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Edition 4.1 2023-02
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary sealed cells and batteries for portable applications – Part 1: Nickel-cadmium

Accumulateurs alcalins et autres accumulateurs à électrolyte non-acide – Accumulateurs étanches pour applications portables – Partie 1: Nickel-cadmium



IEC 61951-1:2017-03+AMD1:2023-02 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES – SECONDARY SEALED CELLS AND BATTERIES FOR PORTABLE APPLICATIONS –

Part 1: Nickel-cadmium

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 61951-1 edition 4.1 contains the fourth edition (2017-03) [documents 21A/622/FDIS and 21A/630/RVD] and its amendment 1 (2023-02) [documents 21A/821/FDIS and 21A/828/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 61951-1 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.

This fourth edition constitutes a technical revision.

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

- addition of battery type;
- revision of Figure 3 (6.1.3.1);
- addition of “Optional pip” note to positive contact;
- changed leader line position from pip to flats of positive contact (B and G).

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61951 series can be found, under the general title *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary sealed cells and batteries for portable applications*, on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES – SECONDARY SEALED CELLS AND BATTERIES FOR PORTABLE APPLICATIONS –

Part 1: Nickel-cadmium

1 Scope

This part of IEC 61951 specifies marking, designation, dimensions, tests and requirements for secondary sealed nickel-cadmium small prismatic, cylindrical and button cells and batteries, suitable for use in any orientation, for portable applications.

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 (IEV) – Part 482: Primary and secondary cells and batteries*

IEC 60086-1, *Primary batteries – Part 1: General*

IEC 60086-2, *Primary batteries – Part 2: Physical and electrical specifications*

IEC 61959, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Mechanical tests for sealed portable secondary cells and batteries*

IEC 62133-1, *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 1: Nickel systems*

IEC 62902, *Secondary cells and batteries – Marking symbols for identification of their chemistry*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-482 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
nominal voltage
suitable approximate value of voltage used to designate or identify a cell or a battery

Note 1 to entry: The nominal voltage of a sealed nickel-cadmium rechargeable single cell: 1,2 V.

Note 2 to entry: The nominal voltage of a battery of n series connected cells is equal to n times the nominal voltage of a single cell.

[SOURCE: IEC 60050-482:2004, 482-03-31, modified – Addition of Notes 1 and 2 to entry.]

3.2
rated capacity
capacity value of a cell or a battery determined under specified conditions and declared by the manufacturer

Note 1 to entry: The rated capacity is the quantity of electricity C_5 Ah (ampere-hours) declared by the manufacturer which a single cell can deliver during a 5 h period when charging, storing and discharging under the conditions specified in 7.3.2.

Note 2 to entry: The capacity of a battery is the quantity of electricity C_5 Ah (ampere-hours) declared by the manufacturer which a battery can deliver during a 5 h period, when charged, stored and discharged under the conditions specified in 7.3.2.

[SOURCE: IEC 60050-482:2004, 482-03-15, modified – Addition of Notes 1 and 2 to entry.]

3.3
small prismatic cell
cell in the form of a rectangular parallelepiped whose width and thickness dimensions are not more than 25 mm

3.4
cylindrical cell
cell of circular cross-section in which the overall height is equal to, or greater than, the overall diameter

3.5
button cell
cell of a circular cross-section in which the overall height is less than the overall diameter

3.6
nickel-cadmium cell
cell containing a nickel hydroxide compound for the positive electrode, a cadmium compound for the negative electrode, and potassium hydroxide or other alkaline solution as electrolyte

Note 1 to entry: Positive electrodes are isolated from negative electrodes by a separator.

3.7
nickel- cadmium battery
assembly of secondary cell(s) as a source of electrical energy characterized by its voltage, size, terminal arrangement, capacity and rate capability

3.8
sealed cell
cell which remains closed and does not release either gas or liquid when operated within the limits of charge and temperature specified by the manufacturer

Note 1 to entry: The cell is equipped with a safety device to prevent dangerously high internal pressure.

Note 2 to entry: The cell does not require addition to the electrolyte and is designed to operate during its life in its original sealed state.

[SOURCE: IEC 60050-482:2004, 482-05-17, modified – The existing note has been developed into Notes 1 and 2 to entry.]

3.9
portable cell
cell designed mainly for use in an easily hand-carried battery

3.10
battery for portable applications
battery for use in device or appliance which is conveniently hand-carried

3.11
trickle charge
method of charge applied to a battery wherein the state of charge is maintained by a continuous, long term, regulated small electric current

Note 1 to entry: The trickle charge compensates self-discharge effects and maintains the battery in an approximately fully charged state.

4 Parameter measurement tolerances

The overall accuracy of controlled or measured values, relative to the specified or actual values, shall be within the following tolerances:

a) ±1 % for voltage;

b) ±1 % for current;

c) ±1 % for capacity;

d) ±2 °C for temperature;

e) ±0,1 % for time;

f) ±0,1 mm for dimensions;

g) ±5 % for humidity.

These tolerances comprise the combined accuracy of the measuring instruments, the measurement techniques used and all other sources of error in the test procedure.

The details of the instrumentation used shall be provided in each report of results.

5 Cell and battery designation and marking

5.1 Cell and battery designation

5.1.1 Small prismatic cells and cylindrical cells

5.1.1.1 General

Sealed nickel-cadmium small prismatic rechargeable single cells and cylindrical rechargeable single cells shall be designated by a letter L, M, J, H or X which signifies:

- low rate of discharge (L);
- medium rate of discharge (M);
- medium high rate of discharge (J);
- high rate of discharge (H);
- very high rate of discharge (X).

NOTE 1 These cells are typically but not exclusively used for the following discharge rates:

- L up to 0,5 I_t A;
- M up to 3,5 I_t A;