



DPC: 21/30433017 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

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Title: Draft BS EN IEC 63366 Product category rules for life cycle assessment of electrical and electronic products and systems.

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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.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

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.	



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SECRETARIAT:

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SECRETARY:

Mr Marco Iadevaia

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 121

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

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Product category rules for life cycle assessment of electrical and electronic products and systems.

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Contents

Page

Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Product life cycle assessment	12
4.1 General.....	12
4.2 Product Category Rules.....	12
4.2.1 General	12
4.2.2 Functional unit and reference flow description	12
Figure 1 — Graphical visualization of functional unit, technical solution and reference flow relationship.....	14
4.2.3 System boundary	14
Figure 2 — Scheme of the analysed product system's boundaries, including the life cycle stages and unit processes, which separate it from the ecosphere (natural environment).....	15
4.2.4 Life cycle inventory.....	16
4.2.5 Allocation rules.....	18
4.2.6 Units	19
4.2.7 Data quality	19
4.3 Development of scenarios	20
4.3.1 General	20
4.3.2 Transportation scenarios	20
4.3.3 Use scenarios	21
4.3.4 End-of-life scenarios	21
Table 1 — Key parameters of end-of-life related processes to be considered in the LCA.....	22
4.4 Life cycle impact assessment	22
4.5 Additional rules.....	22
4.5.1 Rule(s) for extrapolation to a homogenous product family	22
4.5.2 Rules applying for the aggregation of environmental impacts on system level	23
4.6 LCA report	23
4.6.1 General	23
4.6.2 Scope of the study	24
4.6.3 Life cycle inventory.....	24
4.6.4 Environmental impact assessment	24
4.6.5 Additional environmental information.....	24
5 Requirements for the development of PSR for EEPs.....	25
Annex A (informative) Recovery activities: Allocation, calculation and default values	27
A.1 Circular formula	27
A.2 Formula with benefits.....	27

41	Table A.1 — Adaption of the Circular Formula and parameters for the application in context of	
42	“net benefits”	28
43	A.3 Default values for R_1, R_2 and R_3	29
44	Table A.2 — Default values for R_1, R_2 and R_3 to be apply in case of the lack of specific data	30
45	Annex B (informative) Access to LCA datasets	31
46	B.1 General	31
47	B.2 The Global LCA Data Access network	31
48	Annex C (informative) Recommended impact categories	32
49	C.1 General	32
50	In IEC international standardization level, the user of this document would evaluate impact	
51	assessments that take into account the regional characteristics (difference from physical	
52	and geographic condition). In such case, if there is a proven method that is used in each	
53	country, it's also recommended to use it	32
54	Table B.1 — Overview of recommended impact categories at midpoint and indicators to be	
55	considered in LCA studies or reported in environmental declarations	2
56	C.2 Additional environmental information	2
57	Table B.2 — Additional parameters to be declared in the environmental declaration per	
58	functional/declared unit	2
59	Annex D (informative) Correlation with EN15804 standard	3
60	Figure C.1 — Life cycle stages and corresponding modules as defined in EN 15804	3
61	Table C.1 — Life cycle information - Relation between life cycle stages in this standard and	
62	EN15804 modules	3
63	Annex E (informative) General content of a product's environmental declaration	5
64	E.1 General	5
65	E.2 List of information in environmental declarations	5
66	E.2.1 Information about the manufacturer	5
67	E.2.2 Description of the product family, the reference product and its packaging	5
68	E.2.3 Constitutive materials and substances	5
69	E.2.4 Information on life cycle stages and potential impacts	6
70	Annex F (informative) Example of a product's environmental declaration	7
71	F.1 General	7
72	F.2 Basic example	7
73	Figure E.1	8
74	Bibliography	11
75		
76		

77 Introduction

78 In recent years, environmental aspects of electrical and electronic products and systems (EEPS) gained in
79 importance for interested parties, such as customers and regulators.

80 In addition to qualitative approaches already widely applied in the context of environmental conscious design
81 process, quantitative information on the potential environmental impacts of the full life cycle of products gained
82 further interest. This generates the need to provide harmonized rules for the underlying life cycle assessment
83 (LCA) in order to provide robust and consistent quantitative environmental data on EEPS, as well as to enable
84 data aggregation at system level, e.g. buildings, power drive systems and control cabinets.

85 The definition of product category rules (PCR), derived from ISO14025, is an established method for a consistent
86 approach by setting minimum quality standards for LCA in context to environmental product declarations (EPD)
87 and hence are now defined as core rules in this standard for the variety of electrical and electronic products and
88 systems.

89 On the base of the overarching PCR set out as core rules for EEPS, product specific rules (PSR) should be
90 elaborated to further detail the requirements for the LCA in the specific context of the products or systems in
91 scope. This can be done e.g. by product specific standardization committees or environmental declaration
92 programs.

1 Scope

This document defines product category rules (PCR) for electronic and electrical products and systems (EEPS). It specifies the process and requirements on how to conduct life cycle assessment (LCA) in the context of environmental declarations.

PCR is complemented by additional product-specific rules (PSR), which further define e.g. functional units and default scenarios in the product-specific context. Therefore, it also provides guidance on how to develop PSR in corresponding technical committees.

This document provides common rules for:

- a) LCA, including the requirements for developing default scenarios;
- b) the LCA report;
- c) the development of PSRs.

This document provides further guidelines for environmental declarations.

The LCA principles and framework are based on the ISO 14040 series of standards (i.e., ISO 14040 and ISO 14044), and therefore out of scope of this standard.

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

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

ISO 14020, *Environmental labels and declarations - General principles*

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

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

ISO/TS 14027, *Environmental labels and declarations – Development of product category rules*

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 collection

the gathering of waste, including the preliminary sorting and preliminary storage of waste for the purpose of transport to a waste treatment facility

3.2**co-product**

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]

3.3**cut-off criteria**

specification of the amount of material or energy flow or the level of environmental significance associated with unit processes or product system to be excluded from a study

[SOURCE: ISO 14040:2006, 3.18]

3.4**declared unit**

quantity of the product used as a reference unit for the environmental declaration when a functional unit cannot be directly used

Note 1 to entry: The declared unit might differ from the functional unit in terms of the declaration.

3.5**disposal**

any operation which is not recovery even where this operation has a reclamation of substances or energy secondary consequences

[SOURCE: IEC 62635:2012, 3.1]

3.6**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]

3.7**environment**

surroundings in which a product or system exists, including air, water, land, natural resources, flora, fauna, humans and their interrelation

[SOURCE: IEC Guide 109:2012, 3.3]

3.8**environmental aspect**

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

Note 1 to entry: A significant environmental aspect has or can have a significant environmental impact.

[SOURCE: IEC Guide 109:2012, 3.4]

3.9**environmental claim**

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

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

170 [SOURCE: ISO 14021:2016, 3.1.4]

171 **3.10**

172 **environmental impact**

173 change to the environment, whether adverse or beneficial, wholly or partly resulting from environmental aspects

174 [SOURCE: IEC Guide 109:2012, 3.5, modified, "an organization's" has been omitted]

175 **3.11**

176 **environmental declaration**

177 claim which indicates the environmental aspects of a product or service

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

180 [SOURCE: ISO 14020:2000, 2.1]

181 **3.12**

182 **environmental management system**

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

185 [SOURCE: ISO 14001:2015, 3.1.2]

186 **3.13**

187 **functional unit**

188 **FU**

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

190 [SOURCE: ISO 14040:2006, 3.20]

191 **3.14**

192 **hazardous substance**

193 substance that has, according to defined classification criteria, the potential for adversely impacting human
194 health and/or the environment

195 Note 1 to entry: The criteria for determining whether a substance is classified as hazardous are defined by law or regulation.

196 [SOURCE: IEC Guide 109:2012, 3.6]

197 **3.15**

198 **homogenous product family**

199 subgroup of a product family based on the underlying technology or build where the environmental impacts can
200 reasonably be expected to be similar and therefore scalable over the group through a function of certain physical
201 characteristics, e.g. power or weight

202 **3.16**

203 **interested party**

204 person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity

205 EXAMPLE Customers, communities, suppliers, regulators, non-governmental organizations, investors and employees

206 Note 1 to entry: To "perceive itself to be affected" means the perception has been made known to the organization

207 [SOURCE: ISO 14001:2015, 3.1.6]

3.17**landfill**

waste disposal site for the deposit of the waste onto or into land (i.e. underground), including: Internal waste disposal sites (i.e. landfill where a producer of waste is carrying out its own waste disposal at the place of production) and a permanent site (i.e. more than one year) which is used for temporary storage of waste

Note 1 to entry: Excluded are facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere, and storage of waste prior to recovery or treatment for a period less than three years as a general rule, or storage of waste prior to disposal for a period less than one year.

3.18**LCA report**

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

Note 1 to entry: This 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.

3.19**life cycle**

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

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

[SOURCE: ISO 14040:2006, 3.1]

3.20**life cycle assessment****LCA**

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]

3.21**life cycle inventory analysis****LCIA**

phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout its life cycle

[SOURCE: ISO 14040:2006, 3.3]

3.22**material**

substance or mixture of substances within a product or product part

Note 1 to entry: Material can be part or a product

[SOURCE: IEC 62474:2018, 3.15, modified, a note to entry has been added]

3.23**material recovery****recycling**

material-processing operations including mechanical recycling, feedstock (chemical) recycling and organic recycling, but excluding energy recovery

- 251 Note 1 to entry: The term recycling is used synonymously with the term material recovery.
- 252 [SOURCE: ISO 15270:2008, 3.20]
- 253 **3.24**
 254 **organization**
 255 person or group of people that has its own functions with responsibilities, authorities and relationships to achieve
 256 its objectives
- 257 [SOURCE: ISO 14001:2015, 3.1.4, modified, note to entry has been deleted]
- 258 **3.25**
 259 **packaging**
 260 material that is used to protect or contain a product during transportation, storage, marketing or use
- 261 Note 1 to entry: For the purposes of this standard, the term “packaging” also includes any item that is physically attached to,
 262 or included with, a product or its container for the purpose of marketing the product or communicating information about the
 263 product.
- 264 [SOURCE: ISO 14021:2016, 3.1.13]
- 265 **3.26**
 266 **product system**
 267 collection of unit processes with elementary and product flows, performing one or more defined functions, and
 268 which models the life cycle of a product
- 269 [SOURCE: ISO 14040:2006, 3.28]
- 270 **3.27**
 271 **process**
 272 set of interrelated or interacting activities which transforms inputs into outputs
- 273 Note 1 to entry: A process can be documented or not.
- 274 [SOURCE: ISO 14001:2015, 3.3.5]
- 275 **3.28**
 276 **product**
 277 output of an organization that can be produced without any transaction taking place between the organization
 278 and the customer
- 279 Note 1 to entry: Production of a product is achieved without any transaction necessarily taking place between provider and
 280 customer, but can often involve this service element upon its delivery to the customer.
- 281 Note 2 to entry: The dominant element of a product is that it is generally tangible.
- 282 Note 3 to entry: Hardware is tangible and its amount is a countable characteristic (e.g. tyres). Processed materials are
 283 tangible and their amount is a continuous characteristic (e.g. fuel and soft drinks). Hardware and processed materials are
 284 often referred to as goods. Software consists of information regardless of delivery medium (e.g. computer programme, mobile
 285 phone app, instruction manual, dictionary content, musical composition copyright, driver's license).
- 286 [SOURCE: ISO 9000:2015, 3.7.6]
- 287 **3.29**
 288 **product category**
 289 group of products that can fulfil equivalent functions
- 290 [SOURCE: ISO 14025:2006, 3.12]

3.30**product category rules****PCR**

set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories

[SOURCE: ISO 14025:2006, 3.5]

3.31**product family****product group**

subgroup of a product category – technologically or functionally similar products

3.32**product specific rules****PSR**

set of specific rules, requirements and guidelines, based upon and complementing the PCR, for a specific product family

3.33**raw material**

primary or secondary material that is used to produce a product

Note 1 to entry: Secondary material includes recycled material.

[SOURCE: ISO 14040:2006, 3.15]

3.34**recycling**

processing of waste materials for the original purpose or for other purposes, excluding energy recovery

Note 1 to entry: The term recycling is used synonymously with the term material recovery.

[SOURCE: ISO 15270:2008, definition 3.30, modified]

[SOURCE: IEC Guide 109:2012, 3.16]

[SOURCE: IEV 901-07-10]

3.35**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]

3.36**reference flow**

measure of the outputs from processes in a given product system required to fulfil the function expressed by the functional unit

Note 1 to entry: The reference flows translate the abstract functional unit into specific product systems needed to fulfil the required function with a required level of performance

[SOURCE: ISO 14040:2006, 3.29, modified, a note to entry has been added]

- 330 **3.37**
 331 **reference product**
 332 product or product system, supplied by the manufacturer, modelled in the LCA and taken as reference to
 333 extrapolate the environmental impact of other products or product systems matching the same functional unit
 334 (i.e homogeneous product family) and covered by the environmental declaration
- 335 **3.38**
 336 **reference service life**
 337 **RSL**
 338 service life of a product, component, assembly or system which is known to be expected under a particular set,
 339 i.e. a reference set, of in-use conditions and which can form the basis for estimating the service life under other
 340 in-use conditions
- 341 Note 1 to entry: The reference service life is a theoretical period used for calculation purposes. It can never be
 342 compared to the minimum, average or actual service life of the product.
- 343 [SOURCE: ISO 15686-1:2011, 3.22, modified, a note to entry has been added]
- 344 **3.39**
 345 **remanufacture**
 346 production process that creates products using parts taken from previously used products
- 347 [SOURCE: IEV 904-04-10]
- 348 **3.40**
 349 **reuse**
 350 operation by which a product, or a part thereof, having reached the end of one use-stage is used again for the
 351 same purpose for which it was conceived
- 352 [SOURCE: IEC/TR 62635:2012, 3.18]
- 353 **3.41**
 354 **substance**
 355 chemical element and its compounds in the natural state or obtained by any manufacturing process, including
 356 any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding
 357 any solvent which may be separated without affecting its stability or changing its composition
- 358 Note 1 to entry: Definition is taken from Globally harmonized system of classification and labelling (GHS): 2003, Chapter
 359 1.2, Definitions and abbreviations.
- 360 [SOURCE: IEC 62474:2012, 3.13]
- 361 **3.42**
 362 **update**
 363 to write new data to a logical block without destroying the previous data
- 364 After a block has been updated, a normal read returns the most recent generation of the data. Earlier generations
 365 are still available after the update
- 366 [SOURCE: ISO/IEC 14776-321:2002, 3.1.2.4]
- 367 **3.43**
 368 **upgrade**
 369 process of enhancing the functionality, performance, capacity or aesthetics of a product
- 370 Note 1 to entry: Upgrade may involve changes to the software, firmware and/or hardware.
- 371 [SOURCE: ISO 14009:2020, 3.2.27]

3.44**waste**

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

[SOURCE: IEC 62635:2012, 3.20]

3.45**waste electrical and electronic equipment****WEEE**

electrical or electronic equipment which is waste within the meaning of Article 3(1) of Directive 2008/98/EC, including all components, sub-assemblies and consumables which are part of the product at the time of discarding

Note 1 to entry: This standard covers whole equipment discarded as WEEE and fractions thereof.

[SOURCE: EN 50625-1:2014, 3.40, modified, original note 1 to entry has been deleted]

4 Product life cycle assessment**4.1 General**

To quantify the potential environmental impacts caused by EEPs, LCA compliant with ISO 14040 and ISO 14044 shall be performed. And results can then be used to identify improvement potentials in terms of e.g. environmental conscious design for product. In addition, the requirements of this PCR and applicable PSR shall be applied in case the LCA results are further intended to be used in external communication. This is valid when the form of an environmental product declaration (EPD), as laid out in the ISO 14021 and ISO 14025 standards, is used.

4.2 Product Category Rules**4.2.1 General**

The product category rules (PCR) provide a uniform approach to perform the LCA, serving three purposes:

- to ensure a consistent quality of the LCA results,
- to enable data aggregation in larger systems, e.g. buildings or industrial production machinery,
- to serve as basis for environmental declarations using quantitative environmental impacts.

The PCR should be complemented with corresponding, product specific rules (PSR) to further specify assumptions and methodology to be used for specific product families.

Product PSR shall be developed in the respective product technical committees according to the requirements set out in this standard. If there are no PSR available yet but there's the need for quantitative environmental information based on LCA for a certain product group, the LCA practitioner shall complete the missing specifications according to the requirements of ISO 14044 and shall disclose his specifications along with the evaluated data.

NOTE For the completion of the missing information various sources might be available, like for instance environmental declaration programs or PSR in standards by other product groups.

4.2.2 Functional unit and reference flow description

A product or system may have several functions and the main function(s) delivered to the user shall be selected for the LCA study.

The functional unit (FU) is the product or system main function(s) quantified, to which the inputs and outputs are related to.

412 The functional unit shall be defined by:

413 a) The main function(s) delivered to the user;

414 b) The magnitude and level of performance to be achieved for the main function(s). This level shall be
415 quantified and determined according to the market habits, regulatory requirements, standards and/or the
416 technical state of the art;

417 c) the reference service life (RSL) for the reference product, corresponding to the stipulations set out in ii).

418 The FU is used as a reference unit to allow comparison between different alternatives (e.g. products, systems
419 or technical solutions) intended to provide the main functions with the required level of performance.

420 NOTE 1 Some products or systems may have complex FU descriptions, for example multifunctional products such as
421 smartphones.

422 In PSR development it shall be taken into account that the definition of the RSL could lead to distortions for
423 product groups with a considerable range of product life span, where for some products the environmental
424 impacts would be underestimated, while for others it would be overestimated. Hence this should be reflected in
425 the FU and RSL, as well as the EPD, e.g. by providing annualised data.

426 Examples of functional units:

427 1) Motor: To provide (50 kW) of (mechanical power), over (20) years RSL with (260) days of operation per
428 year and (16) operating hours per day.

429 2) Cables (Energy distribution networks in the area of infrastructures): To transmit energy expressed for 1A
430 over a distance of 1 km for 40 years and a 100 % use rate in accordance with relevant standards (mention
431 the relevant standards or refer the product technical data sheet).

432 NOTE 2 Examples taken from CENELEC TC2 Working Group and PEP Ecopassport declaration program. (PCR ed3 -
433 PSR-0001-ed3-EN-2015 10 16)

434 Each functional unit shall be further specified in product specific rules (PSR) for each product or system family
435 to allow fair assessment and comparison. If no PSR is available, the FU shall be defined and documented
436 according to the requirements mentioned above and ISO standards ISO 14040 and ISO 14044.

437 The reference flow describes all the needed flows to fulfil the functional unit. A specific reference flow matches
438 each specific technical solution fulfilling the functional unit.

439 The reference flow shall include:

440 a) The quantitative amount of product(s), e.g. specified through their mass in kg, used to fulfil the functional
441 unit: they will be named "reference product";

442 b) In addition, intermediate flows, for instance auxiliary materials and packaging, including waste and
443 discarded materials generated at each life cycle stage.

444 This relationship between functional unit, technical solution and reference flow is further illustrated in Figure 1
445 through an example.

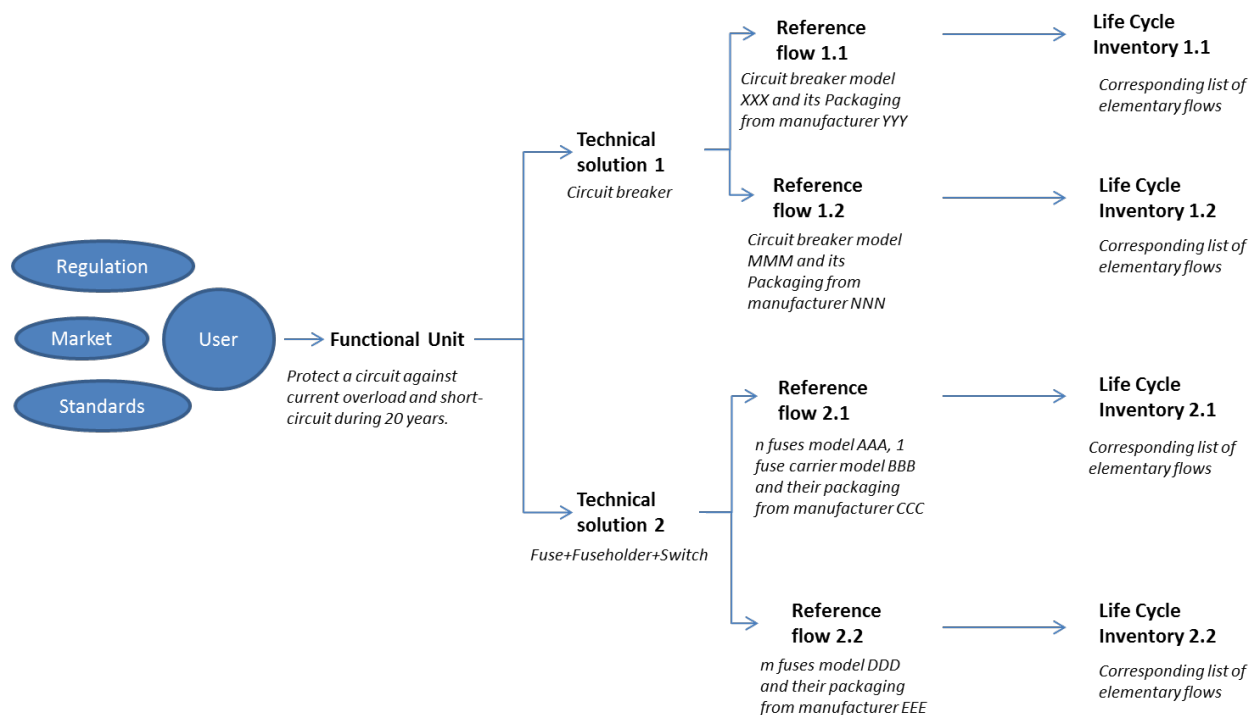


Figure 1 — Graphical visualization of functional unit, technical solution and reference flow relationship

Since this reference flow is very product-system specific it shall be described in detail in product specific rules (PSR).

A product may have several possible functions. Based on the goal and scope of the conducted LCA, the LCA may relate to a specific function and scenario using a functional unit or it may cover a range of functionalities and scenarios using a declared unit (DU). The declared unit shall be used as an alternative to the functional unit if no functional unit can be defined. This is the case when the product can be used in many different ways in the context of its application, or when the precise function of the product or scenarios of the system in which it is integrated is not stated or is unknown.

The declared unit shall clearly mention:

- The quantity of product;
- The unit used (item, mass (kg), length (m), area (m²), volume (m³));
- The mathematical relation between functional unit and declared unit, if applicable.

If a DU is used, it shall be documented accordingly in the LCA report.

If relevant, the DU shall be specified further in the corresponding PSR.

4.2.3 System boundary

4.2.3.1 General

LCA is conducted by defining product systems as models that describe the key elements of the physical systems. The system boundary then defines the unit processes that shall be included in the product system.

In this context it should be noted, that the product system used as a term in LCA may be different from the understanding of a product system as for instance used in engineering.

The life cycle of the EEPS under study shall at least cover the following main life cycle stages: