SLOVENSKI STANDARD
SIST EN 61951-1:2018/oprA1:2022

01-julij-2022

Sekundarni členi in baterije z alkalnimi ali drugimi nekislinskimi elektroliti - Sekundarni hermetični členi in baterije za prenosne naprave - 1. del: Nikelj-kadmij - Dopolnilo A1

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

Ta slovenski standard je istoveten z: **EN 61951-1:2017/prA1:2022**

ICS:

29.220.30	Alkalni sekundarni členi in baterije	Alkaline secondary cells and batteries

SIST EN 61951-1:2018/oprA1:2022 **en**

21A/791/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 61951-1/AMD1 ED4**	
DATE OF CIRCULATION: **2022-05-13**	CLOSING DATE FOR VOTING: **2022-08-05**
SUPERSEDES DOCUMENTS: **21A/766A/CD, 21A/774A/CC**	

IEC SC 21A : SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES

SECRETARIAT: France	SECRETARY: Mr Pierre Bourg
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 21,TC 35	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
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.	

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:

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

PROPOSED STABILITY DATE: 2024

NOTE FROM TC/SC OFFICERS:

During the IEC SC21A WG2 web meeting held on February 21st , 2022 it was decided to issue the CDV for the IEC 61951-1 /AMD1 ED4

IEC 61951-1 4th Edition Amendment

Change to 2 Rationale: IEC 62902 should be added to normative references.

Change to 3 Rationale: Trickle charge definition should be added to help user understanding.

Change to 5.3.1, 5.3.2 Rationale: Marking of registered trademark should be added after name and identification.

Change to 5.3.3 Rational: Marking symbols for identification of the chemistry according to IEC 62902 should be added.

Change to Table 5 in 7.3.2.2 Rationale: The table should be divided into small prismatic cells and cylindrical cells. In small cylindrical cell, J and JT designations should be separated from "M/MT/MU" because there are difference of discharge characteristics between M cells and J cells.

Change to 7.5.1.3 Rationale: IEC designations should be used.

Change to 7.8 Rationale: The term "pressure relief feature" is more accurate for this test than "safety device operation" since it describes a specific function.

Change to 7.12.1 Rationale: Note should be added to clarify that internal resistance measurement is not required.

Change to 7.12.2 Rationale: Formula should be corrected, and units of measurement should be clarified. Abbreviated term "RMS" is unusual. It should be changed to "root mean square".

Change to 7.12.3 Rationale: Formula should be corrected, and units of measurement should be clarified.

Change to Table 31 in 10.3 Rationale: "as agreed" should be changed to footnote "a" in order to add detail.

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*

3.11

trickle charge

charge method by supplying a small electrical current while disconnecting from load to supplement self-discharge of cell

5.3.1 Small prismatic cells and cylindrical cells

Each jacketed cell supplied without connections shall carry durable markings giving the following minimum information:

- sealed rechargeable nickel-metal hydride or Ni-MH;
- rated capacity;
- nominal voltage;
- polarity (+ and –);
- date of manufacture (which may be in code);
- name, identification, or registered trademark of manufacturer or supplier;

5.3.2 Button cells

Each button cell supplied without connection shall carry durable markings giving the following minimum information:

- designation as specified in 5.1;
- polarity (+ and –);
- date of manufacture (which may be in code);
- name, identification, or registered trademark of manufacturer or supplier.

5.3.3 Batteries

Each battery shall carry durable markings giving the following minimum information:

- rated capacity;
- nominal voltage;
- date of manufacture (which may be in code);
- marking symbols (identification of the chemistry according to IEC 62902).

Table 5a – Discharge performance at 20 °C for small prismatic cells

Discharge conditions		Minimum discharge duration h/min			
Rate of constant current A	Final voltage V	Cell designation			
		L/LT/LU	M/MT/MU/J/JT	H/HT/HU	X
0,2 I_t [a]	1,0	5 h	5 h	5 h	5 h
1,0 I_t	0,9	–	42 min	48 min	54 min
5,0 I_t [b]	0,8	–	–	6 min	9 min
10,0 I_t [b]	0,7	–	–	–	4 min

[a] Five cycles are permitted for this test. The test shall be terminated at the end of the first cycle which meets the requirement.

[b] Prior to the 5,0 I_t A and 10,0 I_t A tests, a conditioning cycle may be included if necessary. This cycle shall consist of charging at 0,1 I_t A in accordance with 7.2 and discharging at 0,2 I_t A, in an ambient temperature of 20 °C ± 5 °C, according to 7.3.2.

Table 5b – Discharge performance at 20 °C for cylindrical cells

Discharge conditions		Minimum discharge duration h/min					
Rate of constant current A	Final voltage V	Cell designation					
		L/LT/LU/LS	M/MT/MU	J	JT	H/HT/HU	X
0,2 I_t [a]	1,0	5 h	5 h	5 h	5 h	5 h	5 h
1,0 I_t	0,9	–	42 min	48 min	43 min	48 min	54 min
5,0 I_t [b]	0,8	–	–			6 min	9 min
10,0 I_t [b]	0,7	–	–			–	4 min

[a] Five cycles are permitted per cell for this test. The test shall be terminated at the end of the first cycle of each cell which meets the requirement.

[b] Prior to the 5 I_t A and 10 I_t A tests, a conditioning cycle may be included if necessary. This cycle shall consist of charging at 0,1 I_t A in accordance with 7.2 and discharging at 0,2 I_t A in an ambient temperature of 20 °C ± 5 °C according to 7.3.2.

7.5.1.3 Cylindrical cells dimensionally interchangeable with primary cells

- 200 for KR03, KR6, KR14 and KR20 cells.

7.8 Pressure relief feature

Warning: EXTREME CAUTION SHALL BE EXERCISED WHEN CARRYING OUT THIS TEST ! CELLS SHALL BE TESTED INDIVIDUALLY, AND IT SHOULD BE NOTED THAT CELLS FAILING TO MEET THE REQUIREMENT COULD BURST WITH EXPLOSIVE FORCE EVEN AFTER THE CELL HAS BEEN DISCONNECTED FROM THE CHARGE CURRENT.

FOR THIS REASON, THE TEST SHALL BE CARRIED OUT IN A PROTECTIVE CHAMBER.

The following test shall be carried out in order to establish that the pressure relief feature of the cell will operate to allow the escape of gas when the internal pressure exceeds a critical value.

7.12 Internal resistance

7.12.1 General

The internal resistance of sealed nickel-metal hydride small prismatic or cylindrical rechargeable single cells shall be checked either by the alternating current (AC) or by the direct current (DC) method.

Should the need arise for the internal resistance to be measured by both AC and DC methods on the same cell, then the AC method shall be used first, followed by the DC method. In this case, it is not necessary to discharge and charge the cell between conducting AC and DC methods.

There is no requirement for internal resistance, but when the value is requested, measurement is performed according to the method described here.

7.12.2 Measurement of the internal AC resistance

The alternating root mean square voltage, U_a, shall be measured when applying to the cell an alternating root mean square current, I_a, at the frequency of 1,0 kHz ± 0,1 kHz for a period of 1 s to 5 s.

The internal AC resistance, R_{ac}, is given by

$$R_{ac} = \frac{U_a}{I_a}$$

where

R_{ac} is the internal AC resistance (Ω);

U_a is the alternating root mean square voltage (V);

I_a is the alternating root mean square current (A).

7.12.3 Measurement of the internal DC resistance

The cell shall be discharged at a constant current of value I_1 as specified in Table 25. At the end of a discharge period of 10 s, the voltage U_1 during discharge shall be measured and recorded. The discharge current shall then be immediately increased to a constant