BS EN 60086-2:2016



BSI Standards Publication

Primary batteries

Part 2: Physical and electrical specifications
(IEC 60086-2:2015)

bsi.

National foreword

This British Standard is the UK implementation of EN 60086-2:2016. It is identical to IEC 60086-2:2015. It supersedes BS EN 60086-2:2011 which will be withdrawn on 3 December 2018.

BSI, as a member of CENELEC, is obliged to publish BS EN 60086-2 as a British Standard. However, attention is drawn to the fact that the UK committee voted against its approval as a European standard. The UK committee submitted a negative vote for the following reason:

Although it had been accepted by IEC/TC 35 that the pulse load should be applied first in all the discharge tests, this change has not been applied consistently. The circuit diagrams in 6.1.6, 6.4.2, 6.4.5, 6.5.1 and 6.6.8 still indicate that the background load is applied first. Also, in the table in 6.6.8 the background load for testing a smoke detector is listed before the pulse load.

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 secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

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English Version

Primary batteries - Part 2: Physical and electrical specifications (IEC 60086-2:2015)

Piles électriques - Partie 2: Spécifications physiques et électriques
(IEC 60086-2:2015)

Primärbatterien - Teil 2: Physikalische und elektrische Spezifikationen
(IEC 60086-2:2015)

This European Standard was approved by CENELEC on 2015-12-03. 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

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European foreword

The text of document 35/1350/FDIS, future edition 13 of IEC 60086-2, prepared by IEC/TC 35 "Primary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60086-2:2016.

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) 2016-09-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-12-03

This document supersedes EN 60086-2:2011.

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Endorsement notice

The text of the International Standard IEC 60086-2:2015 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 standard indicated :

IEC 60086-3	NOTE	Harmonized as EN 60086-3.
IEC 60086-4	NOTE	Harmonized as EN 60086-4.
IEC 60086-5	NOTE	Harmonized as EN 60086-5.
IEC 62281	NOTE	Harmonized as EN 62281.

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 60086-1	2015	Primary batteries - Part 1: General	EN 60086-1	2015
ISO 1101	-	Geometrical product specifications (GPS) - Geometrical tolerancing - Tolerances of form, orientation, location and run-out	EN ISO 1101	-

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CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 8
2 Normative references 8
3 Terms, definitions, symbols and abbreviations 8
3.1 Terms and definitions 8
3.2 Symbols and abbreviations 9
4 Battery dimensions, symbols 10
5 Constitution of the battery specification tables 10
6 Physical and electrical specifications 12
6.1 Category 1 batteries 12
6.1.1 General 12
6.1.2 Category 1 – Specifications: LR20, R20P, R20S 13
6.1.3 Category 1 – Specifications: LR14, R14P, R14S 14
6.1.4 Category 1 – Specifications: LR6, FR14505, R6P, R6S 15
6.1.5 Category 1 – Specifications: LR03, FR10G445, R03 16
6.1.6 Category 1 – Specifications: LR1, R1, LR8D425 17
6.2 Category 2 batteries – Specifications: CR14250, CR15H270, CR17345, CR17450, BR17335 18
6.3 Category 3 batteries – Specifications: LR9, CR11108 19
6.4 Category 4 batteries 20
6.4.1 General 20
6.4.2 Category 4 – Specifications: PR70, PR41, PR48, PR44 20
6.4.3 Fit acceptance gauge for PR batteries 22
6.4.4 Category 4 – Specifications: LR41, LR55, LR54, LR43, LR44 23
6.4.5 Category 4 – Specifications: SR62, SR63, SR65, SR64, SR60, SR67, SR66, SR58, SR68, SR59, SR69, SR41, SR57, SR55, SR48, SR54, SR42, SR43, SR44 25
6.4.6 Category 4 – Specifications: CR1025, CR1216, CR1220, CR1616, CR2012, CR1620, CR2016, CR2025, CR2320, CR2032, CR2330, CR2430, CR2354, CR3032, CR2450, BR1225, BR2016, BR2320, BR2325, BR3032 27
6.5 Category 5 batteries 29
6.5.1 Category 5 – Specifications: 4LR44, 2CR13252, 4SR44 29
6.5.2 Category 5 – Specifications: 5AR40 30
6.6 Category 6 batteries 31
6.6.1 Category 6 – Specifications: 3R12P, 3R12S, 3LR12 31
6.6.2 Category 6 – Specifications: 4LR61 32
6.6.3 Category 6 – Specifications: CR-P2 33
6.6.4 Category 6 – Specifications: 2CR5 34
6.6.5 Category 6 – Specifications: 4R25X, 4LR25X 35
6.6.6 Category 6 – Specifications: 4R25Y 36
6.6.7 Category 6 – Specifications: 4R25-2, 4LR25-2 37
6.6.8 Category 6 – Specifications: 6F22, 6LR61, 6LP3146 38
6.6.9 Category 6 – Configurations: Stud for 6F22, 6LR61 6LP3146 39
6.6.10 Category 6 – Specifications: 6AS4 40
6.6.11 Category 6 – Specifications: 6AS6 41

Annex A (informative) Tabulation of batteries by application 42
Annex B (informative) Cross-reference index 48
Annex C (informative) Index 51
Annex D (informative) Common designation 52
Bibliography 53

Figure 1 – Dimensional drawing: Category 1 12
Figure 2 – Dimensional drawing: LR20, R20P, R20S 13
Figure 3 – Dimensional drawing: LR14, R14P, R14S 14
Figure 4 – Dimensional drawing: LR6, FR14505, R6P, R6S 15
Figure 5 – Dimensional drawing: LR03, FR10G445, R03 16
Figure 6 – Dimensional drawing: LR1, R1, LR8D425 17
Figure 7 – Dimensional drawing: CR14250, CR15H270, CR17345, CR17450, BR17335 18
Figure 8 – Dimensional drawing: LR9, CR11108 19
Figure 9 – Dimensional drawing: Category 4 20
Figure 10 – Dimensional drawing: PR70, PR41, PR48, PR44 20
Figure 11 – Gauge opening for P system batteries 22
Figure 12 – Suggested gauge layout 22
Figure 13 – Air hole placement diagram for P system batteries 23
Figure 14 – Dimensional drawing: LR41, LR55, LR54, LR43, LR44 23
Figure 15 – Dimensional drawing: SR62, SR63, SR65, SR64, SR60, SR67, SR66, SR58, SR68, SR59, SR69, SR41, SR57, SR55, SR48, SR54, SR42, SR43, SR44 25
Figure 16 – Dimensional drawing: CR1025, CR1216, CR1220, CR1616, CR2012, CR1620, CR2016, CR2025, CR2320, CR2032, CR2330, CR2430, CR2354, CR3032, CR2450, BR1225, BR2016, BR2320, BR2325, BR3032 27
Figure 17 – Dimensional drawing: 4LR44, 2CR13252, 4SR44 29
Figure 18 – Dimensional drawing: 5AR40 30
Figure 19 – Dimensional drawing: 3R12P, 3R12S, 3LR12 31
Figure 20 – Dimensional drawing: 4LR61 32
Figure 21 – Dimensional drawing: CR-P2 33
Figure 22 – Dimensional drawing: 2CR5 34
Figure 23 – Dimensional drawing: 4R25X, 4LR25X 35
Figure 24 – Dimensional drawing: 4R25Y 36
Figure 25 – Dimensional drawing: 4R25-2, 4LR25-2 37
Figure 26 – Dimensional drawing: 6F22, 6LR61, 6LP3146 38
Figure 27 – Dimensional drawing: Stud 39
Figure 28 – Dimensional drawing: 6AS4 40
Figure 29 – Dimensional drawing: 6AS6 41

Table 1 – Gauge opening dimension (mm) 22
Table A.1 – Automatic camera 42
Table A.2 – CD, digital audio, wireless gaming and accessories 42
Table A.3 – Digital audio 42
Table A.4 – Digital still camera 42

Table A.5 – Electric equipment 42
Table A.6 – Electric fence controller 43
Table A.7 – Electronic key 43
Table A.8 – Hearing aid 43
Table A.9 – Hearing aid high drain 43
Table A.10 – Hearing aid standard 43
Table A.11 – High intensity lighting 43
Table A.12 – Laser pointer 44
Table A.13 – Pager 44
Table A.14 – Photo 44
Table A.15 – Portable lighting (LED) 44
Table A.16 – Portable stereo 45
Table A.17 – Radio 45
Table A.18 – Radio / Clock 45
Table A.19 – Radio / Clock / Remote control 45
Table A.20 – Remote control 45
Table A.21 – Road warning lamp 46
Table A.22 – Smoke detector 46
Table A.23 – Toy (motor) 46
Table A.24 – Toy (non-motorized) 46
Table A.25 – Wireless streaming 47
Table B.1 – Category 1 batteries 48
Table B.2 – Category 2 batteries 48
Table B.3 – Category 3 batteries 48
Table B.4 – Category 4 batteries 49
Table B.5 – Category 5 batteries 50
Table B.6 – Category 6 batteries 50
Table C.1 – Index 51
Table D.1 – Index 52

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PRIMARY BATTERIES –

Part 2: Physical and electrical specifications

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 60086-2 has been prepared by IEC technical committee 35: Primary cells and batteries.

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

Significant changes from the previous edition are test changes to battery types R03, LR03, R6, LR6, PR70, PR41, PR48, 6F22, 6LR61, 6LP3146 4LR25-2, R14, LR14, R20, LR20, CR2025, and CR2032, adding the 5AR40 back into the standard, addition of common designations, addition of two new battery types FR14505 and FR10G445, deletion of battery types LR53, R40, 2EP3863, 6F100, and general editorial changes.

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

FDIS	Report on voting
35/1350/FDIS	35/1352/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.

INTRODUCTION

The technical content of this part of IEC 60086 provides physical dimensions, discharge test conditions and discharge performance requirements. IEC 60086-2 complements the general information and requirements of IEC 60086-1.

This part was prepared to benefit primary battery users, device designers and battery manufacturers by furnishing the specifics of form, fit and function for individual standardized primary cells and batteries. Over the years, this part has been changed to improve its contents and may again be revised in due course in the light of comments made by national committees and experts on the basis of practical experience and changing technology.

This current revision is the result of a reformatting initiative, as well as some content changes, aimed at making this part more user-friendly, less ambiguous, and, from a cross reference basis, fully harmonized with other parts of IEC 60086.

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

PRIMARY BATTERIES –

Part 2: Physical and electrical specifications

1 Scope

This part of IEC 60086 is applicable to primary batteries based on standardized electrochemical systems.

It specifies

– the physical dimensions,
– the discharge test conditions and discharge performance requirements.

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 60086-1:2015, *Primary batteries – Part 1: General*

ISO 1101, *Geometrical product specifications (GPS) – Geometrical tolerancing – Tolerances of form, orientation, location and run-out*

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the terms, definitions, symbols and abbreviations given in IEC 60086-1 and the following apply.

3.1 Terms and definitions

3.1.1
application test
simulation of the actual use of a battery in a specific application

3.1.2
closed-circuit voltage
CCV
voltage across the terminals of a battery when it is on discharge

3.1.3
end-point voltage
EV
specified voltage of a battery at which the battery discharge is terminated

[SOURCE: IEC 60050-482:2004, 482-03-30]

3.1.4
minimum average duration
MAD
minimum average time on discharge which is met by a sample of batteries