MAJAPIDAMIS- JA MUUD TAOLISED ELEKTRISEADMED. OHUTUS. OSA 2-21: ERINÕUDED SALVESTUS-VEESOOJENDITELE

Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for storage water heaters (IEC 60335-2-21:2012 , modified + COR1:2013 + IEC 60335-2-21:2012/A1:2018)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60335-2-21:2021 +A1:2021 sisaldab Euroopa standardi EN 60335-2-21:2021 ja selle muudatuse A1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 60335-2-21:2021 +A1:2021 consists of the English text of the European standard EN 60335-2-21:2021 and its amendment A1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 18.06.2021, muudatus A1 29.10.2021.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 18.06.2021, for A1 29.10.2021.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A1] [A1]. Selles standardis on rahvusvahelise standardi ühismuudatused tähistatud püstkriipsuga teksti vasakul veerisel. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags [A1] [A1]. In this document, the common modifications to the International Standard are indicated by a vertical line in the left margin of the text. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.120; 91.140.65

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60335-2-21 + A1

June 2021, October 2021

ICS 13.120; 91.140.65

Supersedes EN 60335-2-21:2003 and all of its amendments and corrigenda (if any)

English Version

Household and similar electrical appliances - Safety - Part 2-21: Particular requirements for storage water heaters (IEC 60335-2-21:2012 , modified + COR1:2013 + IEC 60335-2-21:2012/A1:2018)

Appareils électrodomestiques et analogues - Sécurité - Partie 2-21: Règles particulières pour les chauffe-eau à accumulation (IEC 60335-2-21:2012 , modifiée + COR1:2013 + IEC 60335-2-21:2012/A1:2018)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-21: Besondere Anforderungen für Wassererwärmer (Warmwasserspeicher und Warmwasserboiler) (IEC 60335-2-21:2012 , modifiziert + COR1:2013 + IEC 60335-2-21:2012/A1:2018)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN 60335-2-21:2021) consists of the text of IEC 60335-2-21:2012 prepared by IEC/TC 61 "Safety of household and similar electrical appliances", together with the common modifications prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-12-18
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2024-06-18

This document supersedes EN 60335-2-21:2003, and all of its amendments and corrigenda (if any).

This document is read in conjunction with EN 60335-1:2012+A11:2014+ A13:2017+A1:2019+ A14:2019+A2:2019.

The numbering system for European sub-clauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive see informative Annex ZZA, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 60335-2-21:2012 was approved by CENELEC as a European Standard with agreed common modifications.

A1 Amendment A1 European foreword

This document (EN 60335-2-21:2021/A1:2021) consists of the text of IEC 60335-2-21:2012/A1:2018 prepared by IEC/TC 61 “Safety of household and similar electrical appliances”.

The following dates is fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-10-04
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This European Amendment A1 supplements or modifies the corresponding clauses of the standards below:

— EN 60335-1:2012+A11:2014+ A13:2017+A1:2019+A14:2019+A2:2019+A15:2021 (Part 1)

— EN 60335-2-21:2021(Part 2)

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Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website. A1

IEC 60335-2-21

Edition 6.1 2018-08

CONSOLIDATED VERSION

VERSION CONSOLIDÉE

colour inside

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

Appareils électrodomestiques et analogues – Sécurité – Partie 2-21: Règles particulières pour les chauffe-eau à accumulation

IEC 60335-2-21:2012-11+AMD1:2018-08 CSV(en-fr)

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

Appareils électrodomestiques et analogues – Sécurité – Partie 2-21: Règles particulières pour les chauffe-eau à accumulation

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-21: Particular requirements for storage water heaters

FOREWORD

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

This sixth edition cancels and replaces the fifth edition published in 2002 including its Amendment 1 (2004) and its Amendment 2 (2008). It constitutes a technical revision.

The principal changes in this edition as compared with the fifth edition of IEC 60335-2-21 are as follows (minor changes are not listed):

– added requirements for immersion heater units (fixed immersion heaters);
– removed reference to ISO 13732-1 from Bibliography.

The text of this standard is based on the following documents:

FDIS	Report on voting
61/4452/FDIS	61/4505/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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 storage water 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.

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- 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.

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.

– 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).

The contents of the corrigendum of April 2013 have been included in this copy.

A1 AMENDMENT A1 FOREWORD

This amendment has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this amendment is based on the following documents:

CDV	Report on voting
61/5563/CDV	61/5650A/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

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

- reconfirmed,
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- amended.

NOTE 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.

A1

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.

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 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.

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 International Standard 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 may 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 Annex AA.

deleted text

This document deals with the reasonably foreseeable hazards presented by appliances and machines that are encountered by all persons.

However, in general, it does not take into account:

- **children** playing with the appliance;
- the use of the appliance by **very young children**;

It is recognized that **very vulnerable people** may have needs beyond the level addressed in this document.

NOTE 101 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;

– in many countries regulations exist for the installation of equipment connected to the water mains.

NOTE 102 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).

2 Normative references

〈A1〉 This clause of Part 1 is applicable except as follows:

Addition:

IEC 60584-1:2013, *Thermocouples – Part 1: EMF specifications and tolerances* 〈A1〉

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 *Replacement:*
normal operation
operation of the appliance after installation in accordance with the instructions and filled with cold water

3.101
storage water heater
stationary appliance for heating and storing water in a container and incorporating devices to control the water temperature

3.102
closed water heater
unvented **storage water heater** intended to operate at the pressure of the water system, the flow of water being controlled by one or more valves in the outlet system

Note 1 to entry: A **closed water heater** is shown in Figure 101a.

Note 2 to entry: The operating pressure may be the output pressure of a reducing or boosting device.

3.103
cistern-fed water heater
storage water heater that is vented to atmosphere and intended to be supplied by water under gravity from a separate cistern, the flow of water being controlled by one or more valves in the outlet system

Note 1 to entry: A **cistern-fed water heater** is shown in Figure 101d.

Note 2 to entry: The water heater may be installed so that the expanded water returns to the cistern.

Note 3 to entry: In a **cistern-fed water heater**, the pressure in the container results from the column of water in the cistern.

3.104
cistern-type water heater
storage water heater having a container supplied by water under gravity from a cistern incorporated in the appliance.

Note 1 to entry: The expanded water can return to the cistern, the flow of water being controlled by one or more valves in the outlet system

Note 2 to entry: A **cistern-type water heater** is shown in Figure 101c.

Note 3 to entry: In a **cistern-type water heater**, the surface of the water is always at atmospheric pressure.

3.105
open-outlet water heater
storage water heater in which the flow of water is only controlled by a valve in the inlet pipe and in which the expanded or displaced water flows through the outlet