

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Secondary cells and batteries – Marking symbols for identification of their chemistry

Batteries d'accumulateurs – Symboles de marquage pour l'identification de leur caractéristique chimique



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2019 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 l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

Tel.: +41 22 919 02 11
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 corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables 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 It also gives information on projects, replaced and withdrawn publications.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 online and once a month by email.

IEC 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: sales@iec.ch.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) 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 IEC

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

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC 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.

IEC Just Published - webstore.iec.ch/justpublished

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

Service Clients - webstore.iec.ch/csc

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

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Secondary cells and batteries – Marking symbols for identification of their chemistry

Batteries d'accumulateurs – Symboles de marquage pour l'identification de leur caractéristique chimique

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.220.20; 29.220.30

ISBN 978-2-8322-6544-4

**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 Application of markings	9
4.1 General.....	9
4.2 Marking of electrochemical battery systems	9
4.3 Application of the markings on the battery.....	9
5 Markings.....	10
5.1 Markings without recycling symbol	10
5.1.1 General	10
5.1.2 Lead acid batteries	10
5.1.3 Nickel cadmium batteries.....	10
5.1.4 Nickel metal hydride batteries.....	10
5.1.5 Lithium ion batteries	10
5.1.6 Lithium metal batteries	10
5.2 Optional markings with recycling symbol	11
5.2.1 General	11
5.2.2 Lead acid batteries	11
5.2.3 Nickel cadmium batteries.....	11
5.2.4 Nickel metal hydride batteries.....	11
5.2.5 Lithium ion batteries	12
5.2.6 Lithium metal batteries	12
5.3 Background colours	12
5.4 Design of markings and symbols.....	12
5.4.1 General	12
5.4.2 Dimensions for symbols.....	13
5.4.3 Dimensions for markings without recycling symbol.....	13
5.4.4 Dimensions for markings with recycling symbol	14
5.4.5 Design of the recycling symbol in accordance with ISO 7000-1135:2004-01	15
5.4.6 Design of the letters (characters).....	15
6 Durability of markings with respect to chemical agents	15
6.1 General.....	15
6.2 Test procedure.....	16
6.2.2 Test with water and recommended cleaning agents	16
6.2.3 Test with electrolyte.....	16
6.2.4 Test with neutralizing solutions	16
6.3 Criteria.....	16
Annex A (informative) Colours for background	17
A.1 General.....	17
A.2 Colour definition for background	17
Bibliography.....	18
Figure 1 – Example of marking for lead acid batteries.....	10
Figure 2 – Example of marking for nickel cadmium batteries	10

Figure 3 – Example of marking for nickel metal hydride batteries 10

Figure 4 – Example of marking for lithium ion batteries 10

Figure 5 – Example of marking for lithium metal batteries 10

Figure 6 – Example of marking with recycling symbol for lead acid batteries 11

Figure 7 – Example of marking with recycling symbol for nickel cadmium batteries 11

Figure 8 – Example of marking with recycling symbol for nickel metal hydride batteries 11

Figure 9 – Example of marking with recycling symbol for lithium ion batteries 12

Figure 10 – Example of marking with recycling symbol for lithium metal batteries 12

Figure 11 – Size of marking without recycling symbol 13

Figure 12 – Size of marking with recycling symbol 14

Figure 13 – Design of recycling symbol..... 15

Figure 14 – Design of letters 15

Table 1 – List of dimensions for symbols 13

Table 2 – Test matrix for durability test of markings 16

Table A.1 – Colour references 17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SECONDARY CELLS AND BATTERIES –
MARKING SYMBOLS FOR IDENTIFICATION OF THEIR CHEMISTRY

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 62902 has been prepared by IEC technical committee 21: Secondary cells and batteries.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
21/990/FDIS	21/994/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

SECONDARY CELLS AND BATTERIES – MARKING SYMBOLS FOR IDENTIFICATION OF THEIR CHEMISTRY

1 Scope

This document specifies methods for the clear identification of secondary cells, batteries, battery modules and monoblocs according to their chemistry (electrochemical storage technology).

The markings described in this document are applicable for secondary cells, batteries, battery modules and monoblocs with a volume of more than 900 cm³.

The marking of the chemistry is useful for the installation, operation and decommissioning phases of battery life.

Many recycling processes are chemistry specific, thus undesired events can occur when a battery which is not of the appropriate chemistry enters a given recycling process. In order to ensure safe handling during sorting and recycling processes, therefore, the battery is marked so as to identify its chemistry.

This document defines the conditions of utilization of the markings indicating the chemistry of these secondary batteries.

The details of markings and their application are defined in this document.

NOTE Nothing in this document precludes the marking of batteries with recycling and chemistry symbols required by state, federal, national or regional laws or regulations or with a seal under license by a national recycling program.

2 Normative references

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.

IEC 60896-21:2004, *Stationary lead-acid batteries – Part 21: Valve regulated types – Methods of test*

IEC 60896-22:2004, *Stationary lead-acid batteries – Part 22: Valve regulated types – Requirements*

ISO 7000, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses: