FAQ
(Table of Definitions ILCD+EPD Data Format) for InData Compliance CPEN2018 (Construction Products EN 15804)

FAQ - 'Table of Definitions of ILCD+EPD data format, for InData compliance CPEN2018 (EN15804, construction products)' (short: 'Table of definitions')

The 'Table of definitions', and this 'FAQ' specifies the ILCD+EPD data format with InData compliance CPEN2018. The data format described here refers to data of construction products according to EN 15804. Please note, that InData, with this current version of ILCD+EPD data format including requirements for InData compliance CPEN2018 only supports data of construction products according to EN 15804 and takes no responsibility for usage in other sectors.

General Questions

(A) What is the ILCD+EPD format?

The ILCD+EPD data format (short for 'ILCD data format with EPD extensions') is a technical means for transporting information associated with an EPD in a structured way. It is based on the established ILCD data format created by the European Commission (http://eplca.jrc.ec.europa.eu/LCDN/developerILCDDataFormat.xhtml). It does not use the entire extent of the original ILCD format, but only those parts which are necessary and suitable for describing EPD data, complemented by additional EPD specific information that was not foreseen in the original ILCD format, as shown in the chart below.

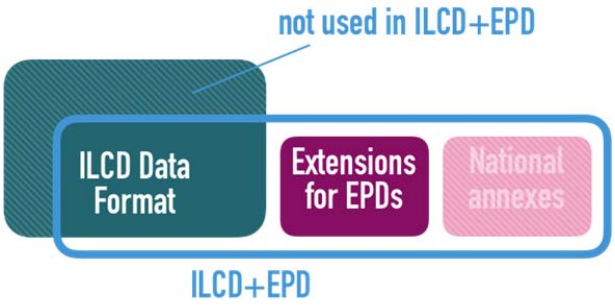

Figure 1: Scheme – ILCD+EPD data format.

(B) What is CPEN2018 compliance?

To support high data transparency and data quality, InData has chosen to set compliance standards for data. Currently, this refers to construction products (CP) and EN 15804 (EN), current version 2018 (CPEN2018). In the future, compliance standards can be defined for other products or standards. For this reason it is essential to define and name the appropriate compliance standard when describing data records.

A fundamental component of this compliance standard is the ILCD + EPD data format. This data format can basically be used very openly and flexibly. Within InData, a consensus was therefore found on which elements of ILCD and which EPD extensions should be addressed and which elements shall be mandatory for the so-called CPEN2018 compliance (see also the corresponding column in the 'Table of definitions').

General comment: Numbers in brackets relate to column 'possible display order' of 'Table of definitions'

(4) What is a UUID?

A Universally Unique Identifier (UUID) is an artificial identifier in form of a 16 byte (corresponding to 32 digits) hexadecimal number. It is randomly generated by the software and used to uniquely identify each data set. The probability that the same UUID is generated twice is nearly zero.

More detailed information about UUIDs can be found at

https://en.wikipedia.org/wiki/Universally_Unique_Identifier

(4) + (47) When is the UUID of a dataset to be changed? And what about the data set version number?

Once a dataset is created and a UUID for it is generated, this UUID stays the same forever. Any time the data set is changed, for instance error corrections or additions are being made, the version number is incremented (usually automatically by the software). This way, it is transparent to anyone at any time which of two different copies of a dataset is the more recent one.

However, whenever such a change would actually change the semantic meaning of a dataset (i.e. would lead to the dataset representing a different real-world object than before) then - instead of updating the existing dataset - a new dataset has to be created (with its own unique UUID). In the EPD context, this would be the case when a new EPD is issued for the same product, with a different reference year of the data.

Examples:
The company ACME, Inc. is represented by a contact dataset. When the address of the company changes, the address is updated in the contact dataset as well, and the version number of that dataset is (usually automatically) incremented. The same would apply if the management would decide to change the organization's name to ACME International, Inc., because the contact dataset would still represent the same real-world object (the company).

A process dataset is representing the EPD 'Aluminum profile' published in the year 2012 by the company ACME, Inc. After 5 years, since the validity of the EPD expires, the company has a new EPD generated for the same product with up-to-date data from the current production process. Thus, a new process dataset with a new UUID has to be generated to represent the new EPD, as it (the 2017 EPD) is a different real-world object than the 2012 EPD. The UUID would also have to be newly generated if relevant material properties for calculating the LCA of a building (e.g. raw density) was changed.

(9) What is the importance of 'classification'?

Hierarchical classifications are commonly used to offer users a way to navigate within a larger amount of data.

In the ILCD+EPD data format, an arbitrary number of classifications (from different classification systems) can be given for a single dataset.

In the future, pre-defined classifications will be even less important, as ontology-based structures (e.g. like the buildingSMART Data Dictionary, or others) can be used to find data.

(11) What is the meaning of 'generic data uncertainty loads'?

The uncertainty loads for generic data are a concept, e.g. used in the German ÖKOBAUDAT database, in order to compensate the incompleteness and imponderability of generic data. For ÖKOBAUDAT the amount of the uncertainty load depends on the estimated data quality of the data set and ranges from 10 to 30 percent. It is included in the published values of the dataset.

Note: The 'uncertainty loads' are not to be confused with the uncertainty or variability of the LCA, e.g. in the case where an EPD is declared as an average of a number of products!

(33) Why are the verification requirements for generic data not as strict as for product specific data?

There are several reasons why generic data cannot be treated the same way as EPD data:

- Generic data are usually not developed within an EPD programme.
- Generic data are surrogate data only – they are used in building assessment tools if no system specific data are available.
- The use of generic data should not be augmented since manufacturers should be encouraged to present specific data.
- If the generation of generic data is too costly, nobody will elaborate them and consequently surrogate data will be missing.

Therefore 'WG InData' accepts also internally verified generic data as long as the verifier is independent from the generation of the data set. It is expected that quality levels for generic data are going to be defined within the context of PEF requirements. These requirements shall be integrated later in the ILCD+EPD format.

(18) Explanation of the reference flow concept

In the LCA world, each activity is modelled as a process. Each process has one or multiple reference products, which are modelled as the reference flow(s) that are flowing out of the process. Hence, when a process dataset is used to represent the data from an EPD, this process dataset is always accompanied by a flow dataset which represents the actual product (reference product) of the EPD. Hence it is called the product flow dataset.

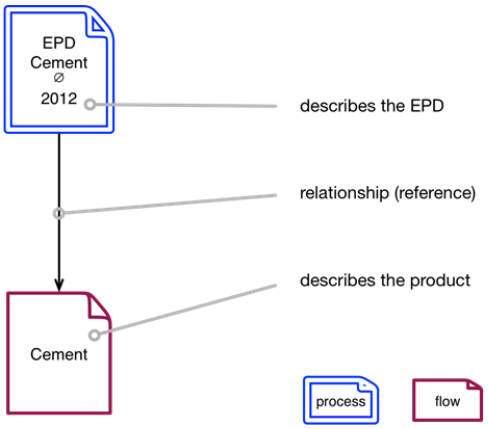

Figure 2: For describing an EPD, tupel consisting of a process dataset and a flow dataset is used.

Properties of the product such as name, classification, declared unit or physical properties like raw density are declared in the product flow dataset.

If there are multiple process datasets representing different EPDs that refer to the same product, they can all reference the same product flow dataset.

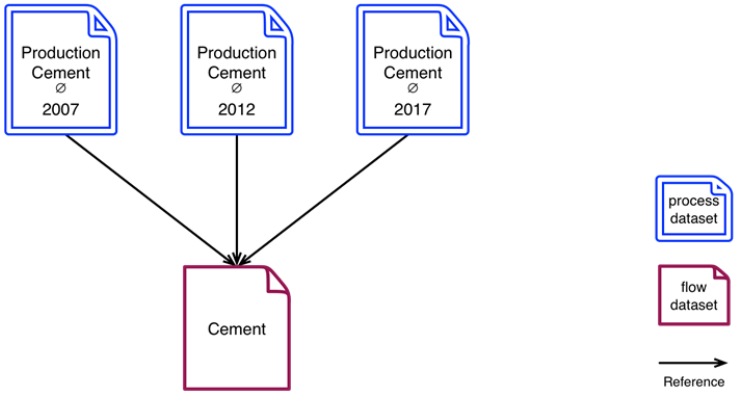

Figure 3: References to the product flow dataset.

(13) What is the purpose of the 'copyright' field?

This indicates whether a dataset is the intellectual property of its respective owner or, in contrast, is in the public domain, which means it can be copied, altered, sold etc. without permission by anyone. Usually, the value of this field will be 'yes'.

(7) Which information shall be given as 'use advice for data set'?

In contrast to the data field 'technical purpose of product or process' this field is foreseen for specific methodological advice. Which methodological information does the user need in order to apply the data set properly in an LCA on building level? Which methodological information does he need in order to understand the values of the data set correctly (e.g. use of secondary materials)? Sometimes a link to appropriate combinable datasets for auxiliary products or for other modules of the life cycle can be helpful. If no specific use advice for data set is needful, a statement like 'no specific use advice for this data set' shall be given.

Examples:
The data set represents with high coverage the average production conditions and the induced environmental impacts for Germany. If specific data for the applied products are not available the use of the data set at hand is recommended.

Data set does not comprise end of life (C1-C4) of the product. Combinable datasets for calculation of the whole life cycle on the building level are e.g.:

- *'recycling of mineral waste [kg]' (C1-C4).*

Data set includes the transportation from Germany (Hamburg) to Norway (Oslo). If the data set is used for other locations module A4 should be altered according to the actual transportation scenario.

The percentage of recycled aluminum scrap (classified as 'secondary product') in the product amounts to 28 %.

(25) What is meant by 'background system' in the (currently used) data field 'technology description including background systems'?

First of all, specific LCA data are based on primary data ('foreground system'). For construction products these are mostly measured, calculated or estimated data from the manufacturing process. In order to assess the upstream processes (e.g. manufacturing of pre-products) and the downstream processes (e.g. construction process) secondary data from background data bases or reports have to be used in most cases since no primary data are available. These processes which cannot be influenced directly form the so-called 'background system'.

(25) What information shall be given in the (currently used) field 'technology description including background systems'?

The technology description shall give technological based information on the product over all life cycle stages which are considered in the representing data set. The information shall be concentrated on the main technological aspects. Which information is necessary in order to make the user understand the background of the LCA information in the data set?

Technical description may include e.g. the following:

- one or two sentences to describe the product;
- declaration of the main product components and or materials;
- short description of the manufacturing process with focus on product specific information which are relevant to understand the data set rather than general literature on the product group;
- information on pre-products or raw materials if reasonable;
- description of the construction process stage, use stage and end-of life stages.

Description of modeling and calculation rules including background systems may include:

- How is the dataset modelled (cut-off criteria, allocations, etc.)?
- Which is the source of the data (e.g. literature, marked average, average by sales numbers, other sources)?
- How high can variations in the results be?
- What are the system boundaries (these can differ from the EPD system boundaries)?
- What year does the raw data relate to?
- When was the last update? What has been updated?

Examples:
MAXI cellulose insulation materials are insulation materials for thermal and sound insulation in building construction applications manufactured by recycling newspaper. The products are made from waste paper and are impregnated with mineral salts to protect them from fire. Manufacturing process and other life cycle stages: see also attached flow diagram.

The data set for aerated concrete at hand conforms to the products on the German market. Aerated concrete is produced in standardised industrial processes (see also diagram for aerated concrete

production).

Background system: The electricity mix was modelled using the energy balances of the AGEB ('Arbeitsgemeinschaft Energiebilanzen e. V".) for Germany for the year 2016. The thermal energy and process steam are generated in heat plants and modelled according to the country-specific situation (emission limit values, energy source base). All relevant and known transport processes are included.

(8) What is the 'technical purpose of a product or a process'

For construction products the technical purpose is its application in the building. Thus, here the main fields of application in the building shall be stated. Also restrictions in the use of the product can be described. Also, it is recommended to give a link to the appropriate product standards.
For other related product groups like upstream products (e.g. plasticizer) or building related processes (e.g. digging) other specifications of the technical purpose will match.

Examples:
MAXI OSB panels are applied as structural boards for walls and roofs in structural as well as in interior work. They are also fit to use as lay plates in flooring construction. Besides, they can be used for racks, frameworks, packages or concrete formwork.
MAXI cellulose fiber insulation material is used in thermal and sound insulation applications, including insulation in solid wood walls, timber frame walls, roof slopes and floor slabs. Cellulose fiber insulation is used for applications where vertical or horizontal cavities are completely filled by blowing in non-loadable insulating material, or where horizontal, arched or moderately pitched (≤ 10°) areas are covered.
Main fields of application for the MAXI EPS products are the following types of application acc. to DIN 4108-10.

- *Basement ceiling - DI;*

- *Intermediate ceiling - DEO, DES;*
- *Topmost intermediate ceiling - DEO, DES*

This commercial grade bulk chemical is used for large scale synthesis in chemical industry.

This truck is used only for long-distance transport of liquid bulk chemicals.

(9) What is the purpose of specifying 'material properties' and which ones are allowed?

For applying LCA data of certain products it is necessary to have additional information about the material properties as regards weight or dimension. At least one meaningful material property that allows conversion from mass into a functional unit shall be given. For example, if the declared unit of an EPD for a mineral wool product is '1 kilogram' of the product, the mass per square meter is needed to calculate the environmental impact of an area in the building

The following properties are currently supported by the technical infrastructure:

Table 1: Material properties in ILCD+EPD data format.

properties	Unit	Description	Comments
bulk density	kg/m^3	kilograms per cubic metre	
grammage	kg/m^2	kilograms per square meter	mass per unit area
gross density	kg/m^3	kilograms per cubic metre	
layer thickness	m	metres	
productiveness	m^2	square metres	
linear density	kg/m	kilograms per meter	
conversion factor to 1 kg	-	-	Mandatory according to EN 15804. Needs to be given in a biunique way. When the amount of the declared unit is divided by the conversion factor, the result has to be mass in kilogram [kg].

In ILCD+EPD-format the 'material property' is a property defined in the product flow (see section 'reference flow concept' above) and not in the EPD data set.

(31) How can the 'data sources used for this data set' be correctly identified?

To uniquely identify the background database used to calculate the dataset, a source dataset is modeled and linked in the 'data sources' field of the EPD data set.

There are two links (references) to data source:

1. The background database used regardless of version number or release date (blue line in the tables below).
2. The actually used background database with specification of the version number and the date of release.

Both details are mandatory. When new database versions are published, corresponding other 'data sources' may be simply added, e.g. be generated by EPD editor. The names and UUID of GaBi and ecoinvent database until 2018 are listed in table 2 and table 3. The currently valid names and UUIDs of the corresponding source datasets can be retrieved at https://oekobaudat.de/OEKOBAU.DAT/resource/datastocks/cab29b8f-a13c-4c43-bcb1-673b8bdd1ad4/sources

Table 2: UUID for GaBi database (1st reference) and its versions (2nd reference)

GaBi Database Version	Name	UUID
All (1st reference)	GaBi Database (all versions)	28d74cc0-db8b-4d7e-bc44-5f6d56ce0c4a
SP20 2013	GaBi database SP20 2013	b9fdf525-e9b8-47a0-b897-2ecfe7e2cff5
SP25 2014	GaBi database SP25 2014	04536297-8f33-4ef0-b06c-54dc273c2aaa
SP26 2014	GaBi database SP26 2014	7d81b748-d7ea-4efd-b72e-205c69306f38
SP27 2015	GaBi database SP27 2015	9422129a-7992-4eaf-aa17-0fca36af4512
SP28 2015	GaBi database SP28 2015	176effc6-2e73-4419-be24-60b3399e91cf
SP29 2016	GaBi database SP29 2016	8cb50bdc-0299-4a4c-9a4e-4c62917018c7
SP30 2016	GaBi database SP30 2016	6985fea4-15ea-4b96-9237-c67ee3a1f28c
SP33 2017	GaBi database SP33 2017	d8181616-4417-4dbd-9614-09937353f17a
SP34 2017	GaBi database SP34 2017	07650073-f65e-4d07-97e9-359a58b7299e
SP35 2018	GaBi database SP35 2018	feda7597-12a1-4bd5-93ef-4d8120877b78

Table 3: UUID for ecoinvtent database (1.) and its versions (2.)

ecoinvent Database Version	Name	UUID
All (1st reference)	ecoinvent Database (all versions)	b497a91f-e14b-4b69-8f28-f50eb1576766
2.0	ecoinvent 2.0 database	67e57f6b-53d2-4adb-a5db-7e8157ce5865
2.1	ecoinvent 2.1 database	dd4ba261-1847-4d00-a9c0-7e81a3402dae
2.2	ecoinvent 2.2 database	9ffadc15-4649-4871-b565-cee8197b17e9
3.0	ecoinvent 3.0 database	ae9fac17-61c1-4776-947a-0fc2865954ff
3.1	ecoinvent 3.1 database	44df4cc3-a75f-4e13-a37a-971dadc97b35
3.2	ecoinvent 3.2 database	d82a6cdc-1930-4a8a-9b07-2f7fda03fcbd
3.3	ecoinvent 3.3 database	c667cc42-12a7-4d92-9d7b-5e4e90a7a274
3.4	ecoinvent 3.4 database	db59e0c6-db9a-4d9a-8637-67b8ed42415c