



SLOVENSKI STANDARD

SIST EN 60086-1:2011

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Nadomešča:

SIST EN 60086-1:2007

Primarne baterije - 1. del: Splošno (IEC 60086-1:2011)

Primary batteries - Part 1: General (IEC 60086-1:2011)

Primärbatterien - Teil 1: Allgemeines (IEC 60086-1:2011)

Piles primaires - Partie 1: Généralités (CEI 60086-1:2011)

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Ta slovenski standard je istoveten z: EN 60086-1:2011

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ICS:

29.220.10 Primarni členi in baterije Primary cells and batteries

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60086-1

March 2011

ICS 29.220.10

Supersedes EN 60086-1:2007

English version

**Primary batteries -
Part 1: General
(IEC 60086-1:2011)**

Piles primaires -
Partie 1: Généralités
(CEI 60086-1:2011)

Primärbatterien -
Teil 1: Allgemeines
(IEC 60086-1:2011)

This European Standard was approved by CENELEC on 2011-03-24. 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.

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CENELEC

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

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Foreword

The text of document 35/1270/CDV, future edition 11 of IEC 60086-1, prepared by IEC TC 35, Primary cells and batteries, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60086-1 on 2011-03-24.

This European Standard supersedes EN 60086-1:2007.

The major technical changes with respect to EN 60086-1:2007 are:

- the clarification of the humidity controls for testing various battery types;
- the modification of the standardization guidelines to allow for standardization of electrochemical systems;
- the standardization of the lithium sulfuryl chloride (LiSO_2Cl_2) and lithium sulphur dioxide (LiSO_2) electrochemical systems.

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

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) 2011-12-24
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-03-24

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Annex ZA has been added by CENELEC
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Endorsement notice

The text of the International Standard IEC 60086-1:2011 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60086-2	2011	Primary batteries - Part 2: Physical and electrical specifications	EN 60086-2	2011
IEC 60086-3	2011	Primary batteries - Part 3: Watch batteries	EN 60086-3	201X ¹⁾
IEC 60086-4	2007	Primary batteries - Part 4: Safety of lithium batteries	EN 60086-4	2007
IEC 60086-5	2011	Primary batteries - Part 5: Safety of batteries with aqueous electrolyte	EN 60086-5	201X ¹⁾
IEC 60410	-	Sampling plans and procedures for inspection by attributes	-	-
ISO/IEC Directives-1	-	Procedures for the technical work	-	-
ISO 3951	Series	Sampling procedures for inspection by variables	-	-

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¹⁾ At draft stage.

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IEC 60086-1

Edition 11.0 2011-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Primary batteries –
Part 1: General

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Piles électriques –
Partie 1: Généralités

SIST EN 60086-1:2011
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRIMARY BATTERIES –**Part 1: General****FOREWORD**

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- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60086-1 has been prepared by IEC technical committee 35: Primary cells and batteries.

This eleventh edition cancels and replaces the tenth edition (2006) and constitutes a technical revision.

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

- the clarification of the humidity controls for testing various battery types;
- the modification of the standardization guidelines to allow for standardization of electrochemical systems;
- the standardization of the lithium sulfuryl chloride (LiSO_2Cl_2) and lithium sulphur dioxide (LiSO_2) electrochemical systems.

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

CDV	Report on voting
35/1270/CDV	35/1274/RVC

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 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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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 IEC 60086-1 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 referenced documents are indispensable for the application 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 60086-2:2011, *Primary batteries – Part 2: Physical and electrical specifications*

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

IEC 60086-4:2007, *Primary batteries – Part 4: Safety of lithium batteries*

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

IEC 60410, *Sampling plans and procedures for inspection by attributes*

ISO/IEC Directives, Part 1: *Procedures for the technical work*

ISO 3951(all parts, as applicable), *Sampling procedures*

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 by permanent means, fitted in a case, with terminals, markings and protective devices etc., as necessary for use

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

3.3**button battery**

small round battery, where the overall height is less than the diameter; batteries complying with Figures 3 and 4 of IEC 60086-2

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

[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

[IEC 60050-482:2004, 482-03-28, modified]

3.6**cylindrical** (cell or battery)

cell or battery with a cylindrical shape in which the overall height is equal to or greater than the diameter

[IEC 60050-482: 2004, 482-02-39, modified]

3.7**discharge** (of a primary battery)

operation during which a battery delivers current to an external circuit

[IEC 60050-482:2004, 482-03-23, modified]

3.8**dry** (primary) **battery**

primary battery in which the liquid electrolyte is essentially immobilized

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

3.9**effective internal resistance – DC method**

The internal d.c. resistance of any electrochemical cell is defined by the following relation:

$$R_i (\Omega) = \frac{\Delta U (V)}{\Delta i (A)}$$

3.10**end-point voltage****EV** (abbreviation)

specified voltage of a battery at which the battery discharge is terminated