



BSI Standards Publication

Primary batteries

Part 1: General

This is a preview of "BS EN IEC 60086-1:20...". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN IEC 60086-1:2021. It is identical to IEC 60086-1:2021 incorporating corrigendum June 2022. It supersedes BS EN 60086-1:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPL/35, Primary cells.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
31 October 2022	Implementation of IEC corrigendum June 2022: Subclause 4.1.7, Formula 1 amended

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EUROPÄISCHE NORM

June 2021

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Supersedes EN 60086-1:2015 and all of its amendments
and corrigenda (if any)

English Version

**Primary batteries - Part 1: General
(IEC 60086-1:2021)**Piles électriques - Partie 1: Généralités
(IEC 60086-1:2021)Primärbatterien - Teil 1: Allgemeines
(IEC 60086-1:2021)

This European Standard was approved by CENELEC on 2021-06-01. 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 CEN-CENELEC Management Centre 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 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: Rue de la Science 23, B-1040 Brussels

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European foreword

The text of document 35/1465/FDIS, future edition 13 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 IEC 60086-1:2021.

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) 2022-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-06-01

This document supersedes EN 60086-1:2015 and all of its amendments and corrigenda (if any).

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

Endorsement notice

The text of the International Standard IEC 60086-1:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60086-6 NOTE Harmonized as EN IEC 60086-6

IEC 62281 NOTE Harmonized as EN IEC 62281

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(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60086-2	2015	Primary batteries - Part 2: Physical and electrical specifications	EN 60086-2	2016
IEC 60086-3	-	Primary batteries - Part 3: Watch batteries	EN IEC 60086-3	-
IEC 60086-4	-	Primary batteries - Part 4: Safety of lithium batteries	EN IEC 60086-4	-
IEC 60086-5	-	Primary batteries - Part 5: Safety of batteries with aqueous electrolyte	EN 60086-5	-

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CONTENTS

FOREWORD	5
INTRODUCTION	7
1 Scope	8
2 Normative references	8
3 Terms and definitions	8
4 Requirements	11
4.1 General	11
4.1.1 Design	11
4.1.2 Battery dimensions	11
4.1.3 Terminals	11
4.1.4 Classification (electrochemical system)	13
4.1.5 Designation	14
4.1.6 Marking	14
4.1.7 Interchangeability: battery voltage	15
4.2 Performance	16
4.2.1 Discharge performance	16
4.2.2 Dimensional stability	16
4.2.3 Leakage	16
4.2.4 Open-circuit voltage limits	16
4.2.5 Service output	16
4.2.6 Safety	16
4.2.7 Validity of testing	17
5 Performance – Testing	17
5.1 Capacity testing versus application and service output testing	17
5.2 Discharge testing	17
5.2.1 General	17
5.2.2 Application tests	18
5.2.3 Service output tests	18
5.3 Conformance check to a specified minimum average duration	19
5.4 Guidance for considering proposed value of minimum average duration	19
5.5 OCV testing	19
5.6 Insulation resistance	19
5.7 Battery dimensions	19
5.8 Leakage and deformation	19
6 Performance – Test conditions	20
6.1 Storage and discharge conditions	20
6.2 Commencement of discharge tests after storage	20
6.3 Discharge test conditions	20
6.3.1 General	20
6.3.2 Compliance	20
6.4 Load resistance	21
6.5 Time periods	21
6.6 Test condition tolerances	21
6.7 Activation of 'P'-system batteries	21
6.8 Measuring equipment	22
6.8.1 Voltage measurement	22

This is a preview of "BS EN IEC 60086-1:20...". [Click here to purchase the full version from the ANSI store.](#)

6.8.2	Mechanical measurement	22
7	Sampling and quality assurance	22
8	Battery packaging	22
Annex A (normative)	Criteria for the standardization of batteries	23
Annex B (informative)	Recommendations for equipment design	24
B.1	Technical liaison	24
B.2	Battery compartment	24
B.2.1	General	24
B.2.2	Limiting access by children	25
B.3	Voltage cut-off	25
Annex C (normative)	Designation system (nomenclature)	26
C.1	General	26
C.2	Designation system in use up to October 1990	26
C.2.1	General	26
C.2.2	Cells	26
C.2.3	Electrochemical system	28
C.2.4	Batteries	28
C.2.5	Modifiers	29
C.2.6	Examples	29
C.3	Designation system in use since October 1990	29
C.3.1	General	29
C.3.2	Round batteries	29
C.3.3	Non-round batteries	33
C.3.4	Ambiguity	36
Annex D (informative)	Standard discharge voltage U_S – Definition and method of determination	38
D.1	Definition	38
D.2	Determination	38
D.2.1	General considerations: the C/R -plot	38
D.2.2	Determination of the standard discharge resistor R_S	39
D.2.3	Determination of the standard discharge capacity C_S and standard discharge time t_S	40
D.3	Experimental conditions to be observed and test results	41
Annex E (informative)	Preparation of standard methods of measuring performance (SMMP) of consumer goods	42
E.1	General	42
E.2	Performance characteristics	42
E.3	Criteria for the development of test methods	42
Annex F (informative)	Guidance for proposing value of minimum average duration	43
F.1	General	43
F.2	Sampling	43
F.3	Calculation method	43
Annex G (normative)	Code of practice for packaging, shipment, storage, use and disposal of primary batteries	44
G.1	General	44
G.2	Packaging	44
G.3	Transport and handling	44
G.4	Storage and stock rotation	44

This is a preview of "BS EN IEC 60086-1:20...". [Click here to purchase the full version from the ANSI store.](#)

G.5	Displays at sales points	45
G.6	Selection, use and disposal	45
G.6.1	Purchase	45
G.6.2	Installation	45
G.6.3	Use	45
G.6.4	Replacement	46
G.6.5	Disposal	46
Annex H (informative)	Compliance checklist	47
Bibliography	48
Figure C.1	– Designation system for round batteries: $d_1 < 100$ mm; height $h_1 < 100$ mm	30
Figure C.2	– Diameter code for non-recommended diameters	31
Figure C.3	– Height code for denoting the hundredths of a millimetre of height	32
Figure C.4	– Designation system for round batteries: $d_1 \geq 100$ mm; height $h_1 \geq 100$ mm	33
Figure C.5	– Designation system for non-round batteries, dimensions < 100 mm	34
Figure C.6	– Designation system for non-round batteries, dimensions ≥ 100 mm	35
Figure C.7	– Height code for discrimination per tenth of a millimetre	35
Figure D.1	– Normalized C/R -plot (schematic)	39
Figure D.2	– Standard discharge voltage (schematic)	40
Table 1	– Standardized electrochemical systems	13
Table 2	– Marking requirements	15
Table 3	– Conditions for storage before and during discharge testing	20
Table 4	– Resistive loads for tests	21
Table 5	– Time periods for tests	21
Table 6	– Test condition tolerances	21
Table A.1	– Items necessary to standardize	23
Table C.1	– Physical designation and dimensions of round cells and batteries	27
Table C.2	– Physical designation and nominal overall dimensions of flat cells	28
Table C.3	– Physical designation and dimensions of square cells and batteries	28
Table C.4	– Diameter code for recommended diameter	31
Table C.5	– Physical designation and dimensions of round cells and batteries based on Clause C.2	36
Table C.6	– Physical designation and dimensions of non-round batteries based on Clause C.2	37
Table D.1	– Standard discharge voltage by system	41

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRIMARY BATTERIES –

Part 1: General

FOREWORD

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

This thirteenth edition cancels and replaces the twelfth edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) a compliance checklist was added as an Annex H;
- b) definitions were harmonized with the other 60086 series documents;
- c) the nominal voltage of the zinc air system is now listed as either 1,4 V or 1,45 V;
- d) Annex F for calculation of MAD values was simplified;
- e) a validity period for testing was added;
- f) the accelerated aging test at 45 °C was changed from 13 to 4 weeks;

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The text of this International Standard is based on the following documents:

FDIS	Report on voting
35/1465/FDIS	35/1469/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

The contents of the corrigendum 1 (2022-06) have been included in this copy.

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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.

Safety requirements and recommendations are available in IEC 60086-4, IEC 60086-5 and IEC 62281. Specifications are available in IEC 60086-2 and IEC 60086-3. Environmental aspects are dealt with in IEC 60086-6.

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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.

This document on one side specifies requirements for primary cells and batteries. On the other side, this document also specifies procedures of how requirements for these batteries are to be standardised.

As a classification tool for primary batteries, this document specifies system letters, electrodes, electrolytes, and nominal as well as maximum open circuit voltage of electrochemical systems.

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.

This document also contains requirements in Annex A justifying the inclusion or the ongoing retention of batteries in the IEC 60086 series.

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 60086-2:2015, *Primary batteries – Part 2: Physical and electrical specifications*

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

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

IEC 60086-5, *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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>