

**MAJAPIDAMIS- JA MUUD TAOLISED ELEKTRISEADMED.  
OHUTUS. OSA 2-29: ERINÕUDED AKULAADURITELE**

**Household and similar electrical appliances - Safety -  
Part 2-29: Particular requirements for battery chargers  
(IEC 60335-2-29:2016, modified +  
IEC 60335-2-29:2016/A1:2019)**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

See Eesti standard EVS-EN IEC 60335-2-29:2021+A1+A11:2024 sisaldab Euroopa standardi EN IEC 60335-2-29:2021 ja selle muudatuste A1:2021 ja A11:2024 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60335-2-29:2021+A1+A11:2024 consists of the English text of the European standard EN IEC 60335-2-29:2021 and its amendments A1:2021 and A11:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.  Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.12.2021, muudatused A1 10.12.2021, A11 19.07.2024.	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 10.12.2021, for A1 10.12.2021 and A11 19.07.2024.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega $\boxed{A1}$ $\langle A1 \rangle$ .  Muudatusega A11 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega $\boxed{A11}$ $\langle A11 \rangle$ .  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 $\boxed{A1}$ $\langle A1 \rangle$ .  The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags $\boxed{A11}$ $\langle A11 \rangle$ .  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.

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ICS 29.200; 97.180

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English Version

**Household and similar electrical appliances - Safety - Part 2-29:  
Particular requirements for battery chargers  
(IEC 60335-2-29:2016, modified + IEC 60335-2-  
29:2016/A1:2019)**

Appareils électrodomestiques et analogues - Sécurité -  
Partie 2-29: Exigences particulières pour les chargeurs de  
batterie  
(IEC 60335-2-29:2016, modifiée + IEC 60335-2-  
29:2016/A1:2019)

Sicherheit elektrischer Geräte für den Hausgebrauch und  
ähnliche Zwecke - Teil 2-29: Besondere Anforderungen für  
Batterieladegeräte  
(IEC 60335-2-29:2016, modifiziert + IEC 60335-2-  
29:2016/A1:2019)

This European Standard was approved by CENELEC on 2021-11-15. Amendment A1 was approved by CENELEC on 2021-11-15. Amendment A11 was approved by CENELEC on 2024-04-17. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendments the status of a national standard without any alteration.

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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 IEC 60335-2-29:2021 consists of the text of IEC 60335-2-29:2016 prepared by IEC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-11-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-11-15

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For relationship with EU Directive(s) / Regulation(s), see informative Annex ZZA and ZZB, which is an integral part of this document.

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## **A1** Amendment A1 European foreword

This document EN IEC 60335-2-29:2021/A1:2021 consists of the text of IEC 60335-2-29:2016/A1:2019 prepared by IEC/TC 61 "Safety of household and similar electrical appliances".

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For relationship with EU Directive(s) / Regulation(s), see informative Annex ZZA, which is an integral part of EN IEC 60335-2-29:2021.

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## **A11** Amendment A11 European foreword

This document (EN 60335-2-29:2021/A11:2024) has been 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 (dop) 2025-04-17 implemented at national level by publication of an identical national standard or by endorsement
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For the relationship with EU Legislation, see informative Annex ZZA, which is an integral part of EN 60335-2-29:2021.

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**Household and similar electrical appliances – Safety –  
Part 2-29: Particular requirements for battery chargers**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-29: Exigences particulières pour les chargeurs de batterie**



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# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



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**Household and similar electrical appliances – Safety –  
Part 2-29: Particular requirements for battery chargers**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-29: Exigences particulières pour les chargeurs de batterie**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

#### Part 2-29: Particular requirements for battery chargers

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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 fifth edition cancels and replaces the fourth edition published in 2002 including its Amendment 1 (2004) and its Amendment 2 (2009). It constitutes a technical revision.

The principal changes in this edition as compared with the fourth edition of IEC 60335-2-29 are as follows (minor changes are not listed):

- Revised the drop test to refer to IEC 60068-2-31 (21.101);
- Requirements for supply cords on battery chargers used at low temperatures (25.7);
- Requirements for battery chargers having an output voltage exceeding SELV have been added (1, 3.2.2, 3.4.3, 10.101, 24.4, 25.5, 25.7, 25.8, 25.15, 26.5);
- A classification for battery chargers used outdoors has been added (6.2, 29.2);
- Some notes in Clause 1, Subclauses 7.1 and 22.102, Figure 101 and Annex AA 11.8 have been converted to normative text.

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

FDIS	Report on voting
61/5142/FDIS	61/5173/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 battery chargers.

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 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

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It is the recommendation of the committee that the content of this standard 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.

- 3.1.9: The artificial load may not be used (USA).
- 11.2: The appliance is not placed in a test corner (USA).
- 21.101: The drop test is carried out differently on outdoor direct plug-in battery chargers (USA).
- 21.102: The test is different (USA).
- 22.26: Basic insulation is allowed between live parts and SELV circuits (USA).
- Annex AA, 11.8: Higher temperature rises are allowed (USA).
- Annex AA, Clause 17: Higher temperature rises are allowed (USA).
- Annex AA, 19.13: Higher temperature rises are allowed (USA).

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## 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:

FDIS	Report on voting
61/5760/FDIS	61/5799/RVD

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

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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.



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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.

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 2-29: Particular requirements for battery chargers

#### 1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric battery chargers for household and similar use having an output not exceeding  $\overline{A_1}$  250 V  $\overline{A_1}$  ripple-free direct current, their **rated voltage** being not more than 250 V.

Battery chargers intended for charging batteries in a household end use application outside the scope of the IEC 60335 series of standards are within the scope of this standard.

Requirements for battery chargers for use by children at least 8 years old without supervision are given in Annex AA.

Battery chargers not intended for normal household use, but which nevertheless may be a source of danger to the public, such as battery chargers intended for use in garages, shops, light industry and on farms, are within the scope of this standard.

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**;
- the use of the appliance by **young children** without supervision.

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

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.

NOTE 102 This standard does not apply to

- built-in battery chargers, except those for installing in caravans and similar vehicles;
- battery chargers that are part of an appliance, the battery of which is not accessible to the user;
- battery chargers intended exclusively for industrial purposes;
- battery chargers 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 chargers for emergency lighting (IEC 60598-2-22);
- supply units for electronic equipment.

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 61558-2-7:2007, *Safety of power transformers, power supplies, reactors and similar products – Part 2-7: Particular requirements and tests for transformers and power supplies for toys*

<sup>A1</sup> IEC 61558-2-4:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers* <sup>A1</sup>

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

### <sup>A1</sup> 3.1 Definitions relating to physical characteristics

#### 3.1.1 *Addition:*

Note 1 to entry: The **rated voltage** is the rated input voltage.

#### 3.1.6 *Addition:*

Note 2 to entry: The **rated current** is the rated input current.

#### 3.1.9 *Replacement:*

##### **normal operation**

operation of the appliance under the following conditions:

Battery chargers for charging lead-acid batteries, and other battery chargers having a **rated DC output current** not exceeding 20 A, are connected to the circuit of Figure 101. The variable resistor is adjusted so that the current in the circuit is the **rated DC output current** when the battery charger is supplied at **rated voltage**.

When the charging current is controlled by the state of charge of the battery, the variable resistor and the capacitor are replaced by a discharged battery of the type and having the largest capacity specified in the instructions.

Other battery chargers are connected to a discharged battery of the type and having the largest capacity specified in the instructions.

#### 3.1.101

##### **rated DC output voltage**

output voltage assigned to the battery charger by the manufacturer

#### 3.1.102

##### **rated DC output current**

output current assigned to the battery charger by the manufacturer