

STN	Letecké batérie. Časť 2: Požiadavky na návrh a konštrukciu.	STN EN 60952-2
		36 4340

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Obsahuje: EN 60952-2:2013, IEC 60952-2:2013

Oznámením tejto normy sa od 13.8.2016 ruší
STN EN 60952-2 (36 4340) z mája 2005

118823

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2014
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60952-2

October 2013

ICS 29.220.20; 49.060

Supersedes EN 60952-2:2004

English version

**Aircraft batteries -
Part 2: Design and construction requirements
(IEC 60952-2:2013)**

Batteries d'aéronefs -
Partie 2: Exigences de conception et de
construction
(CEI 60952-2:2013)

Flugzeugbatterien -
Teil 2: Anforderungen für Planung und
Konstruktion
(IEC 60952-2:2013)

This European Standard was approved by CENELEC on 2013-08-13. 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.

CENELEC

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

Foreword

The text of document 21/804/FDIS, future edition 3 of IEC 60952-2, prepared by IEC/TC 21 "Secondary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60952-2:2013.

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) 2014-05-13
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-08-13

This document supersedes EN 60952-2:2004.

EN 60952-2:2013 includes the following significant technical changes with respect to EN 60952-2:2004:

The inclusion of those formats that can be standardized along with their connectors and electrical interfaces.

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 60952-2:2013 was approved by CENELEC as a European Standard without any modification.

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 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 60952-1	2013	Aircraft batteries - Part 1: General test requirements and performance levels	EN 60952-1	2013



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Aircraft batteries –
Part 2: Design and construction requirements**

**Batteries d'aéronefs –
Partie 2: Exigences de conception et de construction**





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2013 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électriques et électroniques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Aircraft batteries –
Part 2: Design and construction requirements**

**Batteries d'aéronefs –
Partie 2: Exigences de conception et de construction**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 29.220.20; 49.060

ISBN 978-2-8322-0945-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 General construction requirements	6
4.1 General	6
4.2 Safety	7
4.3 Safety philosophy	7
4.4 Factors influencing safety	8
4.5 Regulatory information	8
4.6 Configuration control	9
4.7 General requirements	10
4.8 Installation considerations	10
4.9 Workmanship	10
5 Electrolytes	11
5.1 General	11
5.2 Electrolyte resistance	11
5.3 Electrolyte level	11
5.4 Leakage	11
6 Dissimilar metals	11
7 Corrosion prevention – Vented nickel-cadmium batteries only	12
8 Battery containers and components	12
8.1 General	12
8.2 Battery containers and covers	12
8.3 Electrical bonding	12
8.4 Cell jars and monoblocs	12
9 Venting arrangements	12
9.1 Battery requirements	12
9.2 Cell requirements	13
9.2.1 Vented filler cap for vented cell	13
9.2.2 Valve for valve regulated cell	13
10 Inter-cell connectors for nickel-cadmium batteries	13
10.1 General	13
10.2 Special purpose inter-cell connections – non-removable	14
11 Handles	14
12 Latches	14
13 Materials and components for flooded nickel-cadmium batteries	14
14 Gas barriers and thermal runaway – nickel-cadmium only	14
15 Dimensions, mass, markings and identification requirements	15
15.1 Dimensions and mass	15
15.2 Colour	15
15.3 Marking	15
15.3.1 Battery marking	15
15.3.2 Cell marking	15
15.3.3 Polarity marking	16

16 Heaters – Battery heating system	16
17 Electrical connectors – Strength of receptacle	16
18 Temperature monitoring	16
19 Storage	17
20 Transportation	17
21 Disposal and recycling	17
Annex A (normative) Battery formats	18
Annex B (normative) Connectors	31
Figure A.1 – Format A	18
Figure A.2 – Format B	19
Figure A.3 – Format C	20
Figure A.4 – Format D	21
Figure A.5 – Format E	22
Figure A.6 – Format F	23
Figure A.7 – Format G	24
Figure A.8 – Format H	25
Figure A.9 – Format I	26
Figure A.10 – Format J	27
Figure A.11 – Format K	28
Figure A.12 – Format L	29
Figure A.13 – Format M	30
Figure B.1 – Connector Type A	32
Figure B.2 – Connector Type B	33
Figure B.3 – Connector Type C	34
Figure B.4 – Connector Type Q	35
Figure B.5 – Connector Type R	36
Figure B.6 – Connector Type S	37
Table 1 – Workmanship requirements	11

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AIRCRAFT BATTERIES –

Part 2: Design and construction requirements

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60952-2 has been prepared by IEC technical committee 21: Secondary cells and batteries.

This third edition cancels and replaces the second edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: the inclusion of those formats that can be standardized along with their connectors and electrical interfaces

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

FDIS	Report on voting
21/804/FDIS	21/815/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 the parts in the IEC 60952 series, published under the general title *Aircraft 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 web site 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.

AIRCRAFT BATTERIES –

Part 2: Design and construction requirements

1 Scope

This part of IEC 60952 series defines the physical design, construction and material requirements for nickel-cadmium and lead-acid aircraft batteries containing vented or valve-regulated cells or monoblocs. The batteries are used for both general purposes and specific aerospace applications.

The specific topics addressed in this part serve to establish acceptable quality standards required to qualify a battery as airworthy as defined in Clause 3 of IEC 60952-1:2013.

A preferred range of aircraft batteries is specified in Annex A, but this part of IEC 60952 series may be used for other battery sizes, arrangements and ratings. For particular applications, other design requirements may be stipulated. These will be in addition to the requirements of this part and will be covered by specific documents.

It is recognised that additional data may be required by other organisations (national standards bodies, AECMA, SAE, etc.). The present standard can be used as a framework to devise tests for generation of the required data.

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 60952-1:2013, *Aircraft batteries – Part 1: General test requirements and performance levels*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN