



BSI Standards Publication

Primary batteries

Part 4: Safety of lithium batteries

This is a preview of BS EN IEC 60086-4:2025. [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN IEC 60086-4:2025. It is identical to IEC 60086-4:2025. It supersedes BS EN IEC 60086-4:2019, which will be withdrawn on 31 March 2028.

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.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 20060 7

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 March 2025.

Amendments/corrigenda issued since publication

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

This is a preview of BS EN IEC 60086-4:2025. [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

March 2025

ICS 29.220.10

Supersedes EN IEC 60086-4:2019; EN IEC 60086-4:2019/AC:2019-11; EN IEC 60086-4:2019/AC:2020-05

English Version

Primary batteries - Part 4: Safety of lithium batteries (IEC 60086-4:2025)

Piles électriques - Partie 4: Sécurité des piles au lithium
(IEC 60086-4:2025)Primärbatterien - Teil 4: Sicherheit von Lithium-Batterien
(IEC 60086-4:2025)

This European Standard was approved by CENELEC on 2025-03-05. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

This is a preview of BS EN IEC 60086-4:2025. [Click here to purchase the full version from the ANSI store.](#)

European foreword

The text of document 35/1571/FDIS, future edition 6 of IEC 60086-4, prepared by TC 35 "Primary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60086-4:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-03-31 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-03-31 document have to be withdrawn

This document supersedes EN IEC 60086-4:2019 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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60086-4:2025 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 60068-2-31:2008	NOTE	Approved as EN 60068-2-31:2008 (not modified)
IEC 60086-5:2021	NOTE	Approved as EN IEC 60086-5:2021 (not modified)
IEC 62133-2	NOTE	Approved as EN 62133-2
IEC 61960 (series)	NOTE	Approved as EN IEC 61960 (series)
ISO 7010	NOTE	Approved as EN ISO 7010

This is a preview of BS EN IEC 60086-4:2025. Click here to purchase the full version from the ANSI store.

(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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60086-1	2021	Primary batteries - Part 1: General	EN IEC 60086-1	2021
IEC 60086-2	-	Primary batteries - Part 2: Physical and electrical specifications	EN IEC 60086-2	-
IEC 62281	-	Safety of primary and secondary lithium cells and batteries during transport	EN IEC 62281	-

This is a preview of BS EN IEC 60086-4:2025. [Click here to purchase the full version from the ANSI store.](#)

CONTENTS

FOREWORD.....	5
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	12
5 Type testing and sampling.....	12
5.1 Validity of testing	12
5.2 Test samples	12
6 Testing and requirements	13
6.1 General.....	13
6.1.1 Test application matrix.....	13
6.1.2 Cautionary notice.....	14
6.1.3 Ambient temperature	14
6.1.4 Parameter measurement tolerances	14
6.1.5 PredischARGE	15
6.1.6 Additional cells	15
6.2 Evaluation of test criteria	15
6.2.1 Short-circuit.....	15
6.2.2 Excessive temperature rise.....	15
6.2.3 Leakage	15
6.2.4 Venting	15
6.2.5 Fire.....	16
6.2.6 Rupture	16
6.2.7 Explosion.....	16
6.3 Tests and requirements – Overview	16
6.4 Tests for intended use	17
6.4.1 Test A: Altitude.....	17
6.4.2 Test B: Thermal cycling	17
6.4.3 Test C: Vibration.....	18
6.4.4 Test D: Shock.....	18
6.5 Tests for reasonably foreseeable misuse	19
6.5.1 General	19
6.5.2 Test E: External short-circuit.....	19
6.5.3 Test F: Impact	19
6.5.4 Test G: Crush	20
6.5.5 Test H: Forced discharge.....	21
6.5.6 Test I: Abnormal charging.....	22
6.5.7 Test J: Free fall	22
6.5.8 Test K: Thermal abuse.....	23
6.5.9 Test L: Incorrect installation.....	23
6.5.10 Test M: Overdischarge.....	24
6.6 Information to be given in the relevant specification	25
6.7 Evaluation and report.....	25