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Carbon footprint calculation applicable to industrial lithium-ion batteries - Part 1: General requirements and methodology

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC 63369-1 has been prepared by subcommittee SC 21A: Secondary cells and batteries containing alkaline or other non-acid electrolytes, of IEC technical committee 21: Secondary cells and batteries. It is an International Standard.

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

Draft	Report on voting
21A/948/FDIS	21A/968/RVD

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.

A list of all parts in the IEC 63369 series, published under the general title *Carbon footprint calculation applicable to industrial lithium-ion batteries*, can be found on the IEC website.

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– withdrawn, or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.

1 Scope

This part of IEC 63369 addresses general requirements and methodology, whereas intended IEC 63369-2[1] and intended IEC 63369-3[2] address applications of the methodology and default values of the CFF parameters by geographic area (see Annex B).

This document provides a comprehensive methodology for the calculation of carbon footprint of industrial type Li-ion battery from cradle to grave.

NOTE Industrial-type Li-ion battery is described in IEC 62619 or IEC 62620.

Second life and/or usage that was not intended when the battery was put on the market is not taken into account in this document.

This document, along with the other parts of this series, does not apply to batteries for portable, SLI and electric road vehicle traction applications. The definition of the parameters used for the carbon footprint calculation allows for comparability of results for all rechargeable Li-ion chemistries. Classes of representative products are defined in this document to allow comparison inside each class.

This methodology, based on the data provided by the battery manufacturer, is mainly intended to allow a carbon footprint assessment of several battery solutions over the Cumulated Requested Service (CRS). This assessment can be used in the selection process of the battery purchaser.

The methodology can also be used for a variety of purposes such as battery system development, eco-design and participation in voluntary or mandatory programs.

The methodology in this document is based exclusively on attributional life cycle assessment (LCA).

The carbon footprint calculation of charging equipment and power conversion equipment not necessary for battery functions is not covered in this document.

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.

ISO 14021:2016, *Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)*

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[1] Under consideration.

[2] Under consideration.

Bibliography

[1] IEC 62619:2022, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications*

[2] IEC 62973-1:2018, *Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 1: General requirements*

[3] DEWULF, J., et al, *Recycling rechargeable lithium ion batteries: Critical analysis of natural resource savings.* Resources, conservation and recycling, Volume 54, Issue 4, February 2010, pp. 229-234

[4] Commission Recommendation (EU) 2021/2279 of 15 December 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations

[5] PEFCR for batteries – Product Environmental Footprint Category Rules for High Specific Energy Rechargeable Batteries for Mobile Applications – Version 1.1

[6] ISO 14067:2018, *Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification*

[7] IEC 62620:2014, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for use in industrial applications*

[8] IEC 61427-2:2015, *Secondary cells and batteries for renewable energy storage - General requirements and methods of test - Part 2: On-grid applications*
IEC 61427-2:2015/AMD1:2024

[9] IEC 60254-1:2005, *Lead-acid traction batteries - Part 1: General requirements and methods of tests*

[10] ISO 14040:2006, *Environmental management - Life cycle assessment - Principles and framework*

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