



**SLOVENSKI STANDARD**  
**SIST EN 61951-1:2004/A1:2006**  
**01-julij-2006**

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Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 1: Nickel-cadmium (IEC 61951-1:2003/A1:2005)

Akkumulatoren und Batterien mit alkalischem oder anderen nichtsäurehaltigen Elektrolyten - Tragbare wiederaufladbare gasdichte Einzelzellen - Teil 1: Nickel-Cadmium (IEC 61951-1:2003/A1:2005)

Accumulateurs alcalins et autres accumulateurs à électrolyte non acide - Accumulateurs individuels portables étanches - Partie 1: Nickel-cadmium (CEI 61951-1:2003/A1:2005)

**Ta slovenski standard je istoveten z: EN 61951-1:2003/A1:2006**

**ICS:**

29.220.30

**SIST EN 61951-1:2004/A1:2006 en**

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**Secondary cells and batteries containing alkaline  
or other non-acid electrolytes –  
Portable sealed rechargeable single cells  
Part 1: Nickel-cadmium  
(IEC 61951-1:2003/A1:2005)**

Accumulateurs alcalins et autres  
accumulateurs à électrolyte non acide –  
Accumulateurs individuels portables  
étanches  
Partie 1: Nickel-cadmium  
(CEI 61951-1:2003/A1:2005)

Akkumulatoren und Batterien mit  
alkalischem oder anderen  
nichtsäurehaltigen Elektrolyten –  
Tragbare wiederaufladbare gasdichte  
Einzelzellen  
Teil 1: Nickel-Cadmium  
(IEC 61951-1:2003/A1:2005)

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This amendment A1 modifies the European Standard EN 61951-1:2003; it was approved by CENELEC on 2005-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 21A/421/FDIS, future amendment 1 to IEC 61951-1:2003, prepared by SC 21A, Secondary cells and batteries containing alkaline or other non-acid electrolytes, of IEC TC 21, Secondary cells and batteries, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 61951-1:2003 on 2005-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2006-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2008-12-01

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## Endorsement notice

The text of amendment 1:2005 to the International Standard IEC 61951-1:2003 was approved by CENELEC as an amendment to the European Standard without any modification.

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NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC

61951-1

2003

AMENDEMENT 1  
AMENDMENT 1  
2005-11

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Amendement 1

**Accumulateurs alcalins et autres accumulateurs  
à électrolyte non acide –  
Accumulateurs individuels portables étanches –**

**Partie 1:  
Nickel-cadmium**

[SIST EN 61951-1:2004/A1:2006](https://standards.iteh.ai/catalog/standards/sist/3aa7a34c-f4bd-4e72-ac0a-a48d9fa65e26/sist-en-61951-1-2004-a1-2006)

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**Secondary cells and batteries containing  
alkaline or other non-acid electrolytes –  
Portable sealed rechargeable single cells –**

**Part 1:  
Nickel-cadmium**

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*Pour prix, voir catalogue en vigueur  
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## FOREWORD

This amendment 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 first amendment allows differentiating cells for operation at temperatures of up to 40 °C and cells for operation at temperatures of up to 50 °C.

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

FDIS	Report on voting
21A/421/FDIS	21A/422/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.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://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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### CONTENTS

*Replace the existing title of 7.6.3 by the following:*

7.6.3 LT/LU, MT/MU or HT/HU cylindrical cells

*Add, on page 5, to the list of tables, the title of new Table 26 as follows:*

Table 26 – Permanent charge endurance for LU, MU or HU cylindrical cells

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#### 5.1.2 Cylindrical cells

*Replace the paragraph after the note by the following:*

When a cell is intended for permanent charge at elevated temperatures, typically up to 40 °C, a letter "T" is placed after the letter L, M, H or X.

When a cell is intended for permanent charge at elevated temperatures, typically up to 50 °C, a letter "U" is placed after the letter L, M, H or X.

Page 27

**7.2.1 Discharge performance at 20 °C**

Replace the existing Table 6 by the following:

**Table 6 – 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	M/MT/MU	H/HT/HU	X
0,2 $I_t$ <sup>a</sup>	1,0	5 h	5 h	5 h	5 h
1,0 $I_t$	0,9	–	42 min	48 min	54 min
5,0 $I_t$ <sup>b</sup>	0,8	–	–	6 min	9 min
10,0 $I_t$ <sup>b</sup>	0,7	–	–	–	4 min

<sup>a</sup> Five cycles are permitted for this test. The test shall be terminated at the end of the first cycle which meets the requirement.

<sup>b</sup> 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 7.1 and discharging at 0,2  $I_t$  A, at an ambient temperature of 20 °C ± 5 °C, according to 7.2.1.

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**7.2.2 Discharge performance at –18 °C**

Replace the existing Table 9 by the following:

**Table 9 – Discharge performance at –18 °C for cylindrical cells**

Discharge conditions		Minimum discharge duration h/min					
Rate of constant current A	Final voltage V	Cell designation					
		L/LT/LU	M	MT/MU	H	HT/HU	X
0,2 $I_t$	1,0	2 h	3 h	2 h	3 h	2 h	4 h
1,0 $I_t$	0,9	–	15 min	10 min	30 min	20 min	36 min
2,0 $I_t$ <sup>a</sup>	0,8	–	–	–	9 min	6 min	13 min
3,0 $I_t$ <sup>a</sup>	0,8	–	–	–	–	–	7 min

<sup>a</sup> Prior to the 2,0  $I_t$  A and 3,0  $I_t$  A tests, a conditioning cycle may be included if necessary. This cycle consists of charging at 0,1  $I_t$  A in accordance with 7.1 and discharging at 0,2  $I_t$  A at an ambient temperature of 20 °C ± 5 °C, according to 7.2.1.

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**7.4.1.1 Small prismatic and cylindrical cells**

Replace, on page 33, the last line of this subclause by the following

- 50 for cylindrical cells LT/LU, MT/MU or HT/HU

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#### 7.4.2.3 LT, MT or HT cylindrical cells

*Replace the existing text of this subclause by the following:*

The permanent charge endurance test shall be performed in three steps according to the conditions specified in Table 18.

It consists of:

- a charge acceptance test at +40 °C;
- an ageing period of six months at +70 °C;
- a final charge acceptance test to check the cell's performance after ageing.

NOTE The six months ageing period and the temperature of +70 °C have been selected to simulate four years of permanent charge operation at +40 °C.

Prior to this test, the cell shall be discharged at 0,2  $I_t$  A at 20 °C ± 5 °C to a final voltage of 1,0 V and stored, in an ambient temperature of +40 °C ± 2 °C, for not less than 16 h and not more than 24 h.

The cell shall then be charged and discharged at constant current under the conditions specified in Table 18 while maintained in an ambient temperature of +40 °C ± 2 °C or +70 °C ± 2 °C respectively as appropriate.

The discharge conditions A or B may be chosen to suit the user's requirements. The discharge is carried out immediately on completion of charging.

After performing the first charge acceptance test at +40 °C the cell is stored, in an ambient temperature of +70 °C ± 2 °C, for not less than 16 h and not more than 24 h.

During the ageing period of six months at +70 °C, precautions shall be taken to prevent the cell-case temperature from rising above +75 °C by providing a forced air draught, if necessary.

NOTE Actual cell case temperature, not the ambient temperature, determines cell performance.

The discharge duration of the three cycles at +70 °C shall be recorded. Leakage of electrolyte shall not occur during this test.

After completion of the ageing period, the cell shall be stored, in an ambient temperature of +40 °C ± 2 °C for not less than 16 h and not more than 24 h. The three cycles at +40 °C of the initial charge acceptance test are then repeated using the conditions specified in Table 18. The duration of the discharge shall be not less than the values specified in Table 18.

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*Add the following new subclause 7.4.2.4 and new Table 26 as follows:*

#### 7.4.2.4 LU, MU or HU cylindrical cells

The permanent charge endurance test shall be performed in three steps according to the conditions specified in Table 26.



It consists of:

- a charge acceptance test at +50 °C;
- an ageing period of twelve months at +70 °C;
- a final charge acceptance test to check the cell's performance after ageing.

NOTE The twelve months ageing period and the temperature of +70 °C have been selected to simulate four years of permanent charge operation at +50 °C.

Prior to this test, the cell shall be discharged at  $0,2 I_t$  A at  $20\text{ °C} \pm 5\text{ °C}$  to a final voltage of 1,0 V and stored, in an ambient temperature of  $+50\text{ °C} \pm 2\text{ °C}$ , for not less than 16 h and not more than 24 h.

The cell shall then be charged and discharged at constant current under the conditions specified in Table 26 while maintained in an ambient temperature of  $+50\text{ °C} \pm 2\text{ °C}$  or  $+70\text{ °C} \pm 2\text{ °C}$  respectively as appropriate.

The discharge conditions A or B may be chosen to suit the user's requirements. The discharge is carried out immediately on completion of charging.

After performing the first charge acceptance test at +50 °C the cell is stored, in an ambient temperature of  $+70\text{ °C} \pm 2\text{ °C}$ , for not less than 16 h and not more than 24 h.

During the ageing period of twelve months at +70 °C, precautions shall be taken to prevent the cell-case temperature from rising above +75 °C by providing a forced air draught, if necessary.

NOTE Actual cell case temperature, not the ambient temperature, determines cell performance.

The discharge duration of the three cycles at +70 °C shall be recorded. Leakage of electrolyte shall not occur during this test.

After completion of the ageing period, the cell shall be stored, in an ambient temperature of  $+50\text{ °C} \pm 2\text{ °C}$  for not less than 16 h and not more than 24 h. The three cycles at +50 °C of the initial charge acceptance test are then repeated using the conditions specified in Table 26. The duration of the discharge shall be not less than the values specified in Table 26.