SLOVENSKI STANDARD
oSIST prEN IEC 62902:2024

01-julij-2024

Sekundarne celice in baterije: Simboli za označevanje identifikacije kemične sestave

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

Sekundärbatterien - Symbole für die Kennzeichnung zur Identifikation ihrer Chemie

Batteries et éléments d'accumulateurs - Symboles de marquage pour l'identification de leur caractéristique chimique

Ta slovenski standard je istoveten z: **prEN IEC 62902:2024**

ICS:

01.080.20	Grafični simboli za posebno opremo	Graphical symbols for use on specific equipment
29.220.01	Galvanski členi in baterije na splošno	Galvanic cells and batteries in general

oSIST prEN IEC 62902:2024 **en**

21/1195/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 62902 ED2	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2024-05-03	**2024-07-26**
SUPERSEDES DOCUMENTS:	
21/1180/CD, 21/1192A/CC	

IEC TC 21 : SECONDARY CELLS AND BATTERIES	
SECRETARIAT: France	SECRETARY: Mr Yves BOUDOU
OF INTEREST TO THE FOLLOWING COMMITTEES: SC 21A,TC 35	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☒ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

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

PROPOSED STABILITY DATE: 2029

NOTE FROM TC/SC OFFICERS:

CONTENTS

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.

This second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Added an Introduction
b) Added exemptions and clarifications for the background colour requirement for the marking
c) Added a calculation method for the battery volume
d) Added a second footnote to the Scope
e) Added a term and definition for the principal display panel
f) Added additional chemistry information for Li-ion batteries
g) Added a new Subclause on adaptive size
h) Clarified the test methods for durability / permanence of the marking

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

FDIS	Report on voting

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.

INTRODUCTION

The aim of this document is to introduce uniform marking symbols for the identification of the secondary battery chemistries prevailing on the market. A primary reason is that lead smelters around the world are reporting increasing numbers of lithium ion batteries finding their way into the lead-acid battery waste stream. Because the shape and design of these batteries sometimes is very similar, it can be difficult for sorting facilities and battery smelters to distinguish one technology from the other if there is no clear identification of the battery chemistry by marking symbols.

Processing lithium ion batteries within a Lead smelter, e-waste facility, or municipal waste sorting facility, can result in fire or explosions, with numerous accidents or near-accidents already reported in European and US recycling facilities.

Besides lead-acid and lithium ion batteries, the labelling scheme should also apply to other battery chemistries with a significant market share, such as Nickel Metal Hydride and Nickel Cadmium. Other batteries, such as Sodium ion batteries, should be included in the marking scheme when their market share becomes significant.

A clear identification of the battery chemistry would be helpful during the whole lifetime of the battery, i.e. during selection and purchase of a new battery (e.g. by economic operators as well as end users), transportation, installation and operation of the battery as well as collection, sorting, storage and treatment of waste batteries.

The following standards/recommendations were considered during the development of this document:

The Battery Association of Japan (BAJ) has issued ‘Guidelines for Recycle Mark on rechargeable cells and batteries for portable applications’ which include an optional colour code system for identifying major (rechargeable) battery chemistries: Pb, Ni-Cd, Ni-MH, and Li-ion. These Guidelines also distinguish different cathode materials as well as important impurities (mostly from the anode material).

Call2Recycle has introduced in Canada and the United States of America a licensed labelling program for batteries. It is a non-profit organization that collects and recycles batteries on behalf of companies that pay a fee to license the label.

The recycling symbol required on batteries within the Scope of this document is the General Symbol for Recovery/Recyclable as standardised in ISO 7000-1135, see item 1 in Table 1. It is worth noting the information that ISO offers for this symbol: Function/description: To indicate that the marked item or its material is part of a recovery or recycling process. Additional information: The symbol is applicable only to those products or materials for which at the end of life there is a well-established collection route and recycling process, and which does not significantly impair the effectiveness of other recycling schemes.

Battery marking is also subject of regional legislation. One example is the crossed-out wheeled bin, used in the European Union (EU) and in some other countries to make consumers aware of their obligation to offer batteries for separate collection. The symbol is combined with symbols for substances of very high concern (SVHC), namely cadmium (Cd) and lead (Pb) exceeding certain concentration levels per Regulation (EU) 2023/1542 (Batteries Regulation)[1].

In the frame of discussions aiming at improving collection programs, it was suggested that battery labels should have a consistent and simple marking (e.g., a colour code) across all

[1]) There is no requirement to add the Hg symbol to the separate collection symbol. However, there is a requirement for max. 0,0005 % Hg for all batteries in Annex I *Restriction on substances* of the Batteries Regulation.

battery chemistries to encourage and aid appropriate handling which should, at a minimum, address three primary goals – in descending order of priority:

2) Inform and educate consumers to keep batteries out of the trash and curbside recycling, and direct batteries to dedicated battery recycling networks where available.

3) Provide consumers and recycling network employees human-readable information to enable sorting of used batteries among major chemistry families (e.g., Pb, Li-ion, Ni-Cd, Ni-MH, and Li-metal).

4) If appropriate within a chemistry family, inform recyclers of the unique features, components, and/or constituents for recovery (e.g., cathode material).”

Table 1 contains a list of recycling and ecolabels that can be expected on batteries.

Table 1 – Recycling and ecolabels regarding batteries

No.	Symbol	Official name	Alternative information	Purpose	Source reference
1		General symbol for recovery/recyclable	Möbius loop, three curved arrows	To indicate that the marked item or its material is part of a recovery or recycling process.	ISO 7000-1135 www.iso.org/obp
2		4 in 1 symbol	The white interior shows 4 arrows pointing outwards		Environmental Protection Administration of Taiwan
3		Crossed-out wheeled bin		indicating ‘separate collection’ for all batteries and accumulators	Regulation (EU) 2023/1542
4		Call 2 Recycle battery seal		Private recycling program in the USA and Canada	Battery recycling Seal usage standards
5		Recycling symbol and chemistry for batteries	Guidelines for recycle mark on batteries	Compliance with the Japanese Law for the Promotion of Effective Utilization of Resources	Tecchio, P. et al., Analysis of material efficiency aspects of personal computers product group, JRC Report EUR 28394 EN (2018), page 60
6		U.S. Mercury-Containing and Rechargeable Battery Recycling Act symbol (Battery Council International model)	See footnote [a]	See footnote [b]	42 U.S.C. § 14322(b)

[a] Three chasing arrows or a comparable recycling symbol. For Nickel-Cadmium batteries, the symbol must also state “Ni-Cd” and the phrase “BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.” For Lead acid batteries, the symbol must also state “Pb” or the words “LEAD”, “RETURN”, and “RECYCLE” and if the regulated battery is sealed, the phrase “BATTERY MUST BE RECYCLED.”

[b] Model symbol developed by Battery Council International for Small Sealed Lead Acid (SSLA) batteries in compliance with the U.S. Mercury-Containing and Rechargeable Battery Recycling Act. Variations allowed.

During the preparation of the 2nd edition, the Scope of this document was subject to intensive discussions. One of the subjects that were discussed, was the inclusion of a battery’s energy content. Some experts thought that a limit like the 100 Wh limit used in dangerous goods transportation regulations to distinguish between “fully regulated” and “exempted” when offering batteries for transport under UN numbers 3480 and 3481 could be suitable to distinguish

between different levels of labelling requirements. However, these thoughts were not pursued as they applied only to lithium ion batteries and could hardly be translated into a technology agnostic language. No generally acceptable calculation method was found that would enable the transfer of the energy limit from lithium ion batteries to other chemistries.

A limit of 100 Wh for lithium ion spare batteries in the FAA and IATA regulations for carry-on baggage on board of passenger aircraft was not considered to be suitable for consideration due to similar reasons. The same applied even more to a mass limit of 500 g applicable during the collection of lithium batteries according to Special Provision 636 of the ADR (Agreement for the carriage of Dangerous goods by Road).

Other suggestions were made to limit the Scope to batteries with one or more dimension(s) exceeding 5 cm or, in a different proposal, 100 mm. However, it could not be shown how these limits would correlate with each other and with the volume limit of 900 cm^3 and/or why they would be more suitable than the volume limit.

It has also been discussed to add the following recommendation: In addition, the markings may be used also on secondary battery packaging and in accompanying documents when secondary batteries are placed on the market.