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Primärbatterier – Del 4: Säkerhetsfordringar på litiumbatterier

*Primary batteries –
Part 4: Safety of lithium batteries*

Som svensk standard gäller europastandarden EN 60086-4:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60086-4:2007.

Nationellt förord

Europastandarden EN 60086-4:2007^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60086-4, Third edition, 2007 - Primary batteries - Part 4: Safety of lithium batteries**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60086-4, utgåva 2, 2000, gäller ej fr o m 2010-11-01.

^{*)} EN 60086-4:2007 ikraftsattes 2008-01-21 som SS-EN 60086-4 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

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English version

**Primary batteries -
Part 4: Safety of lithium batteries
(IEC 60086-4:2007)**

Piles électriques -
Partie 4: Sécurité des piles au lithium
(CEI 60086-4:2007)

Primärbatterien -
Teil 4: Sicherheitsnorm
für Lithium-Batterien
(IEC 60086-4:2007)

This European Standard was approved by CENELEC on 2007-11-01. 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 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.

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

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 35/1240/CDV, future edition 3 of IEC 60086-4, prepared by IEC TC 35, Primary cells and batteries, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60086-4 on 2007-11-01.

This European Standard supersedes EN 60086-4:2000.

EN 60086-4:2007 is the result of a reformatting initiative aimed at making this part more user-friendly, less ambiguous and, from a cross-reference point of view, fully harmonized with other parts of EN 60086.

The major technical changes, with regard to EN 60086-4:2000, concern:

- harmonization with EN 62281;
- the tests were renumbered and partly revised or deleted. One test (F: Impact) was added for compliance with EN 62281. The table shows the old and new test numbers as well as tests that were added. The test number in brackets indicates major changes of the test procedure.

Old	New	Test designation
C-3	A	Altitude
(C-1)	B	Thermal cycling
B-1	C	Vibration
B-2	D	Shock
D-1	E	External short circuit
	F	Impact
E-2	G	Crush
	H	Forced discharge
D-4	I	Abnormal charging
E-1	J	Free fall
F-1	K	Thermal abuse
D-3	L	Incorrect installation
D-6	M	Overdischarge

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) 2008-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60086-4:2007 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 60068-2-6	NOTE	Harmonized as EN 60068-2-6:1995 (not modified).
IEC 60068-2-27	NOTE	Harmonized as EN 60068-2-27:1993 (not modified).
IEC 60068-2-32	NOTE	Harmonized as EN 60068-2-32:1993 (not modified).
IEC 62133	NOTE	Harmonized as EN 62133:2003 (not modified).
IEC 61960	NOTE	Harmonized as EN 61960:2004 (not modified).
IEC 62281	NOTE	Harmonized as EN 62281:2004 (not modified).
IEC 60086-5	NOTE	Harmonized as EN 60086-5:2005 (not modified).

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 60086-1	– ¹⁾	Primary batteries - Part 1: General	EN 60086-1	2007 ²⁾
IEC 60086-2	– ¹⁾	Primary batteries - Part 2: Physical and electrical specifications	EN 60086-2	2007 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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INTRODUCTION

The concept of safety is closely related to safeguarding the integrity of people and property. This standard specifies tests and requirements for lithium batteries and has been prepared in accordance with ISO/IEC guidelines, taking into account all relevant national and international standards which apply.

Lithium batteries are different from conventional primary batteries using aqueous electrolyte in that they contain flammable materials.

Consequently, it is important to carefully consider safety during design, production, distribution, use, and disposal of lithium batteries. Based on such special characteristics, lithium batteries for consumer applications were initially small in size and had low power output. There were also lithium batteries with high power output which were used for special industrial and military applications and were characterized as being “technician replaceable”. The first edition of this standard was drafted to accommodate this situation.

However, from around the end of the 1980s, lithium batteries with high power output started to be widely used in the consumer replacement market, mainly as a power source in camera applications. Since the demand for such lithium batteries with high power output significantly increased, various manufacturers started to produce these types of lithium batteries. As a consequence of this situation, the safety aspects for lithium batteries with high power output were included in the second edition of this standard.

The major target of the third edition of this standard was to harmonize it with the transport tests for lithium batteries that were published in IEC 62281 [11].

Guidelines addressing safety issues during the design of lithium batteries are provided in Annex A. Annex B provides guidelines addressing safety issues during the design of equipment where lithium batteries are installed. Both Annex A and B reflect experience with lithium batteries used in camera applications and are based on document [18] of the bibliography.

Safety is freedom from unacceptable risk. There can be no absolute safety: some risk will remain. Therefore a product, process or service can only be relatively safe. Safety is achieved by reducing risk to a tolerable level determined by the search for an optimal balance between the ideal of absolute safety and the demands to be met by a product, process or service, and factors such as benefit to the user, suitability for purpose, cost effectiveness, and conventions of the society concerned.

As safety will pose different problems, it is impossible to provide a set of precise provisions and recommendations that will apply in every case. However, this standard, when followed on a judicious “use when applicable” basis, will provide reasonably consistent standards for safety.

PRIMARY BATTERIES –

Part 4: Safety of lithium batteries

1 Scope

This part of IEC 60086 specifies tests and requirements for primary lithium batteries to ensure their safe operation under intended use and reasonably foreseeable misuse.

NOTE Primary lithium batteries that are standardized in IEC 60086-2 are expected to meet all applicable requirements herein. It is understood that consideration of this part of IEC 60086 might also be given to measuring and/or ensuring the safety of non-standardized primary lithium batteries. In either case, no claim or warranty is made that compliance or non-compliance with this standard will fulfil or not fulfil any of the user's particular purposes or needs.

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

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