

INTERNATIONAL STANDARD

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Measuring equipment for electrical and electromagnetic quantities - Environmental aspects

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IEC 63580 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities. It is an International Standard.

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- withdrawn, or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, CO₂-equivalents, ozone depletion) over their whole life cycle. Figure 1 describes the relationship with some standards covering the life cycle assessment (LCA) topic.

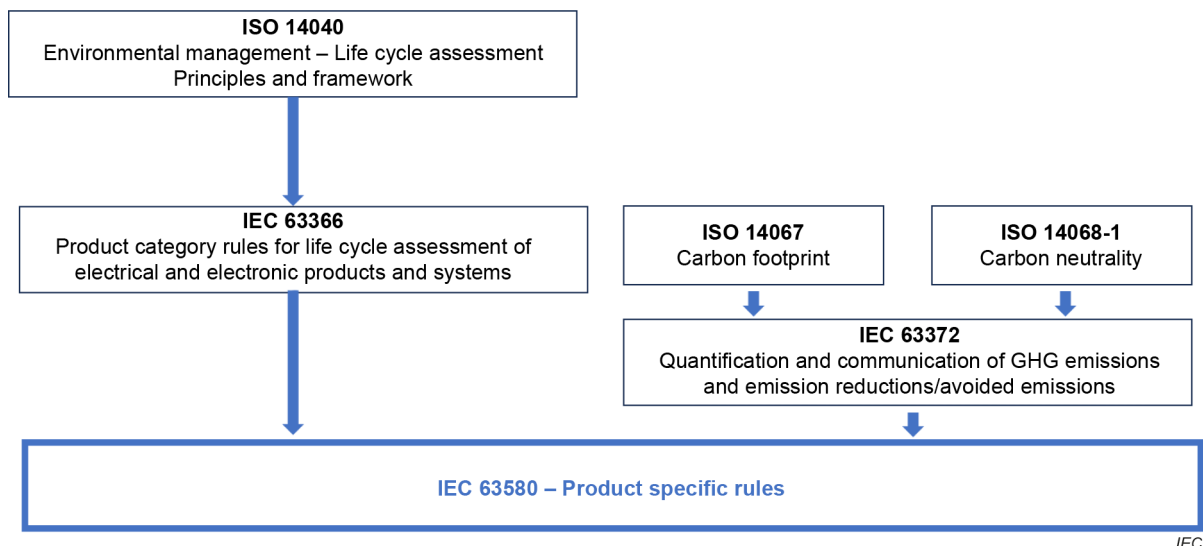


Figure 1 – Standard family for life cycle assessment (LCA)

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.

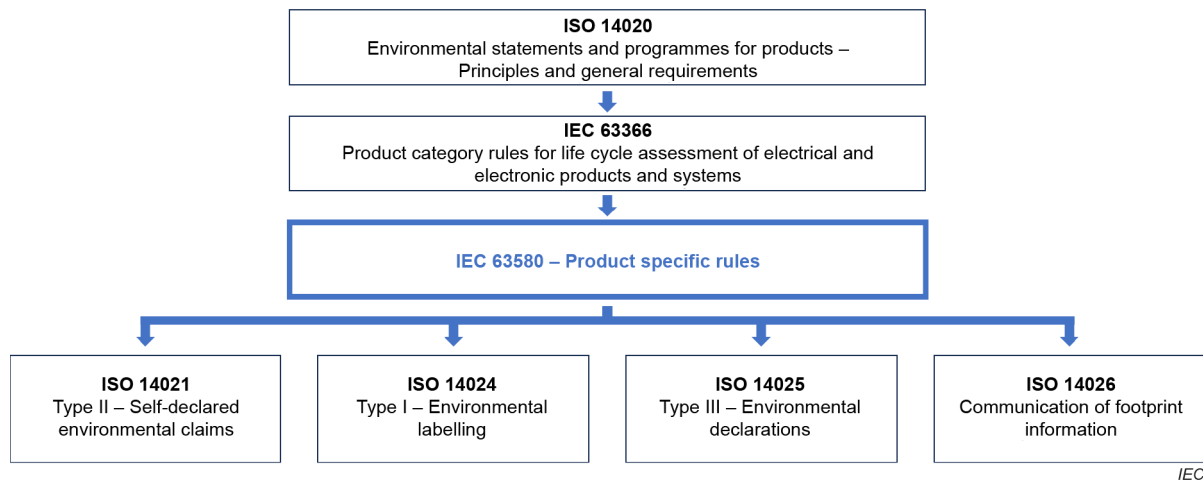


Figure 2 – Standard family for environmental communication

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.

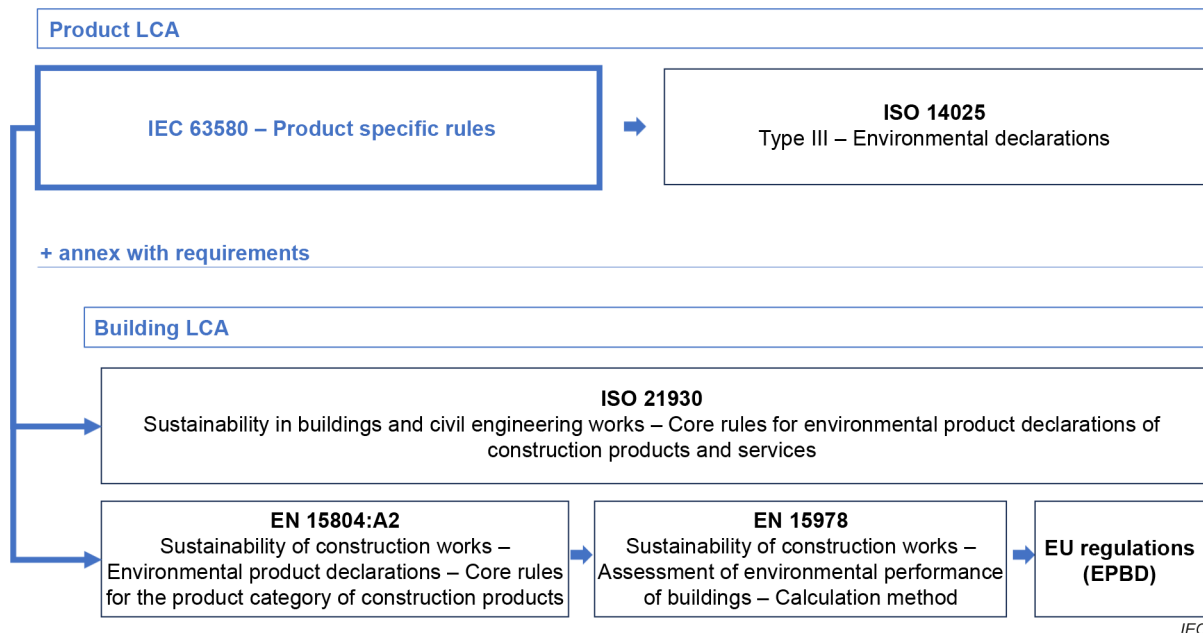


Figure 3 – Standard family for interoperability with Building LCA

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*

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IEC 60051, *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC TR 60890:2014, *A method of temperature-rise verification of low-voltage switchgear and controlgear assemblies by calculation*

IEC 60947 (all parts), *Low-voltage switchgear and controlgear*

IEC 61000-4-30, *Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods*

IEC 61557-2, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 2: Insulation resistance.*

IEC 61557-3, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 3: Loop impedance*

IEC 61557-4, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 4: Resistance of earth connection and equipotential bonding*

IEC 61557-5, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 5: Resistance to earth*

IEC 61557-6, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems*

IEC 61557-7, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 7: Phase sequence*

IEC 61557-8, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 8: Insulation monitoring devices for IT systems*

IEC 61557-9, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 9: Equipment for insulation fault location in IT systems*

IEC 61557-10, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 10: Combined measuring equipment for testing, measuring and monitoring of protective measures*

IEC 61557-11, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 11: Effectiveness of residual current monitors (RCM) in TT, TN and IT systems*

IEC 61557-13, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 13: Hand-held and hand-manipulated current clamps and sensors for measurement of leakage currents in electrical distribution systems*

IEC 61557-14, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 14: Equipment for testing the safety of electrical equipment of machinery*

IEC 61557-16, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 16: Equipment for testing the effectiveness of the protective measures of electrical equipment and/or medical electrical equipment*

IEC 61557-17, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Part 17: Non-contact AC voltage indicators*

IEC 62059-31-1:2018, *Electricity metering equipment - Dependability - Part 31-1: Accelerated reliability testing - Elevated temperature and humidity*

IEC 62430:2019, *Environmentally conscious design (ECD) - Principles, requirements and guidance*

IEC 62474, *Material Declaration for Products of and for the Electrotechnical Industry* (available at <http://std.iec.ch/iec62474>)

IEC 62542:2013, *Environmental standardization for electrical and electronic products and systems - Glossary of terms*

IEC 62586-2:2017, *Power quality measurement in power supply systems - Part 2: Functional tests and uncertainty requirements*

IEC TR 62635:2012, *Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment*

IEC TR 62839-1:2014, *Environmental declaration - Part 1: Wires, cables and accessory products - Specific rules*

IEC 63000, *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

IEC TS 63058, *Switchgear and controlgear and their assemblies for low voltage - Environmental aspects*

IEC 63372, *Quantification and communication of GHG emissions and emission reductions/avoided emissions from electric and electronic products, services and systems - Principles, methodologies and guidance*

IEC 63395, *Sustainable management of waste electrical and electronic equipment (e-waste) - Proposed horizontal publication*

IEC Guide 109:2012, *Environmental aspects - Inclusion in electrotechnical product standards*

ISO/IEC 14776-321:2002, *Information technology - Small Computer System Interface-3 (SCSI-3) – Part 321: SCSI-3 Block Commands (SBC)*

ISO 1382:2020¹, *Rubber - Vocabulary*

ISO 9000:2015, *Quality management systems - Fundamentals and vocabulary*

ISO 9001, *Quality management systems - Requirements*

ISO 14001:2015, *Environmental management systems - Requirements with guidance for use*

ISO 14009:2020, *Environmental management systems - Guidelines for incorporating material circulation in design and development*

¹ An eight edition of this standard was published in 2025.

ISO 14020:2022, *Environmental statements and programmes for products - Principles and general requirements*

ISO 14024:2018, *Environmental labels and declarations - Type I environmental labelling - Principles and procedures*

ISO 14026:2017, *Environmental labels and declarations: Principles, requirements and guidelines for communication of footprint information*

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

ISO 14068-1:2023: *Climate change management - Transition to net zero - Carbon neutrality*

ISO 15270:2008, *Plastics - Guidelines for the recovery and recycling of plastics waste*

EN 15804, *Sustainability of construction works, Environmental product declarations, Core rules for the product category of construction products*

EN 15804:2019-A2, *Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*

EN 15978:2012, *Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method*

ISO 21930:2017, *Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services*

EN 45553:2020, *General method for the assessment of the ability to remanufacture energy-related products*

EN 45554:2020, *General methods for the assessment of the ability to repair, reuse and upgrade energy-related products*

EN 45555:2019, *General methods for assessing the recyclability and recoverability of energy-related products*

EN 45556:2019, *General method for assessing the proportion of reused components in energy-related products*

EN 45557:2020, *General method for assessing the proportion of recycled material content in energy-related products*

EN 45559:2019, *Methods for providing information relating to material efficiency aspects of energy-related products*

OHSAS 18001, *Occupational Health and Safety Management (OHS)*

2011/65/EU, *EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) (8 June 2011)*

PEP ecopassport® program, *PCR Product Category Rules for Electrical, Electronic and HVAC-R Products PCR-ed3-EN-2015 04 02*

Joint Research Centre (JRC), Institute for Environment and Sustainability. *Characterisation factors of the ILCD Recommended Life Cycle Impact Assessment methods. Database and Supporting Information. First edition. February 2012. EUR 25167*

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