SLOVENSKI STANDARD
oSIST prEN IEC 62133-2:2026

01-maj-2026

Sekundarni členi in baterije z alkalnimi ali drugimi nekislinskimi elektroliti - Varnostne zahteve za prenosne zatesnjene sekundarne litijeve člene in za baterije, narejene iz njih, za uporabo v prenosnih napravah - 2. del: Litijevi sistemi

Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

Ta slovenski standard je istoveten z: **prEN IEC 62133-2:2026**

ICS:

29.220.30	Alkalni sekundarni členi in baterije	Alkaline secondary cells and batteries

oSIST prEN IEC 62133-2:2026 **en**

21A/970/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62133-2 ED2**	
DATE OF CIRCULATION: **2026-03-06**	CLOSING DATE FOR VOTING: **2026-05-29**
SUPERSEDES DOCUMENTS: **21A/928/CD, 21A/942A/CC**	

IEC SC 21A : SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES	
SECRETARIAT: France	SECRETARY: Mr Jean-Marie Bodet
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 21	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED: Safety	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

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Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

The resolved comments have been presented during IEC SC21A WG4 Hybrid Meeting held in Washington on 2025-10-29 and approved by the members of the WG4.

The WG4 also aggreed to propose the revised draft (clean document) for CDV and to candidate to be onboarded on Online Standard Development (OSD).

Link to Committee Draft for Vote (CDV) online document:

Click here

How to access

This link leads you to the Online Standards Development (OSD) platform for National Mirror Committee's (NMC) comments. The project draft may be found further down this document.

Resource materials

We recommend NCs to review the available materials to better understand the member commenting on the OSD platform. This includes the:

- OSD NC roles overview
- How to add and submit comments to the IEC

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Should you require any assistance, please contact the IEC IT Helpdesk.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

FOREWORD

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IEC 62133-2 has been prepared by subcommittee 21A: Secondary cells and batteries containing alkaline or other non-acid electrolytes, of IEC technical committee 21: Secondary cells and batteries. It is an International Standard.

This second edition cancels and replaces the first edition of IEC 62133-2 published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62133-2:

a) Clause 1: The scope was revised to indicate that the standard addresses batteries built into equipment unless otherwise noted that the batteries are user-replaceable. The scope also indicates that electric shock hazards are not addressed in the standard.

b) Clause 2: The referenced documents were updated to represent current referenced standards.

c) Clause 3: A number of new terms that are in the standard have been added to this clause.

d) Clause 5: The contents of Clause 5 contain only those statements that are mandatory. All non-mandatory language previously located in Clause 5 was moved to Annex C (Informative*) Recommendations to equipment manufacturers and battery assemblers*. Clause 5 was also organized into General, Cell and Battery subclauses. Removal of insulation resistance criteria, which did not seem relevant to portable lithium-ion batteries. As part of these changes a new normative Annex H has been included for cell construction criteria.

e) Clause 6: Added cells with a rated capacity less than 300 mAh and resistances greater than 3 Ω as option for no further testing. Also added process for evaluating families of cells and batteries similar to what is in the UN lithium battery transport criteria of 38.3.

f) 7.1: Table 3 was updated to reflect changes to tests, etc. The second charging procedure was updated to better reflect how charging using the operating region specifications should be handled. Also, clarification that the temperatures of the operating region is a surface temperature.

g) 7.4 (foreseeable use tests): The following tests were added to the foreseeable use tests: 7.4.3 Electrostatic discharge (ESD) immunity (battery); 7.4.4 Risk evaluation after cycling at temperature extremes (cell). 7.4.3 Electrostatic discharge (ESD) immunity (battery) test was taken from IEC 61960-3:2017. 7.4.4 Risk evaluation after cycling at temperature extremes (cell) test was added to determine that cells subjected to operating region extreme temperature conditions remain safe. Also, since Vibration and Mechanical shock tests represent normal use conditions, these tests were moved to 7.4.

h) 7.5 (foreseeable misuse tests): There were a number of changes made to the tests that are under the foreseeable misuse test subclause as follows:

   1) External Short-circuit (cell) - Revised external short-circuit parameters to 30 mΩ ± 10 mΩ for high current discharge cells. Also conditioning temperature was changed to 57 °C ± 4 °C to match IEC 62281:2019/AMD2:2023 criteria.

   2) External Short-circuit (battery) - Revised external short-circuit parameters to 30 mΩ ± 10 mΩ for high current discharge batteries. Also, the single fault condition is limited to user-replaceable batteries.

   3) Abnormal Charging - Divided into overcharge and high rate abnormal charge test.

      i) Overvoltage charging test - Expanded to include cells and with test parameters modified based upon what is being tested (i.e. cell, battery with overcharge protection and battery without protection).

ii) High rate charging test - Added to evaluate cells and batteries ability to handle some level of overcurrent charging. This test also varies depending upon what is being tested (cell, battery and battery with parallel string).

4) Overdischarge (battery) - Added to evaluate the effectiveness of a batteries overdischarge protection.

5) Internal Short-circuit 7.5.9: Completely re-written to offer choices to the forced internal short-circuit test. It now contains the forced internal short-circuit test, which has been re-organized for clarity; An alternative internal short-circuit test was added. This option has criteria taken from a similar option in IEC 62660-3:2022. The details that the test would need to meet are included in normative Annex J. There is also an option to testing, which consists of construction criteria (puncture strength or separator melt temperature criteria) and additional production verification. These other options are proposed so that the country deviations that had been in the standard when only the forced internal short-circuit test was included were removed.

i) Clause 8: Revised and re-organized. Included was specifics on safe charging including the use of designated chargers that should be included in the information for safety and the manufacturer providing the necessary specifications.

j) Clause 9: Updated to help simplify this clause including reference to IEC 61960-3:2017 and IEC 61960-4:2024 marking criteria and updates to the small battery marking. For small batteries that can be a potential ingestion hazard, IEC 60086-4:2025.

k) Annex A: Annex A was made informative. The forced internal short-circuit sample preparation was moved out of Annex A and into Annex B. The whole clause was revised and reorganized to improve clarity and to make clear that the cell manufacturer is the one that has to specific the operating region.

l) Annex B: This annex is normative and contains the forced internal short-circuit sample preparation clause. It is normative.

m) Annex C: This informative annex was renamed and the non-enforceable guidance language that was in Clause 5 was moved here. Also there have been modification so Clause C.6 to better represent lithium-ion technology concerns.

n) Annex D: This informative annex was revised to better reflect lithium-ion technology concerns.

o) Annex E: This is now the normative criteria for resistance testing of coin cells and now other small cells, which may not have to be tested.

p) Annex G: Revised to clarify standards of safety components to include not only IEC but regional component standards.

q) Annex H: This is a new normative annex for minimum cell safety criteria related to production that can impact safety. This annex applies to all cells.

r) Annex I: This is a new informative annex about cell and battery specifications. This is information that cell and battery manufacturers should be providing for the safe use of their devices.

s) Annex J: This is a new normative annex for criteria for an alternative internal short-circuit as an option to doing the forced internal short-circuit test or utilizing the construction criteria option. This criteria is very similar to that provided in IEC 62660-3:2022 as criteria to be applied if an alternative test is to be conducted.

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

Draft	Report on voting
21A/XXX/XX	21A/XXX/XX

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 62133 series, published under the general title *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications*, can be found on the IEC website.

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.

1 Scope

This part of IEC 62133 specifies requirements and tests for the safe operation of portable sealed secondary lithium cells and batteries containing non-acid electrolyte, under intended use and reasonably foreseeable misuse.

This standard establishes minimum requirements for susceptibility of cells, and batteries to the abuse and environmental effects that these cells and batteries may encounter in handling, transport and storage, but does not presume to account for these effects in specific applications, which are left to the requirements of the combination of the battery and end-use equipment in the end-use equipment standards.

Coin cells with an internal resistance greater than 3 Ω measured in accordance with IEC 61960-4:2024, 6.6, and batteries made from them are out of the scope of this document. The instructions for preventing accidental ingestion of those coin cells and batteries are specified in IEC 60086-4:2025, 7.2.

This standard does not address functional safety of the electronic and programmable electronic battery controls.

This standard addresses first life cells and batteries. In the case of reused, repurposed or second life secondary lithium cells and batteries, additional requirements and tests should be considered.

In addition to the requirements explicitly outlined in this standard including markings and instructions, it is essential to consider other potential safety risks that cannot be fully addressed. These include, but are not limited to, hazardous voltage exposure, flammability risks for non-metallic materials, and other application-specific safety concerns.

Compliance to this standard alone cannot be sufficient for safe integration of a cell or battery in the end-use equipment if only the cells or batteries comply with this standard with no additional evaluation.

NOTE 1 Annex C of this standard provides guidance for further considerations when battery specific criteria are not covered in the end-use equipment standard.

Portable applications comprise hand-held equipment, transportable equipment and movable equipment.

Examples of the main uses are shown below:

a) hand-held equipment: smartphone, tablet PCs, audio/video players, and similar equipment;
b) transportable equipment: notebook computers, CD players, and similar equipment;
c) movable equipment
   1) 18 kg or less in mass and not fixed in place, or
   2) provided with wheels, castors, or other means to facilitate movement by an ordinary person as required to perform its intended use,
   3) power tools, power assisted cycles, business-use video cameras, and similar equipment.

NOTE 2 EESS (Electrical Energy Storage Systems) and UPS, which use batteries over 500 Wh of electric energy are excluded.

NOTE 3 Self-propelled vehicles are excluded

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-482:2004, *International Electrotechnical Vocabulary - Part 482: Primary and secondary cells and batteries (available at http://www.electropedia.org)*

IEC 60086-4:2025, *Primary batteries - Part 4: Safety of lithium batteries*

IEC 60269-7:2021, *Low-voltage fuses - Part 7: Supplementary requirements for fuse-links for the protection of batteries and battery systems*

IEC 60691:2023, *Thermal-links - Requirements and application guide*

IEC 60730-1:2022, *Automatic electrical controls - Part 1: General requirements*

IEC 60738-1:2022, *Thermistors - Directly heated positive temperature coefficient - Part 1: Generic specification*

IEC 61000-4-2:2025, *Electromagnetic Compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test*

IEC 61434:1996, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Guide to designation of current in alkaline secondary cell and battery standards*

IEC 61960-3:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications - Part 3: Prismatic and cylindrical lithium secondary cells and batteries made from them*

IEC 61960-4:2024, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - secondary lithium cells and batteries for portable applications - Part 4: Coin secondary lithium cells, and batteries made from them*

IEC 62133-2, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems*

IEC 62281:2019/AMD2:2023, *Safety of primary and secondary lithium cells and batteries during transport*

IEC 62619:2022, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications*

IEC 62660-3:2022, *Secondary lithium-ion cells for the propulsion of electric road vehicles - Part 3: Safety requirements*

ISO/IEC Guide 51, *Safety aspects - Guidelines for their inclusion in standards*

ISO 6208:1992, *Nickel and nickel alloy plate, sheet and strip*

ISO 8124-1:2022, *Safety of toys — Part 1: Safety aspects related to mechanical and physical properties*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-482:2004, ISO/IEC Guide 51 and the following apply.

3.1
safety
freedom from unacceptable risk

3.2
risk
combination of the probability of occurrence of harm and the severity of that harm

3.3
harm
physical injury or damage to the health of people or damage to property or to the environment

3.4
hazard
potential source of harm

3.5
intended use
use of a product, process or service in accordance with specifications, instructions and information provided by the supplier

3.6
reasonably foreseeable misuse
use of a product, process or service in a way which is not intended by the supplier, but which may result from readily predictable human behaviour

3.7
secondary lithium cell
cell
secondary cell where electrical energy is derived from the insertion/extraction reactions of lithium ions or oxidation/reduction reaction of lithium between the negative electrode and the positive electrode

Note 1 to entry: The cell typically has an electrolyte that consists of a lithium salt and organic solvent compound in liquid, gel or solid form and has a metal or a laminate film casing. It is not ready for use in an application because it is not yet fitted with its final housing, terminal arrangement and electronic control device

3.8
secondary lithium battery
battery
unit which incorporates one or more secondary lithium cells and which is ready for use

Note 1 to entry: This unit incorporates adequate housing and a terminal arrangement and may have electronic control devices

3.9
leakage
unplanned, visible escape of liquid electrolyte from a cell or battery

[SOURCE: IEC 60050-482:2004, 482-02-32 — with deletion of "gas or other material"]