

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

BS EN 60086-4:2015



BSI Standards Publication

Primary batteries

Part 4: Safety of lithium batteries

bsi.

...making excellence a habit.™

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 60086-4:2015. It is identical to IEC 60086-4:2014. It supersedes BS EN 60086-4:2007, which will be withdrawn on 8 October 2017.

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.

© The British Standards Institution 2015.

Published by BSI Standards Limited 2015

ISBN 978 0 580 79834 4

ICS 29.220.10

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2015.

Amendments/corrigenda issued since publication

Date	Text affected
-------------	----------------------

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

January 2015

ICS 29.220.10

Supersedes EN 60086-4:2007

English Version

Primary batteries - Part 4: Safety of lithium batteries (IEC 60086-4:2014)

Piles électriques - Partie 4: Sécurité des piles au lithium
(IEC 60086-4:2014)

Primärbatterien - Teil 4: Sicherheit von Lithium-Batterien
(IEC 60086-4:2014)

This European Standard was approved by CENELEC on 2014-10-08. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

Foreword

The text of document 35/1324/FDIS, future edition 4 of IEC 60086-4, prepared by IEC TC 35 "Primary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60086-4:2015.

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) 2015-07-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-10-08

This document supersedes EN 60086-4:2007.

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.

Endorsement notice

The text of the International Standard IEC 60086-4:2014 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 60027-1:1992	NOTE Harmonized as EN 60027-1:1992.
IEC 60068-2-6:1995	NOTE Harmonized as EN 60068-2-6:1995.
IEC 60068-2-27:1987	NOTE Harmonized as EN 60068-2-27:1987.
IEC 60068-2-31:2008	NOTE Harmonized as EN 60068-2-31:2008.
IEC 60086-5:2011	NOTE Harmonized as EN 60086-5:2011.
IEC 60617 (Series)	NOTE Harmonized as EN 60617 (Series).
IEC 62133	NOTE Harmonized as EN 62133.
IEC 61960	NOTE Harmonized as EN 61960.
IEC 62281	NOTE Harmonized as EN 62281.

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60086-1	2011	Primary batteries -- Part 1: General	EN 60086-1	2011
IEC 60086-2	-	Primary batteries -- Part 2: Physical and electrical specifications	EN 60086-2	-

This is a preview of "BS EN 60086-4:2015". [Click here to purchase the full version from the ANSI store.](#)

CONTENTS

INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	8
4 Requirements for safety.....	11
4.1 Design	11
4.2 Quality plan	11
5 Sampling	11
5.1 General.....	11
5.2 Test samples	11
6 Testing and requirements	12
6.1 General.....	12
6.1.1 Test application matrix.....	12
6.1.2 Safety notice	13
6.1.3 Ambient temperature	13
6.1.4 Parameter measurement tolerances	13
6.1.5 Predischage	14
6.1.6 Additional cells	14
6.2 Evaluation of test criteria	14
6.2.1 Short-circuit.....	14
6.2.2 Excessive temperature rise.....	14
6.2.3 Leakage	14
6.2.4 Venting.....	14
6.2.5 Fire.....	14
6.2.6 Rupture	15
6.2.7 Explosion.....	15
6.3 Tests and requirements – Overview	15
6.4 Tests for intended use	16
6.4.1 Test A: Altitude.....	16
6.4.2 Test B: Thermal cycling	16
6.4.3 Test C: Vibration.....	17
6.4.4 Test D: Shock.....	18
6.5 Tests for reasonably foreseeable misuse	19
6.5.1 Test E: External short-circuit	19
6.5.2 Test F: Impact	19
6.5.3 Test G: Crush	20
6.5.4 Test H: Forced discharge.....	21
6.5.5 Test I: Abnormal charging.....	21
6.5.6 Test J: Free fall	21
6.5.7 Test K: Thermal abuse	22
6.5.8 Test L: Incorrect installation.....	22
6.5.9 Test M: Overdischarge	23
6.6 Information to be given in the relevant specification	24
6.7 Evaluation and report.....	24
7 Information for safety.....	24