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**Measuring equipment for electrical and electromagnetic quantities - Environmental aspects**

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# Measuring equipment for electrical and electromagnetic quantities - Environmental aspects

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

| Draft | Report on voting |
|---|---|
| 85/1001/FDIS | 85/1007/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/standardsdev/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– withdrawn, or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.

# INTRODUCTION

Increasingly, there is a focus on preserving the natural environment for the good of future generations. This results in the publication of various regulations that are based on environmental data, whether at the local or national level. Product manufacturers are also faced by requests from their stakeholders' customers (wholesalers, installers, specifiers, authorities…) for environmental data. In addition to reduce product environmental impact, manufacturers need a standardized methodology to quantify and to consequently reduce the environmental impact of the product.

It is then important to establish product specific rules (PSR) to have standardized science-based methodologies for the data to be evaluated and transmitted.

Specific rules for assessing the environmental impacts and providing appropriate data for ME3Q are among the purposes of this document. These rules establish a common evaluation scheme of their environmental impacts in terms of characterized impact indicators (e.g. greenhouse gas emissions, $CO_2$-equivalents, ozone depletion) over their whole life cycle. Figure 1 describes the relationship with some standards covering the life cycle assessment (LCA) topic.

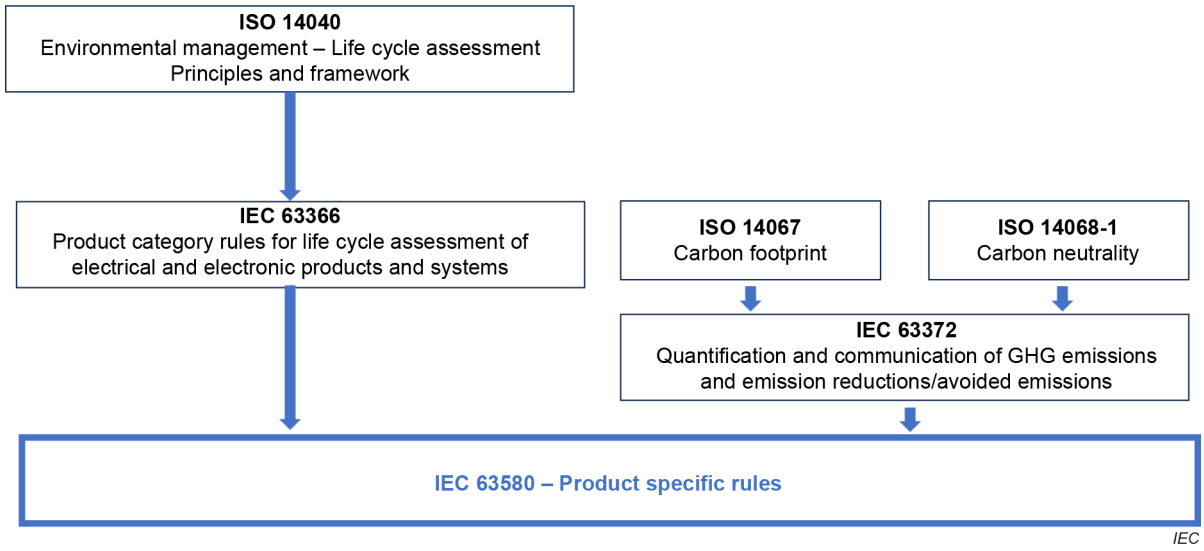



**Figure 1 – Standard family for life cycle assessment (LCA)**

This document is to be used by manufacturers, customers, authorities, programme operators, LCA practitioners and verifiers, whatever the type of environmental data related to life cycle assessment, including extract for one specific impact (carbon footprint). Figure 2 describes the relationship with some standards covering product assessment topic.

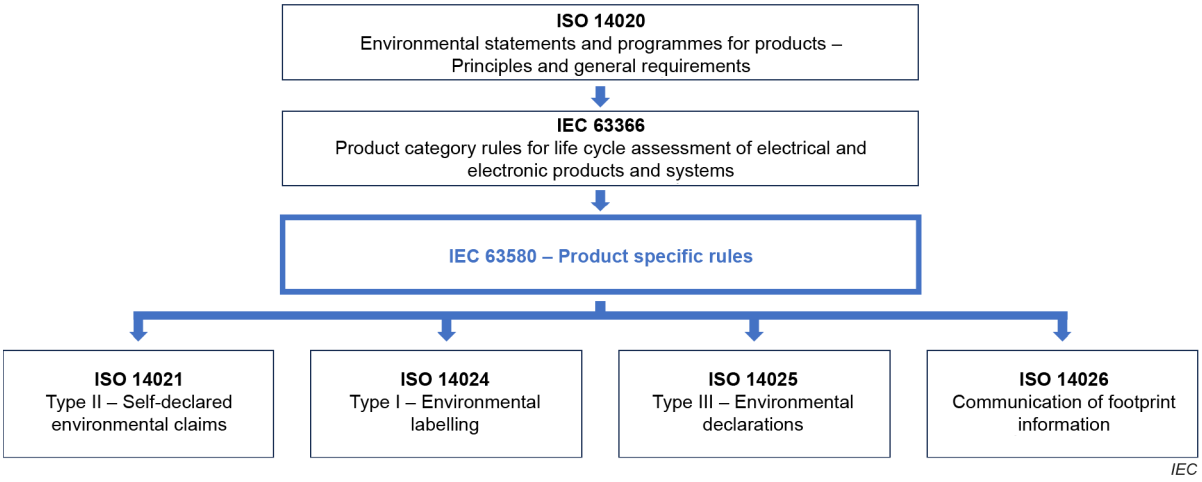



**Figure 2 – Standard family for environmental communication**

Even though ME3Q have a relatively minor impact on the environment, there is a market need for appropriate methods for managing these environmental matters. A simplified means of estimating the environmental impacts will be useful together with readily available data to make the stakeholders, for example contractor's, installer's and end user's, task of assessing environmental impacts at system level easier.

Generally, the environmental impact of ME3Q is very low compared with that of the overall system into which they are incorporated and the processes to which they contribute. The lifetime impact of processes such as the air-conditioning of a building, the manufacture of steel or shipping far exceeds that of the manufacture and use of any associated ME3Q. Figure 3 describes relationship with some standards for interoperability with Building LCA.

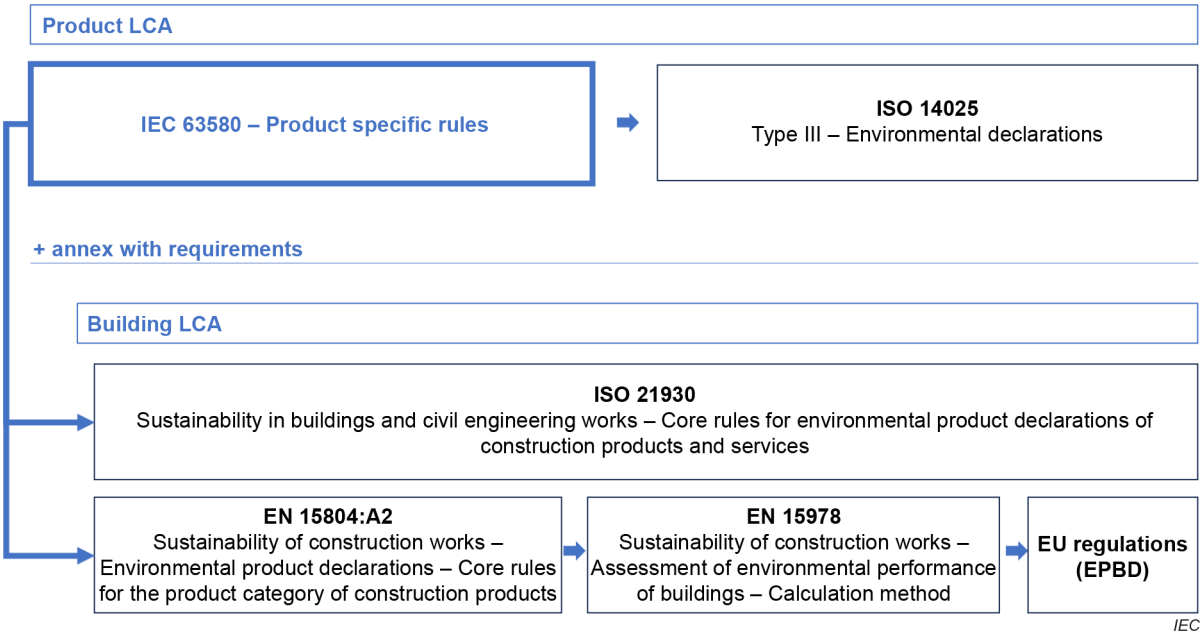



**Figure 3 – Standard family for interoperability with Building LCA**

In addition, release of substances and materials that can be harmful for the environment or induce climatic changes are to be avoided or minimized. From conception to end of life of a product, the environmental impact of all the relevant processes is considered, including how materials are disposed of or recovered for future use.

In order to contribute to conserving natural resources, manufacturers of measuring equipment for electrical and electromagnetic quantities (ME3Q) ensures an environmentally conscious design (ECD) involving:

– phasing-out or minimizing use of hazardous substances or materials;
– efficient use of energy and materials in the manufacture of products;
– ensuring the lowest practical energy consumption by the products while they are in use;
– at the end of product life, the possibility, as far as practical, of recycling materials for future use, and sorting hazardous components requiring a specific treatment.

Declarations and ECD are increasingly deemed as important for some bodies. These can take several forms, for example, Type II or Type III environmental declaration, material declaration (MD). In some business, Green Public Procurement (GPP) is applicable and/or ECD is part of the ISO 14001 certification. Some countries and regions are also actively pushing for environmental conservation, for example, the European Union through its Ecodesign Directive and China through Ecodesign Initiative. Systematic demands for ECD will be deemed as important by most, if not all customers, in the medium term.

Assessing the environmental impact of ME3Q is part of an ECD process. ECD necessitates the identification, measurement and reporting of particular impacts. IEC 62430 describes the basic principles of ECD, with the goal of reducing the potential environmental impacts of products.

## 1 Scope

This International Standard provides guidance to manufacturers of measuring equipment for electrical and electromagnetic quantities (ME3Q) in evaluating and improving the environmental impact of their products, and in enabling effective communication using common references for environmental information throughout the supply chain.

NOTE ME3Q devices are described in Annex A.

This document covers only the below fixed installed measuring equipment:

– IEC 61557-12, power metering and monitoring devices (PMD);
– IEC 62586-1, power quality instruments (PQI);
– IEC 60688, transducers (TRD);
– IEC 62974-1, devices for data management (DDM).

This document provides:

– guidance on the process and general aspects to implement environmentally-conscious product design principles, as given in IEC 62430;
– the product specific rules (PSR) for life cycle assessment (LCA);

NOTE 1 The general methods and the process to execute the LCA are in accordance with ISO 14040 and ISO 14044 but not addressed in this document.

NOTE 2 PSR and LCA can be used for quantitative ECD and also apply for some environmental declarations, for example Type III.

– standard environmental impact data derived from case studies and a means of using them;

NOTE 3 This is to encourage manufacturers to apply more effective quantitative methods in the ECD process to improve the environmental efficiency of their products.

– common rules for communicating information about the presence of regulated substances and the materials contained in the product;
– guidance on communicating information about the end-of-life treatment of the product.

## 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 60050-904, *International Electrotechnical Vocabulary (IEV) - Part 904: Environmental standardization for electrical and electronic products and systems*

IEC 60688:2024, *Electrical measuring transducers for converting AC and DC electrical quantities to analogue or digital signals*

IEC 61557-12:2018, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Equipment for testing, measuring or monitoring of protective measures - Part 12: Power metering and monitoring devices (PMD)*

IEC 62430, *Environmentally conscious design (ECD) - Principles, requirements and guidance*

IEC 63366:2025, *Product category rules for life cycle assessment of electrical and electronic products and systems*

ISO 14040, *Environmental management - Life cycle assessment - Principles and framework*

ISO 14044, *Environmental management - Life cycle assessment - Requirements and guidelines*

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

ISO 14025:2006, *Environmental labels and declarations - Type III environmental declarations - Principles and procedures*

IEC 62586-1:2017, *Power quality measurement in power supply systems - Part 1: Power quality instruments (PQI)*

IEC 62974-1:2024, *Monitoring and measuring systems used for data collection, aggregation and analysis - Part 1: Device requirements*

# 3 Terms, definitions and abbreviated terms

## 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-904 and the following apply.

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

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

## 3.2 General

**3.2.1**
**greenhouse gas**
**GHG**
gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds

Note 1 to entry: For a list of GHGs, see the latest IPCC Assessment Report.

Note 2 to entry: Water vapour and ozone, which are anthropogenic as well as natural GHGs, are not included in the CFP and partial CFP.

Note 3 to entry: The focus of this document is limited to long-lived GHGs, it therefore excludes climate effects due to changes in surface reflectivity (albedo) and short-lived radiative forcing agents (e.g., black carbon and aerosols).

[SOURCE: ISO 14067:2018, 3.1.2.1]

**3.2.2**
**co-product**
any of two or more products coming from the same unit process or product system

Note 1 to entry: Co-product, by-product and product have the same status and are used for identification of several distinguished flows of products from the same unit process. From co-product, by-product and product, waste is the only output to be distinguished as a non-product.

[SOURCE: ISO 14040:2006, 3.10, modified – A note to entry has been added.]