SLOVENSKI STANDARD
oSIST prEN 15941:2021

01-september-2021

Trajnostnost gradbenih objektov - Kakovost podatkov za okoljsko oceno proizvodov in gradbenih del - Izbor in uporaba podatkov

Sustainability of construction works - Data quality for environmental assessment of products and construction works - 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

Ta slovenski standard je istoveten z: **prEN 15941**

ICS:

13.020.20	Okoljska ekonomija. Trajnostnost	Environmental economics. Sustainability
35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
91.010.99	Drugi vidiki	Other aspects

oSIST prEN 15941:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT prEN 15941

June 2021

ICS 35.240.67; 91.010.99

Will supersede CEN/TR 15941:2010

English Version

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

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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 350.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Turkey and United Kingdom.

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

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (prEN 15941:2021) has been prepared by Technical Committee CEN/TC 350 “Sustainability of construction works”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TR 15941:2010.

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

— 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 assessment data quality through 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 the EPD;

— addresses ease of data transfer at product level by addressing the use of a common 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.

1 Scope

This document supports the data quality assessment and selection of data for product-level Environmental Product Declarations (EPD) according to the core product category rules of EN 15804 and for the environmental performance assessment of buildings according to prEN 15978-1 in a consistent way. It can also be used to assess and select data for the environmental assessment of civil engineering works.

It defines data quality requirements with respect to temporal, technological and geographic representativeness for the data used to calculate the LCA based indicator results of the EPD and for construction works when applying EPD, life cycle inventory data or other LCA based information and generates a hierarchy to support the selection of the most appropriate data with regard to 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*

prEN 15978-1, *Sustainability of construction works — Assessment of environmental performance of buildings — Calculation method*

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)*

European Commission – Joint Research Centre – Institute for Environment and Sustainability. International Reference Live 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

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/

3.1
average data
data representative of a product, product group or construction service, provided by one or more suppliers

Note 1 to entry: The product group or construction service can contain similar products or construction services.

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

3.2
downstream process
process that follows a given life cycle stage

[SOURCE: EN 15804:2012+A2:2019, modified – for upstream process see term 3.9]

3.3
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.

3.4
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[1]]

3.5
raw data
data determined by direct measurement, estimation or calculation from the original source

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

3.6
scenario
collection of assumptions and information concerning an expected sequence of possible future events

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

[1] As amended by EN ISO 14040:2006/A1:2020.

3.7
specific data
data representative of a product, product group or construction service, provided by one supplier

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

3.8
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[1]]

3.9
upstream process
process that precedes a given life cycle stage

[SOURCE: EN 15804:2012+A2:2019, modified – for downstream process see term 3.2]

3.10
proxy data
approximate data used if no system specific data (3.7) or generic data (3.3) are 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]

4 Abbreviations

EPD	Environmental Product Declaration
PEF	Product Environmental Footprint

5 Types of data

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 other construction works.

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

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

Typical sources for generic data for upstream processes are:

— Generic EPDs to EN 15804 (e.g. industrial sector EPDs);

— Industry average life cycle data from LCI databases that have been critically reviewed;

— ISO 14044 LCA studies that have been critically reviewed;

— Other data sets to EN 15804 that have not been peer 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.

5.3 Source of data for use at building level

Table 1 provides an overview of the types of data used at building level based on the different life cycle stages.

Table 1 — Types of data for use at building level

	Environmental LCA-based data for ...	**Types and quantities**	**Examples of data use**
A1–3	Construction products Building components HVAC-Systems	Type of products Gross amount of products Losses	
A4	Transport processes	Transport mode Transport distances Load factor Fuel type	
A5	Construction processes	Type of construction process Amount of construction process Amount of waste and its further handling	
B1	Non-energy related emissions Aging of products	Type and amount of construction products for surfaces inside and against outside environment Carbonation	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

	Environmental LCA-based data for ...	Types and quantities	Examples of data use
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, lightning)	Climate conditions User behaviour Management quality
B6.2	Operational energy supply	Energy demand (e.g. elevator)	User behaviour
B6.3	Operational energy supply	Energy demand (e.g. cooking)	User behaviour
B7	Water supply Wastewater treatment	Water demand Waste water collection	User behaviour
B8	Transport processes Other processes and services	Transport mode Transport distance	
C1	Deconstruction processes	Type and amount of deconstruction processes	Deconstruction strategy (demolition versus deconstruction)
C2	Transport processes	Transport mode Transport distances	
C3	Waste processing	Type of processes and amount of material	Strategy
C4	Disposal processing (coefficients for transfer to environment)	Type of processes and amount of material	Strategy
D1	Benefits and loads form recycling-potential new production (A1-A3)	Type and amount of materials for reuse and recycling Type and amount of processes	Strategy for using the potential
D2	Benefits and loads from exported utilities and avoided impacts Alternative energy supply	Type and amount of exported energy	

Other data such as technical characteristics are not covered here.

NOTE Modules A4-D2 are scenario based. In some countries these modules use pre-defined defaults.

5.4 Types of EPD

Table 2 provides a description of the different types of EPD.

Table 2 — Types of EPD with respect to the specificity of types of information (adapted from ISO 21930:2017, Annex B)

	Description	Examples
1. Manufacturer specific EPD	1A Declaration of a specific product from a single plant	EPD for a specific concrete mix produced at a single ready-mix plant of one manufacturer.
	1B Declaration of a specific product as an average from several of the manufacturer's plants.	EPD of a specific concrete mix produced at several (or all) of the plants of one manufacturer. This can include different sites of one company with the same production processes.
	1C Declaration of an average product from a manufacturer's plant.	EPD of the average concrete (or a group of concretes) produced at a single ready-mix plant of one manufacturer.
	1D Declaration of an average product as an average from several of the manufacturer's plants.	EPD of the average concrete mix (or a group of concretes) produced at several (or all) of the plants of one manufacturer. This can include different sites with different production processes.
2. Generic EPD	2A Declaration of a specific product as an average from several manufacturers' plants.	Declaration of an extruded polystyrene insulation product as an average from plants of a certain number of manufacturers within an association.
	2B Declaration of an average product as an average from several manufacturers' plants.	EPD for an average across a range of different densities of insulation material averaged across all products produced by a defined number of members of an association of insulation manufacturers.

6 Data quality criteria

6.1 General

The data quality assessment information shall cover at least the following criteria dealing with representativeness:

— time-related coverage;

— geographical coverage;

— technological coverage.

In addition, the following aspects shall be addressed:

— precision;

— completeness;

— representativeness;

— consistency;

— sources of the data.

The criteria are used at both product and building level to assess the data quality (see 7.1 and 8.3), and the data quality assessment is used to select data (see 7.2 and 8.4). Data quality assessment is also used to report data quality (see 7.3 and 8.5).

6.2 International Reference Life Cycle Data format

The International Reference Life Cycle Data (ILCD) format uses a consistent nomenclature and classification of data to provide meta-data and environmental information for generic and specific LCI and LCA for both unit process data sets and system data sets used in product life cycle assessments. The ILCD format is made up of fields, which are mandatory, recommended or optional within ILCD. Information for particular data quality criteria from ILCD is provided in the relevant sections below.

NOTE The ILCD format is defined in the document, "International Reference Life Cycle Data System (ILCD) Documentation of LCA data sets. Version 1.1 Beta". The format is available at the following web-link: https://eplca.jrc.ec.europa.eu/LCDN/downloads/ILCD_Format_1.1_Documentation/ILCD_ProcessDataSet.html.

6.3 Time-related coverage

6.3.1 General

Criteria associated with time-related coverage are used in both assessment of data quality and selection of data at both product and building level.

6.3.2 General time related aspects

The LCA results are in principle independent of time and of the time elapsing during the life cycle stages production, use and end-of-life. For example, years may pass between fossil oil extraction, refinery, production of plastic, use of plastic as a gutter and finally the process of recycling the waste gutter. This independence is one of the pre-conditions for aggregation of data across modules or across the Life cycle of the product system.

However, the date and the time period over which data are collected has an influence on the quality of data. To be temporally representative, data sets should reflect the true data population of interest regarding time/age of the data including background data sets.

6.3.3 Time-related criteria for construction products and buildings

At both product and building level, four time-related criteria are considered:

a) **The period of data collection of raw data for the product or building under study.** The period of data collection is relevant to ensure that the data are representative of normal production. Agricultural processes may have different yields each year due to differences in weather so collecting data over several years may be more representative of typical production; manufacturing may be more efficient during times when plant is run at full capacity so a year's data will be more representative than a month's production. Collecting data (energy, inputs, production, waste etc.) over the same period ensures the data accurately represents production over that period. When process data are collected where production has only recently started, a shorter period for data collection may be useful but it will not be as representative of typical production. The optional field, 'Data collection period', is included in ILCD format to provide this information. The data collection period should give the date when the data collection period started and the time when the data collection period stopped, e.g. 1st January 2018 to 31st December 2018.

b) **The reference year of for the data set being used.** The reference year refers to the year which the overall inventory represents best, considering the age/representativeness of raw data, and any specific and generic data sets used, i.e. it is not automatically the year of modelling, calculation or

publication year. It is important because more recent data are considered to be more representative, as some processes, for example electricity grid mix, can change significantly over time, and processes and new equipment are expected to become more efficient over time.

The recommended field, 'reference year', is included in ILCD format to provide this information.

c) **The validity of a data set.** The validity refers to the date to which the data set provider judges the inventory is valid with regard to the documented technological and geographical representativeness. EPD have a maximum validity of 5 years from the time of publication. ILCD format provides a recommended field, "data set valid until" which provides this information. It is assumed a data set is temporally representative from the reference year to the end of validity.

d) **The temporal representativeness of the data set**, as judged by the data provider. This is provided in the ILCD field, "time representativeness description".

Another time-related criterion relevant to the consistency of data sets is the time period over which inputs and outputs from the system are accounted for, particularly in relation to disposal processes and carbonation processes. Processes such as landfill can have impacts for many years from the point of disposal, potentially for thousands of years until the landfill has returned to nature. Describing the time period over which impacts have been considered ensures consistency in assessing these impacts.

6.3.4 Time related meta data for ILCD data sets

Table 3 describes the meta data fields in ILCD format that are time related.

Table 3 — Time related fields used in ILCD format

Field name	Requirement	Compliance Requirement Type	Definition
Data collection period (text)	Optional	Optional	Date(s) or time period(s) when the data was collected. Note that this does NOT refer to e.g. the publication dates of papers or books from which the data may stem, but to the original data collection period.
Reference year (Year)	Recommended	ILCD documentation-compliant	Start year of the time period for which the data set is valid (until year of "Data set valid until":). For data sets that combine data from different years, the most representative year is given regarding the overall environmental impact. In that case, the reference year is derived by expert judgement.
Data set valid until: (Year)	Recommended	ILCD documentation-compliant	End year of the time period for which the data set is still valid / sufficiently representative. This date also determines when a data set revision / remodelling is required or recommended due to expected relevant changes in environmentally or technically relevant inventory values, including in the background system.