SLOVENSKI STANDARD
SIST EN 61960-1:2002

01-september-2002

Secondary lithium cells and batteries for portable applications - Part 1: Secondary lithium cells

Secondary lithium cells and batteries for portable applications -- Part 1: Secondary lithium cells

Lithium-Sekundärzellen und -batterien für tragbare Geräte -- Teil 1: Lithium-Sekundärzellen

Eléments et batteries d'accumulateurs au lithium pour applications portables -- Partie 1: Eléments d'accumulateurs au lithium

Ta slovenski standard je istoveten z: **EN 61960-1:2001**

ICS:

29.220.30	Alkalni sekundarni ļ leni in baterije	Alkaline secondary cells and batteries

SIST EN 61960-1:2002 **en**

EUROPEAN STANDARD

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EN 61960-1

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ICS 29.220.30;29.220.90

English version

Secondary lithium cells and batteries for portable applications Part 1: Secondary lithium cells (IEC 61960-1:2000)

Eléments et batteries d'accumulateurs au lithium pour applications portables
Partie 1: Eléments d'accumulateurs au lithium
(CEI 61960-1:2000)

Lithium-Sekundärzellen und -batterien für tragbare Geräte
Teil 1: Lithium-Sekundärzellen
(IEC 61960-1:2000)

This European Standard was approved by CENELEC on 2000-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 European Standard 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Ref. No. EN 61960-1:2001 E

Foreword

The text of document 21A/283/FDIS, future edition 1 of IEC 61960-1, 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 EN 61960-1 on 2000-12-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2001-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2003-12-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61960-1:2000 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60086-4 NOTE: Harmonized as EN 60086-4:2000 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-486	[1)]	International Electrotechnical Vocabulary Chapter 486: Secondary cells and batteries	-	-
IEC 60051	Series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	Series
IEC 60068-2-6	[1)]	Environmental testing Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995[2)]
IEC 60068-2-27	[1)]	Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993[2)]
IEC 60068-2-32	[1)]	Part 2: Tests - Test Ed: Free fall	HD 323.2.32 S2	1991[2)]
IEC 60485	[1)]	Digital electronic d.c. voltmeters and d.c. electronic analogue-to-digital converters	-	-
IEC 61434	[1)]	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Guide to the designation of current in alkaline secondary cell and battery standards	EN 61434	1996[2)]
IEC 61960-2	[3)]	Secondary lithium cells and batteries for portable applications Part 2: Secondary lithium batteries	-	-

[1)] undated reference.

[2)] valid edition at date of issue.

[3)] to be published.

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Eléments et batteries d'accumulateurs au lithium pour applications portables –

Partie 1: Eléments d'accumulateurs au lithium

Secondary lithium cells and batteries for portable applications –

Part 1: Secondary lithium cells

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

Commission Electrotechnique Internationale
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SECONDARY LITHIUM CELLS AND BATTERIES FOR PORTABLE APPLICATIONS –

Part 1: Secondary lithium cells

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61960-1 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.

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

FDIS	Report on voting
21A/283/FDIS	21A/294/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 3.

Annex A is for information only.

The committee has decided that the content of this publication will remain unchanged until 2006-01. At this date, the publication will be

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

INTRODUCTION

Recent progress in the battery industry has seen secondary lithium cells and batteries evolve from the research environment to a state of regular commercial production and sale. In response to this situation, the IEC has prepared a new standard to cover secondary lithium cells and batteries for portable electronic applications. This part of IEC 61960 covers secondary lithium cells. Part 2 of IEC 61960 covers secondary lithium batteries and should be used in conjunction with this part.

This standard has been prepared so that it covers only those secondary lithium cells that are:

- commercially available, and
- available from two or more manufacturers.

Traditionally the manufacturers and users of alkaline secondary cells and batteries have expressed the current used to charge and discharge these cells and batteries as a multiple of the capacity. For example, a current of 20 A used to charge a cell with a rated capacity (*C* Ah) of 100 Ah would be expressed as *C*/5 A or 0,2 *C* A This method of current designation has been used in earlier standards relating to alkaline secondary cells and batteries.

Comments have been made that this method of current designation is dimensionally incorrect, in that a multiple of the capacity (ampere hours) will be in ampere hours and not, as required for current, in amperes. As a result of these comments, the method described in IEC 61434 has been used in this standard.

In brief, the method states that the reference test current (I_t) is expressed as:

$$I_t \text{ A} = C_n \text{Ah}/1 \text{ h}$$

where

C_n is the rated capacity declared by the manufacturer in ampere hours (Ah), and

n is the time base in hours (h) for which the rated capacity is declared.

SECONDARY LITHIUM CELLS AND BATTERIES FOR PORTABLE APPLICATIONS –

Part 1: Secondary lithium cells

1 General

1.1 Scope

This International Standard specifies performance and safety tests, designations, markings, dimensions and other requirements for secondary lithium single cells.

The objective of this standard is to provide the purchasers of secondary lithium cells with a set of criteria with which they can judge the performance and safety of various secondary lithium cells offered by various manufacturers.

This standard defines a minimum required level of performance and safety, and a standardized methodology by which testing is performed and the results of this testing reported to the user. Hence, users will be able to establish the viability of commercially available cells via the declared specification and thus be able to select the cell best suited for their intended application.

This standard covers secondary lithium cells with a range of chemistries. Each electrochemical couple has a characteristic voltage range over which it releases its electrical capacity, a characteristic nominal voltage and a characteristic final voltage during discharge. Users of secondary lithium cells and batteries are requested to consult the manufacturer for advice.

For the avoidance of doubt, the scope of this standard does not include secondary lithium batteries which are covered in IEC 61960-2.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(486), *International Electrotechnical Vocabulary (IEV) – Chapter 486: Secondary cells and batteries*

IEC 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

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

IEC 60068-2-27, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*