IEC 62902

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

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

IEC 62902:2019-02(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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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

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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 cm^3.

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:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
battery
one or more cells fitted with devices necessary for use, for example case, terminals, marking and protective devices

[SOURCE: IEC 60050-482:2004, 482-01-04]

3.2
battery volume
displacement of the battery

3.3
battery module
group of cells connected together either in a series and/or parallel configuration with or without protective devices (e.g. fuse or positive temperature coefficient, PTC) and monitoring circuitry

[SOURCE: IEC 62620:2014, 3.8, modified – The word "battery" has been added to the term, and "positive temperature coefficient" to the definition.]

3.4
cell
basic functional unit, consisting of an assembly of electrodes, electrolyte, container, terminals and usually separators that is a source of electric energy obtained by direct conversion of chemical energy

[SOURCE: IEC 60050-482:2004, 482-01-01, modified – Note to entry has been omitted.]

3.5
lead acid battery
secondary battery with aqueous electrolyte based on dilute sulfuric acid, a positive electrode of lead dioxide and a negative electrode of lead

[SOURCE: IEC 60050-482:2004, 482-05-01, modified – The term has been changed from "lead dioxide lead battery" to "lead acid battery", and the note has been deleted.]

3.6
secondary lithium battery
lithium battery which is designed to be electrically recharged

Note 1 to entry: The recharge is accomplished by way of a reversible chemical reaction.

[SOURCE: IEC 60050-482:2004, 482-01-03, modified – The term has been changed from "secondary cell" to "secondary lithium battery". In the definition, "cell" has become "lithium battery".]

3.7
lithium ion battery
secondary battery with an organic solvent electrolyte and positive and negative electrodes which utilize an intercalation compound in which lithium is stored

Note 1 to entry: A lithium ion battery does not contain lithium metal.

[SOURCE: IEC 60050-482:2004, 482-05-07]

3.8
lithium metal battery
battery which incorporates one or more lithium cells with an organic solvent electrolyte or a solid electrolyte, a positive electrode and a negative electrode composed of lithium metal

3.9
monobloc battery
battery, with multiple separate but electrically connected cell compartments each of which is designed to house an assembly of electrodes, electrolyte, terminals or intercell connections and possible separators

[SOURCE: IEC 60050-482:2004, 482-02-17, modified –The word "interconnections" has been replaced by "intercell connections" in the definition and the note has been deleted.]

3.10
nickel cadmium battery
secondary battery with an alkaline electrolyte, a positive electrode containing nickel oxide and a negative electrode of cadmium

[SOURCE: IEC 60050-482:2004, 482-05-02, modified – The first preferred term "nickel oxide cadmium battery" has been omitted.]

3.11
nickel metal hydride battery
secondary battery with an electrolyte of aqueous potassium hydroxide, a positive electrode containing nickel as nickel hydroxide and a negative electrode of hydrogen in the form of a metal hydride

[SOURCE: IEC 60050-482:2004, 482-05-08]

3.12
secondary cell
cell which is designated to be electrically recharged

[SOURCE: IEC 60050-482:2004, 482-01-03, modified – The note has been deleted.]

3.13
marking
line, shape, pattern, letter or symbol on the surface, which helps to identify features of the marked product or material

3.14
symbol
written character or mark used to represent information

EXAMPLE: The recycling symbol represents the information that the battery is to be recycled.

3.15
label
sheet with an adhesive layer containing information for application on products

3.16
valve regulated lead acid battery
VRLA
secondary battery in which cells are closed but have a valve which allows the escape of gas if the internal pressure exceeds a predetermined value

Note 1 to entry: The cell or battery cannot normally receive additions to the electrolyte.

Note 2 to entry: This note only applies to the French language.

[SOURCE: IEC 60050-482:2004, 482-05-15, modified – Note 2 has been added.]

4 Application of markings

4.1 General

Markings defined in Clause 5 are applicable to all products according to their size and configuration as defined in the scope of this document.

Each end product in accordance with this document shall be marked in accordance with this Clause 4 before being placed on the market.

In case of dismantling the batteries into monoblocs and modules for the purpose of reuse of the monoblocs and modules, additional marking of these monoblocs or batteries shall be carried out in accordance with this document.

Single cells should not be marked in the event that they are fitted into batteries or modules.

4.2 Marking of electrochemical battery systems

This marking is only applicable to secondary cells and batteries of the following chemistries:

a) lead acid (Pb),
b) nickel cadmium (Ni-Cd),
c) nickel metal hydride (Ni-MH),
d) lithium ion (Li-ion),
e) lithium metal (Li-metal).

Batteries or modules applying more than one of these chemistries shall be marked for all applied chemistries.

This marking is not applicable for batteries of other chemistries and technologies such as:

f) flow batteries,
g) sodium-sulfur high temperature batteries,
h) Na-NiCl high temperature batteries, and
i) all other chemistries not listed here.

4.3 Application of the markings on the battery

The markings can be fixed on the battery either by:

a) printing, or
b) labelling, or
c) other methods.

The markings shall be applied on the battery or modules before these are placed on the market.

The markings shall be visible, legible and indelible over the expected life of the batteries.

The markings with the design described in Clause 5 may be integrated into existing printings or labels.

The marking shall be placed on the displayed side, which is the side on which the battery information is placed, to achieve good visibility.

If, due to design reasons or customer requirements, the marking cannot be placed on the displayed side, the size of the marking shall be as defined in 5.4.

5 Markings

5.1 Markings without recycling symbol

5.1.1 General

Markings shown in Figures 1 to 5 shall be used in the event that the recycling symbol is applied in other markings or if a recycling symbol does not need to be declared or cannot be declared.

5.1.2 Lead acid batteries

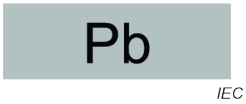

Figure 1 – Example of marking for lead acid batteries

5.1.3 Nickel cadmium batteries

Figure 2 – Example of marking for nickel cadmium batteries

5.1.4 Nickel metal hydride batteries

Figure 3 – Example of marking for nickel metal hydride batteries

5.1.5 Lithium ion batteries

Figure 4 – Example of marking for lithium ion batteries

5.1.6 Lithium metal batteries

Figure 5 – Example of marking for lithium metal batteries

5.2 Optional markings with recycling symbol

5.2.1 General

The markings shown in Figures 6 to 10 with the recycling symbol in accordance with ISO 7000-1135:2004-01 shall be used in the event that the recycling symbol is still not applied in other markings and if a recycling symbol needs to be declared.

NOTE The applicability and meaning of the recycling symbol can vary by country.

5.2.2 Lead acid batteries

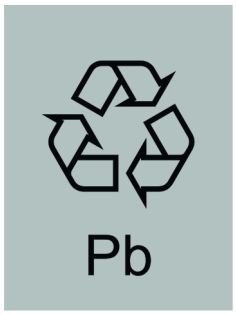

Figure 6 – Example of marking with recycling symbol for lead acid batteries

5.2.3 Nickel cadmium batteries

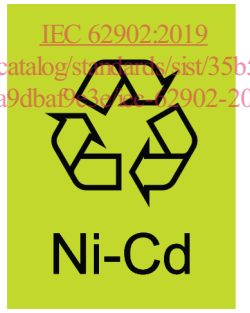

Figure 7 – Example of marking with recycling symbol for nickel cadmium batteries

5.2.4 Nickel metal hydride batteries

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