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REDLINE VERSION

Laddningsbara celler och batterier – Symboler för identifiering av kemiskt system

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

En så kallad ”Redline version” (RLV) innehåller både standarden som fastställts som SEK-publication och en ändringsmarkerad IEC-standard. Alla tillägg och borttagningar sedan den tidigare utgåvan av IEC-standarderna är markerade med färg. Med en RLV sparar du mycket tid när du ska identifiera och bedöma aktuella ändringar i standarderna. SEK Svensk Elstandard kan bara ge ut RLV i de fall den finns tillgänglig från IEC.



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REDLINE VERSION

INTERNATIONAL STANDARD



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62902:2019. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 62902 has been prepared by IEC technical committee 21: Secondary cells and batteries. It is an International Standard.

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) Addition of an Introduction;
- b) Addition of exemptions and clarifications for the marking background colour requirement;
- c) Addition of a calculation method for the battery volume;
- d) Addition of a new note to the Scope;
- e) Addition of a term and definition for the principal display panel;
- f) Addition of further chemistry information for Li-ion batteries;
- g) Addition of a new subclause on adaptive size;
- h) Clarification of the test methods for durability and permanence of the marking.

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

Draft	Report on voting
21/1195/CDV	21/1208/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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

This document introduces 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 throughout the entire battery lifetime, i.e. from the selection and purchase of a new battery (e.g. by economic operators as well as end users), to transportation, installation and use of the battery and then to waste battery collection, sorting, storage and treatment.

The following standards and 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)¹.

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 7000-1135:2004-01, see item 1 in Table 1. It is worth noting the information that ISO provides 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 can also be subject to regional legislation. One example being the crossed-out wheeled bin used in the European Union (EU) and in some other countries to make consumers aware of their obligation to make their batteries available for separate collection. Some other regulations, e.g. Regulation (EU) 2023/1542 on batteries and waste batteries, can require the use of additional symbols for substances of very high concern (SVHC), namely cadmium (Cd) and lead (Pb) exceeding certain concentration levels².

¹ For more information see the document referred to under "Source reference" for item 5 in Table 1.







² Regulation EU 2023/1542 does not require the addition of 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.

In a comment submitted by Battery Council International (BCI) on a request by the Environmental Protection Agency (USA) for information regarding the development of best practices for the collection of batteries to be recycled and voluntary battery labelling guidelines, it was suggested that battery labels should have a consistent and simple marking (e.g. a colour code) across all battery chemistries to encourage and aid appropriate handling which should, at a minimum, address three primary goals – in descending order of priority:

- 1) inform and educate consumers to keep batteries out of the trash and curbside recycling, and direct batteries to dedicated battery recycling networks where available;
- 2) provide consumers and recycling network employees with 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);
- 3) if appropriate within a chemistry family, inform recyclers of the unique features, components or constituents or both, 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 7000-1135:2004-01 www.iso.org/obp
2		4 in 1 symbol	The white interior shows 4 arrows pointing outwards		Environmental Protection Administration of Taiwan (Province of China)
3		Crossed-out wheeled bin		To indicate "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 ^a	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 ^b	See footnote ^c	42 U.S.C. § 14322(b)
<p>^a The symbol has two placeholders after "Li-ion" where codes for details of the chemistry are entered.</p> <p>^b 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."</p> <p>^c 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.</p>					

During the preparation of the second 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 the 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 Federal Aviation Administration (FAA) (of the United States) and International Air Transport Association (IATA) regulations for carry-on baggage on board of passenger aircraft was not considered to be suitable for consideration for similar reasons. The same applied even more to a mass limit of 500 g applicable during the collection of lithium batteries according to UNECE, Special Provision 636 of the Agreement for the carriage of Dangerous goods by Road (ADR).

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 cm³ and why they would be more suitable than the volume limit.

It was also 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".

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.~~

The markings described in this document are applicable to

- secondary cells,
- batteries,
- battery modules, and
- monoblocs,

when they are placed on the market for end use and when their battery volume exceeds 900 cm³.

The chemistry marking is useful for the installation, operation and decommissioning phases in the battery's life cycle.

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. Therefore, the battery is marked so as to identify its chemistry to ensure safe handling during sorting and recycling processes.

This document defines the conditions of use 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.~~

NOTE The 900 cm³ limit has been chosen because it is a reasonable compromise between larger format batteries and small batteries. On small batteries, the space for additional labels is limited which can result in a readability conflict.

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*

IEC 61960-3:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications – Part 3: Prismatic and cylindrical lithium secondary cells and batteries made from them*

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

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Laddningsbara celler och batterier – Symboler för identifiering av kemiskt system

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

Som svensk standard gäller europastandarden EN IEC 62902:2025. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62902:2025.

Nationellt förord

Europastandarden EN IEC 62902:2025

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62902, Second edition, 2025 - Secondary cells and batteries - Marking symbols for identification of their chemistry**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN IEC 62902, utg 1:2019 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2028-04-30.

ICS 29.220.20; 29.220.30

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EUROPEAN STANDARD

EN IEC 62902

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2025

ICS 29.220.20; 29.220.30

Supersedes EN IEC 62902:2019

English Version

**Secondary cells and batteries - Marking symbols for
identification of their chemistry
(IEC 62902:2025)**

Batteries d'accumulateurs - Symboles de marquage pour
l'identification de leur caractéristique chimique
(IEC 62902:2025)

Sekundärbatterien - Symbole für die Kennzeichnung zur
Identifikation ihrer Chemie
(IEC 62902:2025)

This European Standard was approved by CENELEC on 2025-04-02. 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.

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

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Ref. No. EN IEC 62902:2025 E

SEK Svensk Elstandard

SS-EN IEC 62902, utg 2:2025

European foreword

The text of document 21/1195/CDV, future edition 2 of IEC 62902, prepared by TC 21 "Secondary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62902:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-04-30 document have to be withdrawn

This document supersedes EN IEC 62902:2019 and all of its amendments and corrigenda (if any).

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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 62902:2025 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 60622	NOTE	Approved as EN 60622
IEC 61056 (series)	NOTE	Approved as EN 61056 (series)
IEC 61951-1	NOTE	Approved as EN 61951-1
IEC 61951-2	NOTE	Approved as EN 61951-2
IEC 62620:2014	NOTE	Approved as EN 62620:2015 (not modified)
IEC 62675	NOTE	Approved as EN 62675

Annex ZA (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 60896-21	2004	Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test	EN 60896-21	2004
IEC 60896-22	2004	Stationary lead-acid batteries - Part 22: Valve regulated types - Requirements	EN 60896-22	2004
IEC 61960-3	2017	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications - Part 3: Prismatic and cylindrical lithium secondary cells and batteries made from them	EN 61960-3	2017
ISO 7000	-	Graphical symbols for use on equipment - Registered symbols	-	-

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
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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IEC 62902 has been prepared by IEC technical committee 21: Secondary cells and batteries. It is an International Standard.

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) Addition of an Introduction;
- b) Addition of exemptions and clarifications for the marking background colour requirement;
- c) Addition of a calculation method for the battery volume;
- d) Addition of a new note to the Scope;
- e) Addition of a term and definition for the principal display panel;
- f) Addition of further chemistry information for Li-ion batteries;

- g) Addition of a new subclause on adaptive size;
- h) Clarification of the test methods for durability and permanence of the marking.

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

Draft	Report on voting
21/1195/CDV	21/1208/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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

This document introduces 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 throughout the entire battery lifetime, i.e. from the selection and purchase of a new battery (e.g. by economic operators as well as end users), to transportation, installation and use of the battery and then to waste battery collection, sorting, storage and treatment.

The following standards and 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)¹.

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 7000-1135:2004-01, see item 1 in Table 1. It is worth noting the information that ISO provides 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 can also be subject to regional legislation. One example being the crossed-out wheeled bin used in the European Union (EU) and in some other countries to make consumers aware of their obligation to make their batteries available for separate collection. Some other regulations, e.g. Regulation (EU) 2023/1542 on batteries and waste batteries, can require the use of additional symbols for substances of very high concern (SVHC), namely cadmium (Cd) and lead (Pb) exceeding certain concentration levels².

¹ For more information see the document referred to under "Source reference" for item 5 in Table 1.







² Regulation EU 2023/1542 does not require the addition of 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*.

In a comment submitted by Battery Council International (BCI) on a request by the Environmental Protection Agency (USA) for information regarding the development of best practices for the collection of batteries to be recycled and voluntary battery labelling guidelines, it was suggested that battery labels should have a consistent and simple marking (e.g. a colour code) across all battery chemistries to encourage and aid appropriate handling which should, at a minimum, address three primary goals – in descending order of priority:

- 1) inform and educate consumers to keep batteries out of the trash and curbside recycling, and direct batteries to dedicated battery recycling networks where available;
- 2) provide consumers and recycling network employees with 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);
- 3) if appropriate within a chemistry family, inform recyclers of the unique features, components or constituents or both, 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 7000-1135:2004-01 www.iso.org/obp
2		4 in 1 symbol	The white interior shows 4 arrows pointing outwards		Environmental Protection Administration of Taiwan (Province of China)
3		Crossed-out wheeled bin		To indicate "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 ^a	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 ^b	See footnote ^c	42 U.S.C. § 14322(b)
<p>^a The symbol has two placeholders after "Li-ion" where codes for details of the chemistry are entered.</p> <p>^b 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."</p> <p>^c 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.</p>					

During the preparation of the second 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 the 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 Federal Aviation Administration (FAA) (of the United States) and International Air Transport Association (IATA) regulations for carry-on baggage on board of passenger aircraft was not considered to be suitable for consideration for similar reasons. The same applied even more to a mass limit of 500 g applicable during the collection of lithium batteries according to UNECE, Special Provision 636 of the Agreement for the carriage of Dangerous goods by Road (ADR).

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 cm³ and why they would be more suitable than the volume limit.

It was also 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".

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 to

- secondary cells,
- batteries,
- battery modules, and
- monoblocs,

when they are placed on the market for end use and when their battery volume exceeds 900 cm³.

The chemistry marking is useful for the installation, operation and decommissioning phases in the battery's life cycle.

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. Therefore, the battery is marked so as to identify its chemistry to ensure safe handling during sorting and recycling processes.

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

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

NOTE The 900 cm³ limit has been chosen because it is a reasonable compromise between larger format batteries and small batteries. On small batteries, the space for additional labels is limited which can result in a readability conflict.

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*

IEC 61960-3:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications – Part 3: Prismatic and cylindrical lithium secondary cells and batteries made from them*

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