum water temperature is 99 °C (Japan, Norway, Portugal, United Kingdom and USA).

– 24.102: The temperature limit of 130 °C is only allowed for closed water heaters having a rated pressure of at least 0,4 MPa (South Africa).

Note of the Secretary: National Committees are asked to reconfirm their in some countries notes. They will be deleted unless reconfirmed.

200 INTRODUCTION

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

203 Guidance documents concerning the application of the safety requirements for appliances can
204 be accessed via TC 61 supporting documents on the IEC website

205 <https://www.iec.ch/tc61/supportingdocuments>

206 This information is given for the convenience of users of this International Standard and does
207 not constitute a replacement for the normative text in this standard.

208 This standard recognizes the internationally accepted level of protection against hazards such
209 as electrical, mechanical, thermal, fire and radiation of appliances when operated as in
210 normal use taking into account the manufacturer's instructions. It also covers abnormal
211 situations that can be expected in practice and takes into account the way in which
212 electromagnetic phenomena can affect the safe operation of appliances.

213 This standard takes into account the requirements of IEC 60364 as far as possible so that
214 there is compatibility with the wiring rules when the appliance is connected to the supply
215 mains. However, national wiring rules may differ.

216 If an appliance within the scope of this standard also incorporates functions that are covered
217 by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as
218 far as is reasonable. If applicable, the influence of one function on the other is taken into
219 account.

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

222 NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is
223 not necessary to specify particular requirements for the appliance in question over and above the general
224 requirements.

225 This standard is a product family standard dealing with the safety of appliances and takes
226 precedence over horizontal and generic standards covering the same subject.

227 NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are
228 not applicable since they have been taken into consideration when developing the general and particular
229 requirements for the IEC 60335 series of standards.

230 An appliance that complies with the text of this standard will not necessarily be considered to
231 comply with the safety principles of the standard if, when examined and tested, it is found to
232 have other features that impair the level of safety covered by these requirements.

233 An appliance employing materials or having forms of construction differing from those detailed
234 in the requirements of this standard may be examined and tested according to the intent of
235 the requirements and, if found to be substantially equivalent, may be considered to comply
236 with the standard.

237 NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- 238 – IEC standards published by TC 59 concerning methods of measuring performance;
- 239 – CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- 240 – CISPR 14-2 concerning electromagnetic immunity;
- 241 – IEC standards published by TC 111 concerning environmental matters.

242

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-21: Particular requirements for storage water heaters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **storage water heaters** for household and similar purposes and intended for heating water below boiling temperature, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other 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 laymen in shops, in light industry and on farms, are within the scope of this standard.

This standard is also applicable to **immersion heater units** intended to be retrofitted in a **heat exchange closed water heater** having provision for retrofitting. Such a unit shall comply with the requirements in **normative** Annex AA.

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 authorities responsible for the protection of labour and similar authorities;
- in many countries regulations exist for the installation of equipment connected to the water mains.

This standard does not apply to

- appliances for boiling water (IEC 60335-2-15);
- instantaneous water heaters (IEC 60335-2-35);
- commercial dispensing appliances and vending machines (IEC 60335-2-75);
- 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);
- **battery-operated appliances.**