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Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

Nachhaltigkeit von Bauwerken - Datenqualität für die Erfassung der Umweltqualität von Produkten und Bauwerken - Auswahl und Anwendung von Daten

Contribution des ouvrages de construction au développement durable - Qualité des données pour l'évaluation environnementale des produits et des ouvrages de construction - Sélection et utilisation des données

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Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

Contribution des ouvrages de construction au développement durable - Qualité des données pour l'évaluation environnementale des produits et des ouvrages de construction - Sélection et utilisation des données

Nachhaltigkeit von Bauwerken - Datenqualität für die Erfassung der Umweltqualität von Produkten und Bauwerken - Auswahl und Anwendung von Daten

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EN 15941:2024 (E)**European foreword**

This document (EN 15941:2024) has been prepared by Technical Committee CEN/TC 350 “Sustainability of construction works”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2024, and conflicting national standards shall be withdrawn at the latest by August 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TR 15941:2010.

In comparison with the previous edition, the following technical modifications have been made. The document:

- addresses both specific and generic data;
- addresses the assessment of data quality in relation to time, geography, technology, precision, completeness, consistency and sources of data;
- addresses the selection of data based on the assessment of data quality through guidance on the generation of a hierarchy;
- addresses the assessment, selection and use of data at both product and building level, and its applicability to all construction works including civil engineering works;
- addresses the avoidance of double counting through the selection of data, particularly in relation to electricity;
- addresses the reporting of data quality at product level in the Project Report and in the Environmental Product Declaration (EPD);
- addresses ease of data transfer at product level by addressing the use of a common Life Cycle Inventory (LCI) – nomenclature;
- addresses the reporting and communication of data quality information at building level;
- addresses the responsibilities of data providers to make data quality information available;
- no longer provides guidance on the pre-verification of generic data.

This document has been prepared under a Mandate given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies the data quality assessment and selection of data for Environmental Product Declarations (EPD) according to the core product category rules of EN 15804 and for the environmental performance assessment of buildings according to EN 15978 in a consistent way. It can also be used to assess and select data for the environmental assessment of civil engineering works according to EN 17472.

It defines data quality requirements with respect to temporal, technological and geographical representativeness for the data used to calculate the Life Cycle Assessment (LCA) based indicator results of the EPD and for construction works when applying EPD, life cycle inventory data or other LCA based information, and gives guidance for the generation of a hierarchy to support the selection of the most appropriate data regarding data quality. It also addresses the reporting of data quality at product and building level.

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.

EN 15804:2012+A2:2019, *Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*

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

CEN ISO/TS 14071, *Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006 (ISO/TS 14071)*

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

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

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

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

European Commission — Joint Research Centre — *Institute for Environment and Sustainability. International Reference Life Cycle Data System (ILCD) Handbook — Nomenclature and other conventions*. 2010. EUR 24384 EN. Luxembourg. Publications Office of the European Union; 2010, ISBN 978-92-79-15861-2

EN 15941:2024 (E)**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:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

NOTE Annex A provides an overview of how the definitions in this document differ from those in EN 15804, PEF and Level(s).

3.1**average data**

calculated mean of data based on a representative sample for a construction product or construction service, provided by one or more manufacturer, either from their multiple plants or based on multiple similar construction products of the manufacturer(s)

[SOURCE: ISO 21930:2017, 3.5.6, modified – reference to calculated mean has been added, the term “supplier” has been changed to “manufacturer”, the term “fully” has been deleted and note 1 to entry has been deleted]

3.2**average EPD**

EPD based on average data (3.1)

Note 1 to entry: The term collective EPD is equivalent to average EPD of more than one manufacturer.

[SOURCE: ISO 21930:2017, 3.1.12, modified – Note 1 to entry has been added]

3.3**construction element****building component****building element**

component or a set of assembled components incorporated in a building or construction works en-15941-2024

[SOURCE: EN 15643:2021, 3.15]

3.4**downstream process**

process that follows a given life cycle process

[SOURCE: EN 15804:2012+A2:2019, 3.34, modified – upstream process has been deleted and the term “stage” has been changed to “process”]

3.5**driving process**

product, material or process contributing significantly to at least 80 % of any environmental indicators included in the building or civil engineering works assessment, over the life cycle modules assessed

3.6**generic data**

data that is not site or enterprise specific

Note 1 to entry: This refers to data that is not directly collected, measured, or estimated by a company, but sourced from a third party LCI database or other sources. Generic data includes industry average data (e.g. from published production data, government statistics, and industry associations), literature studies, engineering studies and patents, and may also be based on financial data, and contain proxy data, and other generic data.

3.7**product system**

collection of unit processes with elementary and product flows, performing one or more defined functions, and which models the life cycle of a product

[SOURCE: EN ISO 14040:2006, 3.28]

3.8**raw data**

data determined by direct measurement, estimation or calculation from the original source

[SOURCE: Sonnemann & Vigon (Ed.), UN 2011]

3.9**scenario**

collection of assumptions and information concerning an expected sequence of possible future events

[SOURCE: EN 15804:2012+A2:2019, 3.28]

3.10**specific data**

data representative of a product, product group or construction service, provided by one supplier

[SOURCE: EN 15804:2012+A2:2019, 3.31]

3.11**unit process**

smallest element considered in the life cycle inventory analysis for which input and output data are quantified

Note 1 to entry: Data processed by mathematical relations from raw data [Sonnemann and Vigon (Ed.), UN 2011].

[SOURCE: EN ISO 14040:2006, 3.34, modified – Note 1 to entry has been added]

3.12**upstream process**

process that precedes a given life cycle stage

[SOURCE: EN 15804:2012+A2:2019, 3.34, modified – downstream process deleted]

EN 15941:2024 (E)**3.13****proxy data**

substitute data used to approximate for system specific data (3.10) or generic data (3.6) if they are not available

EXAMPLE Data for production of acetic acid used in lieu of data for production of formic acid or selection of a generic data set of electricity from one region to represent another region.

Note 1 to entry: Data can be site specific or average.

[SOURCE: ISO 21930:2017, 3.5.5, modified – definition clarified]

3.14**reference service life****RSL**

service life of a construction product which is known to be expected under a set of reference in-use conditions and which can form the basis for estimating the service life under other in-use conditions

[SOURCE: EN 15804:2012+A2:2019, 3.26, modified – note 1 to entry and note 2 to entry have been deleted]

4 Abbreviations

ADP	Abiotic Depletion Potential
CHP	Combined Heat and Power
EPD	Environmental Product Declaration
GO	Guarantee of Origin
GWP	Global Warming Potential
HVAC	Heating, Ventilation and Air Conditioning
ILCD	International Reference Life Cycle Data System
LCA	Life Cycle Assessment or Life Cycle Analysis
LCI	Life Cycle Inventory
PCR	Product Category Rule
PEF	Product Environmental Footprint
PV	Photovoltaic
RSL	Reference Service Life

5 Types and sources of data at product, building and construction works level**5.1 General**

This clause describes different categories of data and some different data sources that are commonly used in developing EPD and in the environmental performance assessment of buildings and construction works.

5.2 Sources of generic data for use at product, building and construction works level

Examples of sources for generic data for upstream processes include:

- Collective EPD according to Table 2 (e.g. industrial sector EPD);
- Industry average life cycle data from LCI databases that have been critically reviewed;
- Manufacturer specific EPD, if representative, used as proxy data where there is no collective EPD;
- EN ISO 14044 LCA studies that have been critically reviewed;
- Other data sets according to EN 15804 that have not been critically reviewed or verified;
- Industry average life cycle data from LCI databases that have not been critically reviewed;
- Industry association reports and governmental statistics;
- Data from literature, scientific papers, literature studies, engineering studies and patents;
- Data sets generated by data set providers in the absence of industry provided data;
- Proxy data from other sectors.

The selection of data are dependent on the context of its use.

Note The list contains sources for generic data. This does not mean that sources like a collective EPD is “automatically” generic data.

5.3 Examples of data and their uses at building and construction works level

In addition to the sources of generic data listed in 5.2, Table 1 provides a detailed overview of examples of data used at building and construction works level based on the different life cycle stages according to EN 15804 and EN 15978.

<https://standards.iteh.ai> **Table 1 — Examples of data for use at building and construction works level** <https://standards.iteh.ai>

Life Cycle Modules	Environmental LCA-based data for:	Type of data and quantities of products	Examples of data use
A1–A3	Construction products Building components HVAC-Systems	Specific, generic or average data on production processes Amount of products included	Use in building assessment
A4	Transport processes	Transport mode and vehicle type Transport distance Capacity utilization Fuel type/energy source	Specification of scenarios for the transport stage of the building assessment

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Life Cycle Modules	Environmental LCA-based data for:	Type of data and quantities of products	Examples of data use
A5	Construction processes	Type of construction process Resource consumption for construction process Amount of waste and its further handling	Specification of scenarios for the construction stage of the building assessment
B1	Non-energy related emissions Aging of products	Type and amount of construction products with interior or exterior surfaces and their emissions to the environment Carbonation Fugitive emission of refrigerant HVAC system	Identification of dangerous substances
B2	Maintenance processes	Frequency Type and amount of activity	Maintenance strategy Service level
B3	Repair processes Construction processes	Frequency Probability of repair Type and amount of activity	Repair Strategy
B4	Like A1-A3, A4, A5, C1, C2, C3, C4 and D1	Like A1-A3, A4, A5, C1, C2, C3, C4 and D1	Replacement strategy
B5	Like A1-A3, A4, A5, C1, C2, C3, C4 and D1	Like A1-A3, A4, A5, C1, C2, C3, C4 and D1	Refurbishment strategy
B6.1	Operational energy supply	Energy demand (heating, cooling, air conditioning, hot water supply, lighting)	Climate conditions User behaviour Management quality
B6.2	Operational energy supply	Energy demand (e.g. elevator)	User behaviour
B6.3	Operational energy supply	User related energy demand (e.g. cooking, electricity use for computers)	User behaviour
B7	Water supply Wastewater treatment	Water demand Wastewater collection	User behaviour