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Interested committees:

Title: BS EN 63058 Switchgear and controlgear and their assemblies for low voltage - Environmental aspects

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Responsible Committee Secretary: **Mr Simon Bounds (BSI)**Direct tel: **0208 996 7281**E-mail: simon.bounds@bsigroup.com

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



121/128/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER: IEC 63058 ED1	
DATE OF CIRCULATION: 2023-01-20	CLOSING DATE FOR COMMENTS: 2023-04-14
SUPERSEDES DOCUMENTS: 121/109/RR	

IEC TC 121 : SWITCHGEAR AND CONTROLGEAR AND THEIR ASSEMBLIES FOR LOW VOLTAGE	
SECRETARIAT: France	SECRETARY: Mr Michaël LAHEURTE
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 2,TC 22,TC 44,TC 65,TC 111,SC 121A,SC 121B	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☒ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	

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- any relevant patent rights of which they are aware and to provide supporting documentation,
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TITLE:

Switchgear and controlgear and their assemblies for low voltage - Environmental aspects

NOTE FROM TC/SC OFFICERS:

TC121 Officers support circulation of CD1 for project IEC 63058 ED1

Secretary Note: NC experts are kindly requested to refer their comments to line number.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SWITCHGEAR AND CONTROLGEAR AND
THEIR ASSEMBLIES FOR LOW VOLTAGE –****Environmental aspects****FOREWORD**

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- International Standard IEC 63058 has been prepared by IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage.
- This edition cancels and replaces the technical specification published in 2021.
- This edition includes the following significant technical changes with respect to the previous technical specification:
- new definitions relevant for material efficiency (3.1.47 to 3.1.68),
 - new Section 6 on material efficiency,
 - new Annex F - Environmental information for information exchange,
 - new Annex G - Assessment of carbon footprint for switchgear and controlgear

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

FDIS	Report on voting
xxx	xxx

189
190 Full information on the voting for its approval can be found in the report on voting indicated in
191 the above table.

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

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

197 The committee has decided that the contents of this document will remain unchanged until the
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- 200 • reconfirmed,
201 • withdrawn,
202 • replaced by a revised edition, or
203 • amended.

204

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205

INTRODUCTION

Increasingly, there is a focus on preserving the natural environment for the good of future generations. For this to be achieved, efficient use of energy and materials throughout the life cycle of every product and process to conserve world's finite natural resources is essential. In addition, release of substances and materials that might 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 should be considered, including how materials are disposed of or recovered for future use.

In order to contribute to conserving natural resources, manufacturers of low-voltage switchgear and controlgear and their assemblies should ensure 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 required and in some instances mandated. 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 required by most, if not all customers, in the medium term.

Assessing the environmental impact of low-voltage switchgear and controlgear and their assemblies is part of an ECD process. ECD requires the identification, measurement and reporting of particular impacts. ISO/IEC 62430 describes the basic principles of ECD, with the goal of reducing the potential environmental impacts of products.

Generally, the environmental impact of low-voltage switchgear and controlgear and their assemblies 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 exceed that of the manufacture and use of any associated low-voltage switchgear and controlgear.

Even though low-voltage switchgear and controlgear and their assemblies 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 is required together with readily available data to make the stakeholder's, for example contractor's, installer's and end user's, task of assessing environmental impacts at system level easier.

Specific rules for assessing the environmental impacts and providing appropriate data for low-voltage switchgear and controlgear and their assemblies 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. CO₂-equivalents, ozone depletion) over their whole life cycle.

SWITCHGEAR AND CONTROLGEAR AND THEIR ASSEMBLIES FOR LOW VOLTAGE –

Environmental aspects

1 Scope

This document provides guidance to manufacturers of low-voltage switchgear and controlgear and their assemblies 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.

This document provides:

- guidance on the process and general aspects to implement environmentally-conscious product design principles, as given in ISO/IEC 62430, essential for low-voltage switchgear and controlgear and their assemblies;

- 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, according to IEC 62474;

- guidance on communicating information about the end of life treatment of the product.

NOTE 4 This document is intended to replace Annex O and Annex W of IEC 60947-1:2020.

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* (available at www.electropedia.org)

IEC 61439-1:2020, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

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

IEC 62474:2018, *Material declaration for products of and for the electrotechnical industry*

IEC 62474-DB¹, *Material declaration for products of and for the electrotechnical industry* (available at <http://std.iec.ch/iec62474>)

¹ "DB" refers to the IEC on-line database.

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*

ISO 14006, *Environmental management systems – Guidelines for incorporating ecodesign*

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*

ISO 14040:2006, *Environmental management – Life cycle assessment – Principles and framework*

ISO 14044:2006, *Environmental management – Life cycle assessment – Requirements and guidelines*

ISO 14044:2006/AMD1:2017

ISO 14044:2006/AMD2:2020

ISO 14045:2012, *Environmental management – Eco-efficiency assessment of product systems – Principles, requirements and guidelines*

EN 45558:2019, *General method to declare the use of critical raw materials in energy-related products*

IEC 63366², *Product category rules for life cycle assessments of electronic and electrical products and systems*

Reference Life Cycle Data System (ILCD) Handbook, *Recommendations for Life Cycle Impact Assessment in the European context. First edition November 2011. EUR 24571*

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/>

3.1.1

declarable substance group

group of substances included in the IEC 62474-DB at the date the material declaration is made

Note 1 to entry: Substance group is multiple CAS # (for example Lead compounds).

3.1.2

end of life

life cycle stage of a product starting when it is removed from its intended use phase

[SOURCE: IEC TR 62635:2012, 3.2, modified – Hyphens deleted in term, alternate term deleted, "use-stage" replaced with "use phase".]

² Under development: current stage CD

3.1.3**end of life treatment**

operation after a waste has been handed over to a facility for product and product part reuse, material recycling, energy recovery and residue disposal

Note 1 to entry: This includes dismantling, material separation and disposal.

[SOURCE: IEC TR 62635:2012, 3.3, modified – Hyphens in term deleted, insertion of Note 1 to entry.]

3.1.4**energy recovery**

production of useful energy through direct and controlled combustion or other processing of waste

Note 1 to entry: Waste incinerators producing hot water, steam and/or electricity are common means for energy recovery.

[SOURCE: IEC 60050-904:2014, 904-04-03]

3.1.5**environment**

surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation

Note 1 to entry: Surroundings can extend from within an organization to the local, regional and global system.

Note 2 to entry: Surroundings can be described in terms of biodiversity, ecosystems, climate or other characteristics.

[SOURCE: ISO 14001:2015, 3.2.1, modified – "interrelationships" replaced with "interrelation" in the definition.]

3.1.6**environmental aspect**

element of an organization's activities or products that interacts or can interact with the environment

Note 1 to entry: An environmental aspect can cause (an) environmental impact(s). A significant environmental aspect is one that has or can have one or more significant environmental impact(s).

Note 2 to entry: Significant environmental aspects are determined by the organization applying one or more criteria.

[SOURCE: ISO 14001:2015, 3.2.2, modified – "or services" deleted in the definition.]

3.1.7**environmental claim**

statement, symbol or graphic that indicates an environmental aspect of a product, a component or packaging

Note 1 to entry: An environmental claim may be made on product or packaging labels, through product literature, technical bulletins, advertising, publicity, telemarketing, as well as through digital or electronic media such as the Internet.

[SOURCE: ISO 14021:2016, 3.1.4]

3.1.8**environmentally conscious design**

systematic approach which considers environmental aspects in the design and development with the aim to reduce adverse environmental impacts throughout the life cycle of a product

Note 1 to entry: Other terminology used worldwide with the same meaning includes ecodesign, design for environment (DFE), green design and environmentally sustainable design.

[SOURCE: ISO/IEC 62430:2019, 3.1.1, modified – Abbreviated term "ECD" and Note 2 to entry deleted.]

3.1.9**environmental declaration program**

voluntary program for the development and use of Type III environmental declarations, based on a set of operating rules (program instructions)

[SOURCE: ISO 14025:2006, 3.3, modified – "Type III" removed from the term and "(program instructions)" added to the definition.]

3.1.10

environmental impact

change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's environmental aspects

[SOURCE: ISO 14001:2015, 3.2.4]

3.1.11

environmental declaration

claim which indicates the environmental aspects of a product or a service, for example a Type II or a Type III environmental declaration or a product environmental footprint

Note 1 to entry: An environmental label or declaration may take the form of a statement, symbol or graphic on a product or package label, in product literature, in technical bulletins, in advertising or in publicity, amongst other things.

[SOURCE: ISO 14020:2000, 2.1, modified – First preferred term "environmental label" deleted and "for example a Type II or a Type III environmental declaration or a product environmental footprint" added.]

3.1.12

Type II environmental declaration

environmental declaration providing self-declared environmental claims according to ISO 14021:2016

3.1.13

Type III environmental declaration

environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information

Note 1 to entry: For a Type III declaration, an environmental declaration program is used, including program instructions and product category rules. The predetermined parameters are based on ISO 14040 and ISO 14044.

Note 2 to entry: The additional environmental information may be quantitative or qualitative.

[SOURCE: ISO 14025:2006, 3.2, modified – Note 1 to entry modified.]

3.1.14

environmental management system

part of the management system used to manage environmental aspects, fulfil compliance obligations, and address risks and opportunities

[SOURCE: ISO 14001:2015, 3.1.2]

3.1.15

LCA functional unit

quantified performance of a product system for use as a reference unit

[SOURCE: ISO 14040:2006, 3.20, modified – Addition of "LCA" in term.]

3.1.16

standard data

secondary data applicable to a homogeneous product family as resulting from a study

3.1.17

specific data

data directly collected, measured or estimated for a specific product

3.1.18

hazardous substance

substance that can adversely impact the environment with immediate or retarded effect

3.1.19**homogeneous product family**

subgroup of a product family where the environmental aspects can reasonably be expected to be similar and therefore scalable over the group through a function of certain parameter, for example electrical ratings or weight

3.1.20**LCA report**

accompanying document to the life cycle assessment as a basis to the environmental declaration giving further detailed information about the inputs, outputs, used LCI-data and the made assumptions in regard to this document

Note 1 to entry: The LCA report is not meant for external communication but has to be kept for justification purposes in terms of environmental declaration verification or market surveillance.

3.1.21**life cycle**

consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to the final disposal

[SOURCE: ISO 14040:2006, 3.1]

3.1.22**life cycle assessment**

compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

[SOURCE: ISO 14040:2006, 3.2, modified – Abbreviated term "LCA" deleted.]

3.1.23**life cycle inventory**

inventory of flows from and to nature for a product system

Note 1 to entry: Inventory flows include inputs of water, energy, and raw materials, and releases to air, land, and water.

Note 2 to entry: LCI according to the ILCD Guidelines are available in the Life Cycle Data Network (LCDN).

3.1.24**life cycle stage**

element of a life cycle

EXAMPLE Raw material acquisition and production, manufacturing, packaging and distribution, installation and use, maintenance and upgrading, and end of life.

Note 1 to entry: The phrase "life cycle phase" is sometimes used interchangeably with "life cycle stage".

3.1.25**material**

substance or mixture of substances within a product or product part

[SOURCE: IEC 62474:2018, 3.15]

3.1.26**material class**

defined classification of materials that are established in the referenced IEC 62474 database for purposes of inventorying aspects of a product, such that no two classes contain the same materials

[SOURCE: IEC 62474:2018, 3.16, modified – Deletion of the note to entry.]

3.1.27**organization**

person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

[SOURCE: ISO 9000:2015, 3.2.1, modified – Notes 1 and 2 to entry deleted.]

3.1.28**packaging**

material that is used to protect or contain a product during transportation, storage, marketing or use

Note 1 to entry: For the purposes of this document, the term "packaging" also includes any item that is physically attached to, or included with, a product or its container for the purpose of marketing the product or communicating information about the product.

[SOURCE: ISO 14021:2016, 3.1.13]

3.1.29**process**

set of interrelated or interacting activities which transform inputs into outputs

Note 1 to entry: Inputs to a process are generally outputs of other processes.

Note 2 to entry: Processes in an organization are generally planned and carried out under controlled conditions to add value.

[SOURCE: ISO 9000:2015, 3.4.1, modified – "that use inputs to deliver an intended result" replaced with "which transform inputs into outputs", Notes 1, 3, 5 and 6 to entry deleted, Note 2 to entry shortened.]

3.1.30**product**

goods or service

Note 1 to entry: in this document product includes also assemblies.

[SOURCE: ISO 14024:2018, 3.2, modified - note added]

3.1.31**product category**

group of products that can fulfil equivalent functions

[SOURCE: ISO 14025:2006, 3.12]

3.1.32**product category rules**

set of specific rules, requirements and guidelines for developing Type II/Type III environmental declarations and/or for quantitative analysis within an ECD process, for one or more product categories

[SOURCE: ISO 14025:2006, 3.5, modified – Abbreviated term "PCR" deleted, "Type II/" and "and/or for quantitative analysis within an ECD process" added.]

3.1.33**product family**

subgroup of a product category, technologically or functionally similar products

Note 1 to entry: Basic product families are defined by product standards in IEC 60947 (all parts). Further families can be defined by the manufacturers.

3.1.34**program operator**

body or bodies that conduct a Type III environmental declaration program

[SOURCE: ISO 14025:2006, 3.4, modified – Note to entry deleted.]

3.1.35**product specific rules**

specific set of rules and requirements applicable to a product family, complementing product category rules for life cycle assessment

3.1.36**use phase**

life cycle stage of a product starting when it has been put into service and finishing at end of life

3.1.37**recycling**

operation by which waste products are reprocessed into products, product parts, materials or substances whether for the original or other purposes

Note 1 to entry: It includes the reuse, the reprocessing of material but does not include the energy recovery and reprocessing into materials that are to be used as fuels or for back-filling operations.

[SOURCE: IEC TR 62635:2012, 3.16]

3.1.38**recyclability**

ability of waste product to be recycled, based on actual practices

[SOURCE: IEC TR 62635:2012, 3.13]

3.1.39**recyclability rate**

ratio of recyclable product mass to total product mass

[SOURCE: IEC TR 62635:2012, 3.14]

3.1.40**recovery**

operation by which waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfill a particular function, or waste being prepared to fulfill that function, in the plant or in the wider economy

Note 1 to entry: Recovery operations include recycling and energy recovery.

[SOURCE: IEC TR 62635:2012, 3.9, modified – Note 1 to entry added.]

3.1.41**recoverability**

ability of a waste product to be recovered, based on actual practices

[SOURCE: IEC TR 62635:2012, 3.11]

3.1.42**recoverability rate**

ratio of recoverable products, product parts, materials mass to total waste product mass reprocessed

[SOURCE: IEC TR 62635:2012, 3.12]

3.1.43**substance**

chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition

[SOURCE: IEC 62474:2018, 3.28]

3.1.44**raw material**

primary or secondary material that is used to manufacture a product

Note 1 to entry: Secondary material includes recycled material.

[SOURCE: ISO 14040:2006, 3.15, modified – "produce" replaced with "manufacture"]

3.1.45**waste**

material or object which the holder discards or intends or is required to discard

[SOURCE: IEC TR 62635:2012, 3.20]

3.1.46**reference lifetime**

theoretical period of time for which the product is expected to be used according to a particular set of conditions of use

Note 1 to entry: The reference lifetime is used for LCA calculation purposes only. It is not intended to provide information about the minimum, average or actual duration of the useful life or the overall lifetime of the products.

3.1.47**material efficiency**

a framework intended to reduce of use of virgin resources in the product through:

- improving design to use less material
- extending product lifetime, by improving durability and enabling maintenance, repair and/or upgrade
- enabling to reuse components or recycle materials from products at EoL
- use of reused components and/or recycled materials in products.

Note 1 to entry: whereas improving product design to use less material was part of the environmental conscious design, the focus on lifetime extension, reuse and recycling is particular of the new material efficiency approach. Therefore, the new approach is consistent with the environmental conscious design and brings it at the next level.

3.1.48**durability****<of a product>**

ability to function as required, under defined conditions of use, maintenance and repair, until a limiting state is reached

Note 1 to entry: The degree to which maintenance and repair are within the scope of durability will vary by product or product-group.

Note 2 to entry: Durability can be expressed in units appropriate to the part or product concerned, e.g. calendar time, operating cycles, distance run, etc. The units should always be clearly stated.

[SOURCE: EN 45550:2020; 4.2.1.1, modified: Note 2 deleted]

3.1.49**limiting event**

occurrence which results in a primary or secondary function no longer being delivered

Note 1 to entry: Examples of limiting events are failure, wear-out failure or deviation of any analogue signal.

[SOURCE: EN 45550:2020; 4.2.1.3]

3.1.50**limiting state**

condition after one or more limiting event(s)

Note 1 to entry: A limiting state can be changed to a functional state by maintenance or repair.

Note 2 to entry: A limiting state can change to EoL-status, if maintenance or repair is no longer viable due to socio-economic or technical reasons.

[SOURCE: EN 45550:2020; 4.2.1.4, modified: "of the ErP" in Note 1 deleted]

3.1.51**primary function**

function fulfilling the intended use

Note 1 to entry: There can be more than one primary function.

Note 2 to entry: examples of primary function for circuit breakers are: conducting the current, breaking normal and fault currents, providing isolation, ...

[SOURCE: EN 45550:2020; 4.2.2.1, modified: Note 2 added]

3.1.52

secondary function

function that enables the primary function(s)

Note 1 to entry: examples of secondary function are: current and voltage measurement, ...,

[SOURCE: EN 62542:2017; 5.14, modified: "supplements or enhances" deleted, Note 1 added]

3.1.53

tertiary function

function other than a primary or a secondary function

Note 1 to entry: examples of tertiary function are communication, displays,

Note 2 to entry: classification of functions into primary, secondary and tertiary shall be done at system level, Communication is a tertiary function at product level, but can secondary at system level as enabling system operation.

[SOURCE: EN 62542:2017; 5.16, modified examples deleted, Notes added]

3.1.54

reuse

process by which a product or its parts, having reached the end of their first use, are used for the same purpose for which they were conceived

Note 1 to entry: Reuse after second or subsequent usage is also considered as reuse, but normal, regular or sporadic use is not considered as reuse

[SOURCE: CLC/TR 45550:2020; 4.4.3]

3.1.55

repair

process of returning a faulty product to a condition where it can fulfil its intended use

[SOURCE: CLC/TR 45550:2020; 4.4.4]

3.1.56

upgrade

process of enhancing the functionality, performance, capacity or aesthetics of a product

Note 1 to entry: An upgrade to a product may involve changes to its software, firmware and/or hardware.

Note 2 to entry: Refer to the "Blue Guide" [3] for conditions under which a product is considered as a new product when placing it on the market after upgrading it.

[SOURCE: CLC/TR 45550:2020; 4.4.5]

3.1.57

critical raw material

materials which, according to a defined classification methodology, are economically important, and have a high-risk associated with their supply

Note 1 to entry: for the purpose of this document, examples of CRMs are the ones listed in annex 1 of {COM(2017) 490 final}³. Future updates to this list will apply and replace former versions of this list.

[SOURCE: EN 45558; 4.4.4 - modified: Note to entry modified]

3.1.58

remanufacturing

under consideration

[SOURCE EN 45553; 3.2 to be considered]

³ Available online: [https://ec.europa.eu/transparency/documents-register/detail?ref=COM\(2020\)174&lang=en](https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2020)174&lang=en)

3.1.59
refurbishing

functional or aesthetical maintenance or repair of an item to restore to original, upgraded, or other predetermined form and functionality

[SOURCE: IEV 904-04-09]

3.1.60
Energy efficiency

under consideration

[SOURCE: TBD]

3.1.61
primary material

material made from virgin raw material(s)

[SOURCE EN 45557; 3.1.1.1]

3.1.62
recycled material

material which is pre-consumer, post-consumer or post-industrial

Note 1 to entry: The terms “recycled material” and “secondary material” have the same meaning in this document.

[SOURCE: EN 45557; 3.1.1.2 modified, post-industrial case added]

3.1.63
pre-consumer material

material diverted from the waste generated during a manufacturing process excluding reutilization of materials such as rework, regrind or scrap generated in a process and being reincorporated in the same process that generated it

Note 1 to entry: Same process means the same manufacturing operation for the same type of product in the same or different physical location.

[SOURCE: EN 45557; 3.1.1.3]

3.1.64
post-industrial recycled material

material diverted from the waste stream during a manufacturing process, excluding reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it

[SOURCE: ISO 1382:2020, 3.375]

3.1.65
post-consumer material

material recovered from waste generated by households or by commercial, industrial and institutional facilities in their role as end-users of a finished product

Note 1 to entry: This includes returns of products, or parts thereof, from the distribution of finished products for end-users.

[SOURCE: EN 45557; 3.1.1.4]

3.1.66
maintenance

701 combination of all technical and management actions intended to retain an item in, or restore it
702 to, a state in which it can perform as required

703 Note 1 to entry: Management is assumed to include supervision activities.

704 [SOURCE: IEC 192-06-01]

705 **3.1.67**

706 **carbon footprint of a product**

707 sum of GHG emissions and GHG removals in a product system, expressed as CO₂ equivalents
708 and based on a life cycle assessment using the single impact category of climate change

709 Note 1 to entry: A CFP can be disaggregated into a set of figures identifying specific GHG emissions and removals
710 (see Table 1). A CFP can also be disaggregated into the stages of the life cycle.

711 Note 2 to entry: The results of the quantification of the CFP are documented in the CFP study report expressed in
712 mass of CO₂e per functional unit.

713 [SOURCE: ISO 14067:2018, 3.1.1.1]

714 **3.1.68**

715 **useful life**

716 time interval of an asset, from its first use to the end of life, where user requirements are no
717 longer met due to economics of operation and maintenance, or obsolescence

718 [SOURCE: this definition is from IEC TR 62978:2017, the term “end-of-useful life” is under
719 consideration by TC1/JWG2, see 1/2513/NP]

720 **3.2 Abbreviated terms**

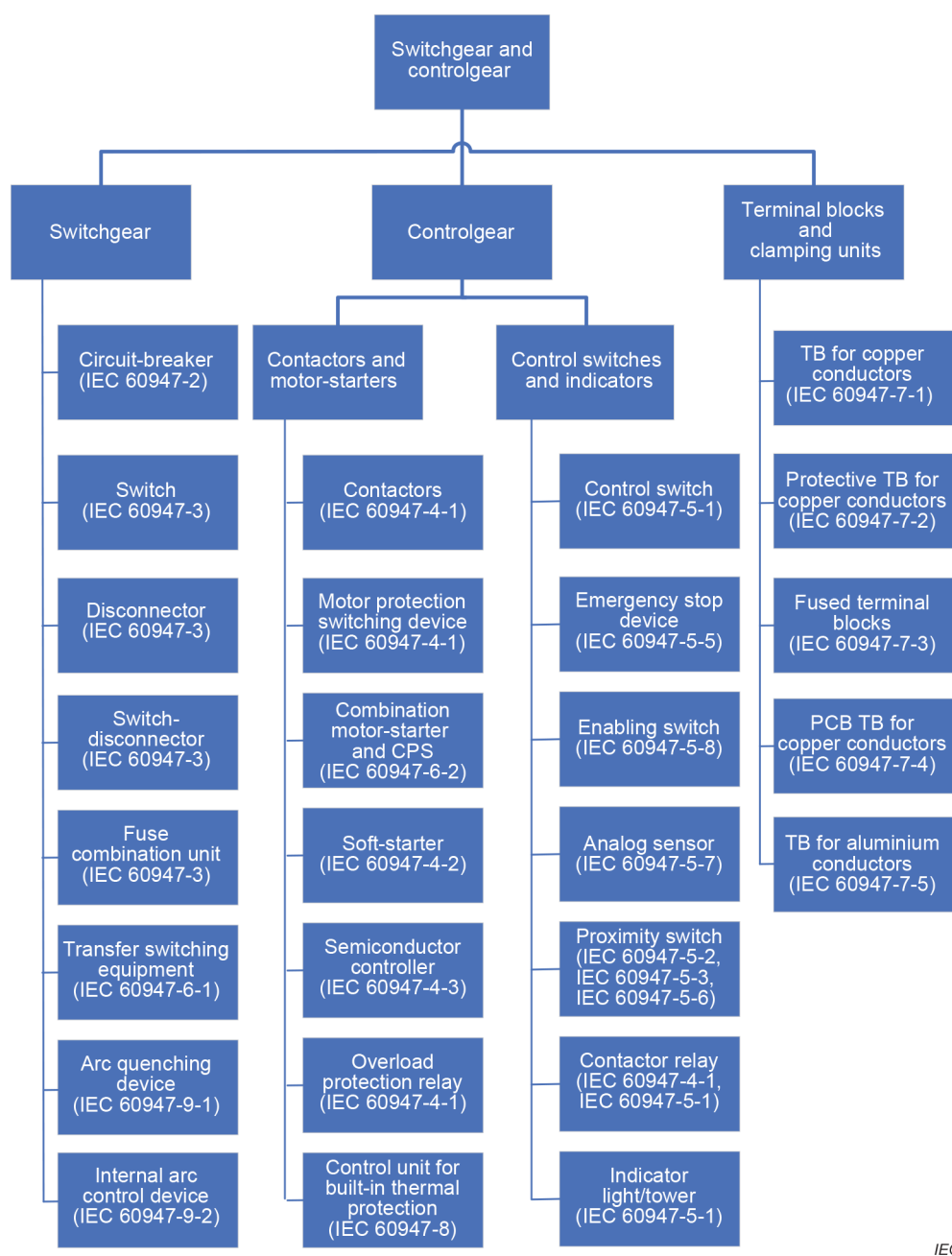
CAS	chemical abstracts service
CFP	carbon footprint of a product
CRM	critical raw material
EEE	electrical and electronic equipment
ECD	environmentally conscious design
EOL	end of life
EPD	environmental product declaration
GPP	green public procurement
GWP	global warming potential
ILCD	international life cycle data
LCA	life cycle assessment
LCA FU	LCA functional unit
LCDN	life cycle data network
LCI	life cycle inventory
LCIA	life cycle impact assessment
MD	material declaration
OHS	occupational health and safety
PCR	product category rules
PSR	product specific rules
RLT	reference life time
SG&CG	switchgear and controlgear

4 Environmental aspects of switchgear and controlgear and their assemblies

4.1 Product description and classification

In a broad sense, switchgear are switching devices intended for use in connection with generation, transmission, distribution and conversion of electrical energy in buildings and industrial area. Controlgear are products for controlling various energy consuming equipment, such as motors, pumps, fans, conveyor belts, primarily in the industrial areas, but also in household appliances.

Figure 1 shows the product families for low-voltage SG&CG in the scope of this document.



IEC

Figure 1 – Overview of the defined product families of low-voltage SG&CG

Low-voltage SG&CG assemblies are combinations of switchgear and/or controlgear and other electrical components (e.g. sensors, meters, relays), completely assembled with all internal electrical and mechanical interconnections, with one or more incoming and outgoing circuits, intended for distributing, protecting, managing and controlling power according to the needs of a specific application.

Assemblies incorporate combinations of devices and components to suit the needs of the application and safety requirements. The basic principles of this document apply to all devices and components incorporated in the assembly, including those referring to different product standards.

Low-voltage SG&CG assemblies are considered as one product family.

4.2 Environmental aspects

Even though the impacts of low-voltage SG&CG and their assemblies on the environment is relatively small compared to that of the other components of the electrical system, their widespread use requires measures are taken to minimize such impacts.

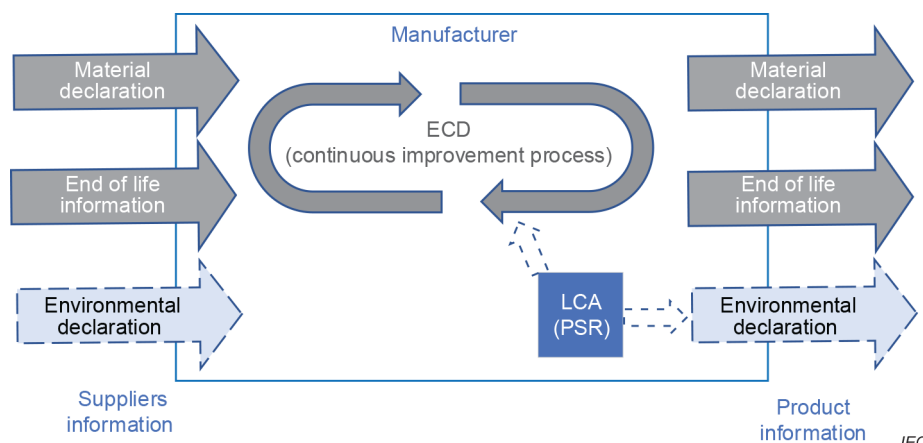


Figure 2 – ECD considering upstream and downstream product information

The systematic approach to the design and development of products, aimed at minimizing their negative environmental impact is known as ECD. ECD process and requirements for electrical and electronic Equipment (EEE) are described in ISO/IEC 62430. The ECD process for low-voltage SG&CG and their assemblies is briefly introduced in Clause 5 and more deeply explained in Annex A.

In addition, this document also addresses tools and processes supporting ECD, which are summarized in Figure 2 and Table 1 together with the corresponding relevant sections and reference standards.