SLOVENSKI STANDARD
SIST EN 60086-1:2015

01-december-2015

Nadomešča:
SIST EN 60086-1:2011

Primarne baterije - 1. del: Splošno

Primary batteries - Part 1: General

Primärbatterien - Teil 1: Allgemeines

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Piles électriques - Partie 1: Généralités

Ta slovenski standard je istoveten z: EN 60086-1:2015

SIST EN 60086-1:2015
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ICS:

29.220.10 Primarni členi in baterije Primary cells and batteries

SIST EN 60086-1:2015 **en**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60086-1

October 2015

ICS 29.220.10

Supersedes EN 60086-1:2011

English Version

Primary batteries - Part 1: General (IEC 60086-1:2015)

Piles électriques - Partie 1: Généralités
(IEC 60086-1:2015)

Primärbatterien - Teil 1: Allgemeines
(IEC 60086-1:2015)

This European Standard was approved by CENELEC on 2015-09-01. 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.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

The text of document 35/1346/FDIS, future edition 12 of IEC 60086-1, prepared by IEC/TC 35 "Primary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60086-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-06-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-09-01

This document supersedes EN 60086-1:2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

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The text of the International Standard IEC 60086-1:2015 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 62281	NOTE	Harmonized as EN 62281.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60086-2	[1)]	Primary batteries - Part 2: Physical and electrical specifications	FprEN 60086-2	2015 [1)]
IEC 60086-3	2011	Primary batteries - Part 3: Watch batteries	EN 60086-3	2011
IEC 60086-4	2014	Primary batteries - Part 4: Safety of lithium batteries	EN 60086-4	2015
IEC 60086-5	2011	Primary batteries - Part 5: Safety of batteries with aqueous electrolyte	EN 60086-5	2011

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1) At draft stage.

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INTERNATIONAL STANDARD

Primary batteries – Part 1: General

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PRIMARY BATTERIES –

Part 1: General

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60086-1 has been prepared by IEC technical committee 35: Primary cells and batteries.

This twelfth edition cancels and replaces the eleventh edition (2011) and constitutes a technical revision.

The major technical changes with respect to the previous edition are:

– the order of the Annexes was changed to the order in which they appear in the document and a caption was added to indicate where the Annex information first appears in the document;
– the humidity conditions for non P-system batteries in Table 3 was modified;
– the standard discharge voltage for the Y and W chemistries was determined to be at 3,5 V and 2,8 V respectively;
– details on capacity measurement were moved from Annex E to Subclause 5.1.

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– the coin/button cell and battery definition was clarified in order to better address issues with the swallowing of coin cells.

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

FDIS	Report on voting
35/1346/FDIS	35/1349/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 2.

A list of all parts in the IEC 60086 series, under the general title *Primary batteries*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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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A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

The technical content of this part of IEC 60086 provides fundamental requirements and information on primary cells and batteries. All batteries within the IEC 60086 series are considered dry cell batteries. In this sense, IEC 60086-1 is the main component of the IEC 60086 series and forms the basis for the subsequent parts. For example, this part includes elementary information on definitions, nomenclature, dimensions and marking. While specific requirements are included, the content of this part tends to explain methodology (how) and justification (why).

Over the years, this part has been changed to improve its content and remains under continual scrutiny to ensure that the publication is kept up to date with the advances in both battery and battery-powered device technologies.

NOTE Safety information is available in IEC 60086-4, IEC 60086-5 and IEC 62281.

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PRIMARY BATTERIES –

Part 1: General

1 Scope

This part of IEC 60086 is intended to standardize primary batteries with respect to dimensions, nomenclature, terminal configurations, markings, test methods, typical performance, safety and environmental aspects.

As a primary battery classification tool, electrochemical systems are also standardized with respect to system letter, electrodes, electrolyte, nominal and maximum open circuit voltage.

NOTE The requirements justifying the inclusion or the ongoing retention of batteries in the IEC 60086 series are given in Annex A.

The object of this part of IEC 60086 is to benefit primary battery users, device designers and battery manufacturers by ensuring that batteries from different manufacturers are interchangeable according to standard form, fit and function. Furthermore, to ensure compliance with the above, this part specifies standard test methods for testing primary cells and batteries.

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2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60086-2:–[1], *Primary batteries – Part 2: Physical and electrical specifications*

IEC 60086-3:2011, *Primary batteries – Part 3: Watch batteries*

IEC 60086-4:2014, *Primary batteries – Part 4: Safety of lithium batteries*

IEC 60086-5:2011, *Primary batteries – Part 5: Safety of batteries with aqueous electrolyte*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
application test
simulation of the actual use of a battery in a specific application

3.2
battery
one or more cells electrically connected and fitted in a case, with terminals, markings and protective devices etc., as necessary for use

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1 To be published.

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[SOURCE:IEC 60050-482:2004, 482-01-04, modified definition]

3.3
button (cell or battery)
small round cell or battery where the overall height is less than the diameter

Note 1 to entry: In English, the term “button (cell or battery)” is only used for non-lithium batteries while the term “coin (cell or battery)” is used for lithium batteries only. In languages other than English, the terms “coin” and “button” are often used interchangeably, regardless of the electrochemical system.

3.4
cell
basic functional unit, consisting of an assembly of electrodes, electrolyte, container, terminals and usually separators, that is a source of electric energy obtained by direct conversion of chemical energy

[SOURCE:IEC 60050-482:2004, 482-01-01]

3.5
closed-circuit voltage
CCV (abbreviation)
voltage across the terminals of a battery when it is on discharge

[SOURCE:IEC 60050-482:2004, 482-03-28, modified ("voltage between the terminals of a cell or battery" replaced by "voltage across the terminals of a battery")]

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3.6
coin (cell or battery)
see button (cell or battery)

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3.7
cylindrical (cell or battery)
round cell or battery in which the overall height is equal to or greater than the diameter

[SOURCE:IEC 60050-482: 2004, 482-02-39, modified ("cell with a cylindrical shape" replaced by "round cell or battery")]

3.8
discharge (of a primary battery)
operation during which a battery delivers current to an external circuit

3.9
dry (primary) **battery**
primary battery in which the liquid electrolyte is essentially immobilized

[SOURCE:IEC 60050-482:2004, 482-04-14, modified]

3.10
effective internal resistance – DC method
the internal d.c. resistance of any electrochemical cell is defined by the following relation:

$$R_{\mathrm{i}}\,(\Omega) = \frac{\Delta U\,(\mathrm{V})}{\Delta i\,(\mathrm{A})}$$