



**Bundesinstitut  
für Bau-, Stadt- und  
Raumforschung**

im Bundesamt für Bauwesen  
und Raumordnung



## **ÖKOBAUDAT Manual**

### **Technical and formal information and rules for the ÖKOBAUDAT database**

#### **Version 2.1**

#### **Published by**

Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR)  
within the Federal Office for Building and Regional Planning (BBR)  
Deichmanns Aue 31-37  
D-53179 Berlin

#### **Created in cooperation with BBSR by**

Hildegund Figl  
IBO – Österreichisches Institut für Bauen und Ökologie GmbH  
Alserbachstraße 5/8, 1090 Wien, Österreich

Oliver Kusche  
Oliver Kusche Research & Consulting, Marie-Curie-Str. 1, 79100 Freiburg

Berlin, Wien, Freiburg, 28.06.2021, with correction from 29.11.2021 and 20.11.2023

Editorial changes: 18.12.2023

**Instructions for use/disclaimer**

This document provides assistance for the use of ÖKOBAUDAT. This manual has been compiled with great care. However, no liability can be accepted for the correctness, completeness and currentness of the information. The authors and the publisher are not responsible for the contents of secondary sources.

## Content

1.	Introduction .....	5
1.1	ÖKOBAUDAT .....	5
1.1.1	The ÖKOBAUDAT platform .....	5
1.1.2	BNB-compliant data and additional data on the ÖKOBAUDAT platform .....	5
1.1.3	Data networking.....	5
1.1.4	International Network.....	7
1.1.5	Who is responsible for ÖKOBAUDAT?.....	7
1.2	Aim and contents of this document .....	7
1.2.1	Aim of this document .....	7
1.2.2	Contents of this document .....	8
1.2.3	Note on DIN EN 15804+A1 and DIN EN 15804+A2 .....	8
1.3	Change documentation.....	9
2.	ILCD+EPD Data format and Compliance Rules .....	10
2.1	Overview .....	10
2.1.1	The ILCD+EPD data format.....	10
2.1.2	InData Compliance Rules for Construction Products (Conformity rules for the provision of EPD data sets of construction products).....	10
2.1.3	Table of Definitions .....	11
2.2	ÖKOBAUDAT-specific rules for the ILCD+EPD data format.....	11
2.2.1	Multilingual datasets .....	11
2.2.2	Names of datasets.....	11
2.2.3	Product categories (,classification‘).....	12
2.2.4	Dataset types in ÖKOBAUDAT (‘subtype‘).....	12
2.2.5	Uncertainty penalties for generic datasets.....	14
2.2.6	Name of conformity system .....	16
2.2.7	ÖKOBAUDAT “Stamp” .....	17
2.3	Modules, indicators and parameters .....	17
2.3.1	Life cycle modules in accordance with DIN EN 15804 in ÖKOBAUDAT .....	17
2.3.2	Indicators .....	18
2.3.3	Biogenic carbon content .....	19
2.4	Material properties .....	19
2.4.1	Concept of reference product (“Reference flow“).....	19
2.4.2	Material properties .....	20
2.5	References.....	20

3.	Data management .....	21
3.1	Updates, changes and archiving.....	21
3.1.1	Updates and archiving.....	21
3.1.2	Valid time of datasets and handling of expired datasets.....	21
3.1.3	Modifications in datasets .....	22
3.2	Software and interfaces .....	22
3.2.1	Soda4LCA .....	22
3.2.2	EPD Editor.....	22
3.2.3	Validation.....	22
3.3	Data delivery to ÖKOBAUDAT.....	23
3.3.1	Content requirements for importing datasets into ÖKOBAUDAT.....	23
3.3.2	Ways to import data.....	23
3.3.3	Selection of a product category .....	23
3.3.4	Validation of datasets .....	23
3.3.5	Workflow for data delivery in detail .....	24
3.4	Using ÖKOBAUDAT datasets.....	25
3.4.1	Use of the ÖKOBAUDAT datasets in life cycle assessment tools .....	25
3.4.2	Terms of use.....	25
3.4.3	Data search in the ÖKOBAUDAT database .....	25
3.4.4	Access to the ÖKOBAUDAT database.....	27
4.	References .....	29
4.1	Links to further software and instructions.....	29
4.2	Links to documents.....	29
4.3	Standards.....	29
5.	Table of figures .....	30
6.	List of tables.....	30
7.	Glossary.....	31

# 1. Introduction

## 1.1 ÖKOBAUDAT

### 1.1.1 The ÖKOBAUDAT platform

ÖKOBAUDAT is a platform with data, information and links related to the life cycle assessment (LCA) of construction works. The ÖKOBAUDAT platform is published in German and English at [www.oekobaudat.de](http://www.oekobaudat.de).

At the platform's core is the online database with LCA and EPD<sup>1</sup> datasets on building materials, construction, transport, energy and disposal processes. ÖKOBAUDAT is provided as a standardized database for life cycle assessment of construction works by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

The datasets are in compliance with DIN EN 15804 „Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products“ and are subject to strict quality requirements. They can be used in many different building assessment systems. With the help of life cycle assessment tools, such as eLCA provided by the BBSR, the entire life cycle of a building can be reconstructed with the ÖKOBAUDAT database.

The database system with its search and filter functions enables user-friendly online searches of the datasets. New EPD datasets are included on an ongoing basis. Previous datasets are archived online to ensure no information is lost.

### 1.1.2 BNB-compliant data and additional data on the ÖKOBAUDAT platform

ÖKOBAUDAT is the mandatory database for the Assessment System for Sustainable Building (Bewertungssystem Nachhaltiges Bauen, BNB). To ensure consistency, BNB-compliant data must be based on the background database GaBi (see [Principles for the acceptance of LCA data in the online database ÖKOBAUDAT<sup>2</sup>](#)). The ÖKOBAUDAT platform also offers datasets based onecoinvent background data. With this exception, this data fully adheres to the ÖKOBAUDAT requirements in terms of quality and data format and, in justified cases, can therefore be used for BNB life cycle assessments.

The BNB system currently still uses the data sets according to EN 15804+A1. As soon as sufficient data sets according to EN 15804+A2 are available, new benchmarks will be calculated using reference buildings.

### 1.1.3 Data networking

At national level, the BBSR has established a consistent digitised infrastructure for the delivery of data to ÖKOBAUDAT and the transfer of data to associated tools such as the building life cycle assessment tool eLCA. The prerequisites for the digitised processes were the establishment of ÖKOBAUDAT as an online database, the development of the ILCD+EPD data format and the provision of suitable data interfaces (API). Furthermore, the BBSR provides the following tools developed through its research projects:

- EPD Editor (modelling or transfer of EPD to EPD datasets in ILCD+EPD data format)
- validation tool (for checking the data format before data transfer to ÖKOBAUDAT)

ÖKOBAUDAT is therefore the focal point of a comprehensive infrastructure consisting of data producers, data suppliers, databases and data users in a national and international context (Figure 1).

---

<sup>1</sup> Environmental Product Declaration

<sup>2</sup> <https://www.oekobaudat.de/en/service/downloads.html>

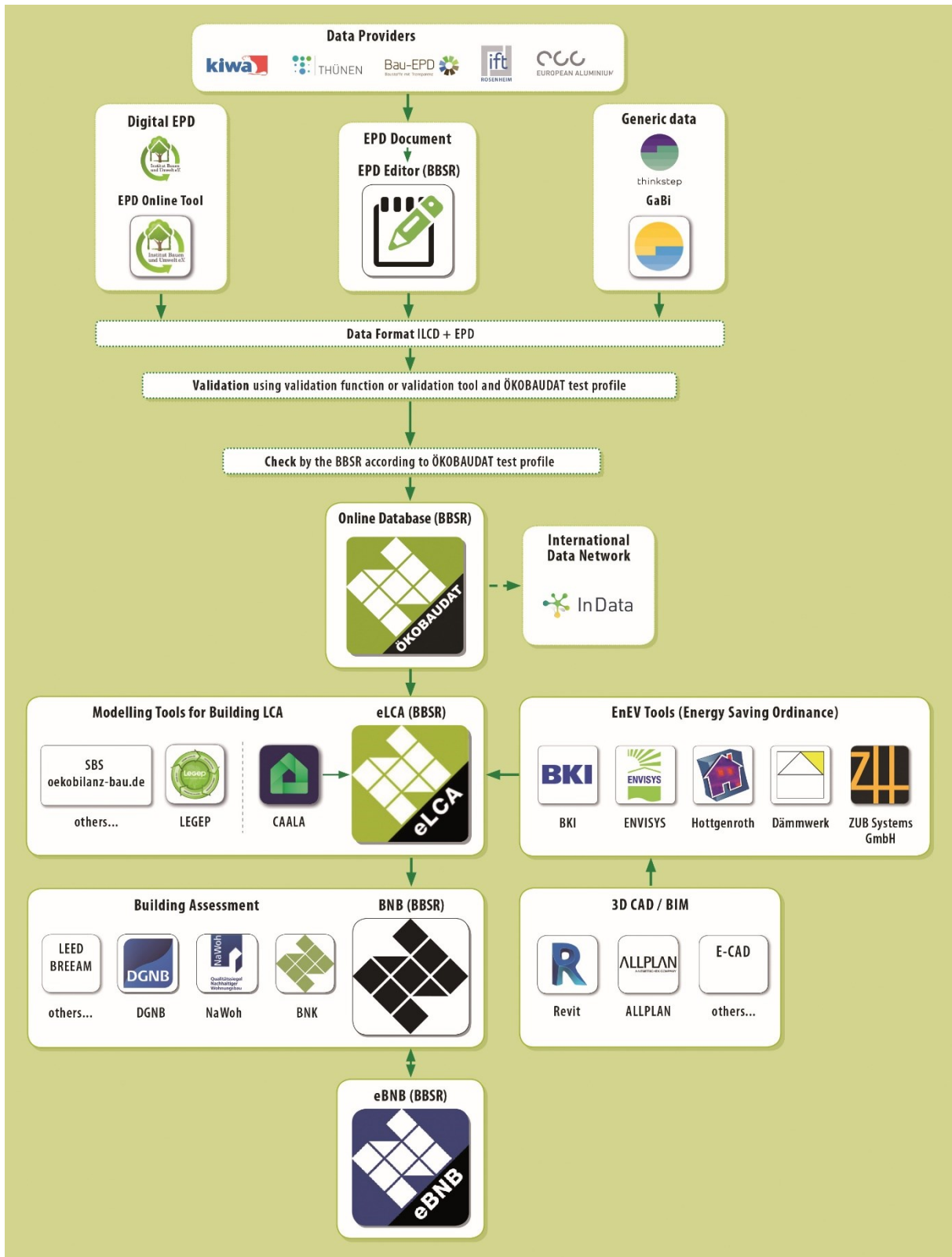


Figure 1: Digital data exchange via standardised processes – data generation, delivery, distribution and use. Source: BBSR

### 1.1.4 International Network

The BBSR supports sustainable construction and broad use of life cycle assessments in the international context through various activities. The digitised infrastructure associated with ÖKOBAUDAT and provided by the Federal Government including a network of data and tools already envisages an international database structure. Compliance with internationally used standards and the open source-based tools facilitate global data exchange. With the development of the ILCD+EPD data format and the corresponding digital structures and tools, Germany has assumed a pioneering role and created the prerequisites and starting point for major international developments.

With this background, BBSR initiated the “International Open Data Network for Sustainable Construction” (InData) in 2015.<sup>3</sup> The InData Working Group, led by the BBSR, is an informal, non-profit working group of interested stakeholders with the main goal of harmonising the digitalisation of EPDs and life cycle assessment results in the construction sector. A common data format is intended to ensure that data is communicated in a transparent, credible and user-friendly manner. The official specifications, implementation guidelines and documentation are published on the InData website at <https://www.InData.network/resources>. The InData initiative uses the ILCD+EPD data format developed for ÖKOBAUDAT.

InData has also established conformity rules for the provision of EPD data sets of construction products (Compliance Rules for Construction Products, CP for short). These conformity rules in the versions CPEN2018, CPEN2018v2 and CP-2020 are part of the ÖKOBAUDAT rules (for details see section 2.1.2).

### 1.1.5 Who is responsible for ÖKOBAUDAT?

The publisher of ÖKOBAUDAT is the German Federal Ministry for Housing, Urban Development and Building (BMWSB).

Responsibility under the Press Act lies with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) in the Federal Office for Building and Regional Planning (BBR).

ÖKOBAUDAT and its related tools were developed with support from the German building materials industry and within the framework of research projects as part of the Future Building (Zukunft Bau) innovation programme, in which, amongst others, beibob medienfreunde, greendelta, IBO - Österreichisches Institut für Bauen und Ökologie GmbH, KIT - Institute for Applied Computer Science, Oliver Kusche Research & Consulting, Online Now! GmbH and Sphera Solutions GmbH (formerly thinkstep) were involved.

The BMWSB provides the ÖKOBAUDAT data free of charge and without any restrictions for the purpose of performing life cycle assessment of buildings. Responsibility for content and values remains with the owner of the records.

## 1.2 Aim and contents of this document

### 1.2.1 Aim of this document

The manual at hand is an explanatory supplement to the ÖKOBAUDAT database. It serves as a reference work that summarizes all relevant technical and formal rules for the ÖKOBAUDAT database – independently from the content-related and methodological requirements on EPD programmes and data, which can be found in the document [Principles for the acceptance of LCA data in the online database ÖKOBAUDAT](#)<sup>4</sup>. New agreements shall be incorporated on an ongoing basis. Important changes and news are also announced in the news section of the ÖKOBAUDAT website.

---

<sup>3</sup> <https://www.indata.network/>

<sup>4</sup> <https://www.oekobaudat.de/en/service/downloads.html>

## 1.2.2 Contents of this document

Chapter 2, 'ILCD+EPD Data format and Compliance Rules', illustrates the basic principles of the ILCD+EPD data format and the ÖKOBAUDAT conformity rules. A detailed description of the data fields in the ILCD+EPD data format can be found in ["Table of definitions, ILCD+EPD Data format"](#)<sup>5</sup>.

ÖKOBAUDAT data management is presented in chapter 3. This comprises information on ÖKOBAUDAT updates and archiving of old data stocks, valid time of datasets and handling of expired datasets as well as data changes. Overmore, the technical/formal rules for data delivery to ÖKOBAUDAT are described. Finally, an overview about the various ways to use or access ÖKOBAUDAT data is given.

## 1.2.3 Note on DIN EN 15804+A1 and DIN EN 15804+A2

In recent years, EN 15804 has been largely harmonised with the Product Environmental Footprint (PEF) and the new DIN EN 15804:2012+A2:2019+AC:2021 (hereinafter "EN 15804+A2") has been published from February 2020. This replaces the previous version DIN EN 15804:2012+A1:2013 (hereinafter "EN 15804+A1"). For the impact indicators, new or more up-to-date characterisation factors have been defined; certain impact indicators are subject to completely new calculation methods. There are also new indicators. Therefore, the impact indicators calculated according to EN 15804+A2 can no longer be compared with the results according to EN 15804+A1. For a transition period, data based on EN 15804+A1 are also shown on the ÖKOBAUDAT platform. The two databases are strictly separated from each other in the front end.

This was implemented in the ÖKOBAUDAT setting as follows:

- In the data field "Name of conformity system", the version of the standard (EN 15804+A1 or EN 15804+A2) must be specified (see section 2.2.6).
- For the acceptance and publication of data sets according to EN 15804+A1 and ILCD+EPD data format v1.1. (CPEN2018 and CPEN2018v2) there are expiration dates that are announced on the ÖKOBAUDAT website.
- On the ÖKOBAUDAT website, three database views can be found under the ["Database"](#) tab: "ÖKOBAUDAT for EN 15804+A1", "ÖKOBAUDAT for EN 15804+A2" and "Additional data sets" (data sets based on ecoinvent). The data sets "ÖKOBAUDAT for EN 15804+A1" are currently still used in the BNB system (see section 3.4.3).
- In the interface and in the downloads in XML or CSV format, the database can be filtered into data sets in accordance with EN 15804+A1 or EN 15804+A2 using the "Conformity system" column (see section 3.4.4).
- In the EPD editor, the new ILCD+EPD data format in revision v1.2. and the indicators in accordance with EN 15804+A2 are implemented in version 5.0 and higher. The previous versions of the EPD editor can only be used for data sets in accordance with EN 15804+A1 and the former ILCD+EPD data format (see section 3.2.2).
- There are currently two different ÖKOBAUDAT check profiles for data sets according to EN 15804+A1 / ILCD+EPD data format v1.1 and EN 15804+A2 / ILCD data format v1.2, respectively (see section 3.3.4).
- The following new regulations apply to data sets in accordance with EN 15804+A2:
  - Rules on the mandatory specification of life cycle assessment indicators (see section 2.3.2 Indicators).
  - The flow properties "Biogenic carbon content in product" and "Biogenic carbon content in accompanying packaging" must be specified (see section 2.3.3 Biogenic carbon content).

References to a specific version of DIN EN 15804 are identified in this document by citing the amendment:

---

<sup>5</sup> <https://www.oekobaudat.de/en/service/downloads.html>



- 'EN 15804+A2' for DIN EN 15804:2012+A2:2019+AC:2021
- 'EN 15804+A1' for DIN EN 15804:2012+A1:2013

### 1.3 Change documentation

Compared to version 2.1 of November 29th, 2021, the following changes have been incorporated:

- Federal Ministry for Housing, Urban Development and Building (BMWSB) (formerly BMI)
- Alternative texts for images
- Information about InData updated (chapters 1.1.4 and 2.1.2)
- Standards citations updated
- Section 2.2.7: "This data set is part of ÖKOBAUDAT" (previously: "This data set was checked by the BBSR and is part of ÖKOBAUDAT")
- Section 3.4.2: "ÖKOBAUDAT is not permitted for performing life cycle assessment of building products." (previously: "... not designed ...")

## 2. ILCD+EPD Data format and Compliance Rules

### 2.1 Overview

#### 2.1.1 The ILCD+EPD data format

Syntactically, ÖKOBAUDAT datasets correspond to the ILCD data format<sup>6</sup> with extensions for EPD data that cannot be presented in the ILCD format. For certain data fields, the ILCD definition was further specified or simplified, respectively, if the detailed descriptions were not relevant for EPD datasets. This adapted ILCD format is called “ILCD+EPD data format”.

The currently valid version is the ILCD+EPD data format in revision 1.2.

#### 2.1.2 InData Compliance Rules for Construction Products (Conformity rules for the provision of EPD data sets of construction products)

The InData Working Group (see also section 1.1.4 International Network) has established conformity rules for the provision of EPD data sets of construction products (Compliance Rules for Construction Products, CP for short). These are essentially based on the ILCD+EPD data format developed by BBSR and the EN 15804.

Table 1 shows the versions of the Compliance Rules previously approved by InData.

**Table 1: Overview of the versions of Compliance Rules of the InData Initiative for the provision of EPD data sets of construction products**

	<b>CPEN2018</b>	<b>CPEN2018v2</b>	<b>CP-2020</b>
Compliance system	EN 15804+A1	EN 15804+A1	EN 15804+A2
ILCD+EPD data format	Version v1.1 <sup>1</sup>	Version v1.2	Version v1.2
Life cycle assessment indicators	“Table of definitions”, version 23.11.2018	“Table of definitions”, version 23.11.2018	“Table of definitions CP-2020”, version 1.4.2021
Mandatory specification of defined data fields	“Table of definitions”, version 23.11.2018	“Table of definitions CP-2020”, version 1.4.2021	“Table of definitions CP-2020”, version 1.4.2021
InData Compliance Rules	Version: September 2019	Version: December 2020	Version: December 2020

<sup>1</sup> originally without version designation

These conformity rules are also part of the ÖKOBAUDAT rules. For the acceptance of data sets in ÖKOBAUDAT, the provisions of this manual and the [Principles for the acceptance of LCA data in the online database ÖKOBAUDAT](#) apply as well.

Important note:

ÖKOBAUDAT data sets are InData-compliant if they follow the recommendation that the data fields “Name” and “Technical purpose of product or process” are also available in English (see also Section 2.2.1 Multilingual datasets).

Conversely, InData-compliant data sets are not necessarily ÖKOBAUDAT-compliant (see also Section 2.2.7 ÖKOBAUDAT “Stamp”).

<sup>6</sup> <http://eplca.jrc.ec.europa.eu/LCDN/developer/ILCDDataFormat.xhtml>

### 2.1.3 Table of Definitions

A detailed description of the data fields in the ILCD+EPD data format can be found in [“Table of definitions, ILCD+EPD Data format”](#)<sup>7</sup>. The table contains the field names and their respective definitions and explanations. Additional columns indicate which data fields have been added to or modified from the ILCD format and if input is mandatory or optional. Further explanations on the contents of complex data fields are compiled in [“FAQ: ILCD+EPD Data format, InData Compliance CP-2020”](#)<sup>7</sup>. Explanations of the previous version of the ILCD+EPD data format can be found in [“FAQ: ILCD+EPD Data format, InData Compliance CP-2020 and CPEN2018v2”](#)<sup>7</sup>.

The following chapters explain rules for certain fields of the “ILCD+EPD data format” that are specific to the ÖKOBAUDAT.

## 2.2 ÖKOBAUDAT-specific rules for the ILCD+EPD data format

### 2.2.1 Multilingual datasets

In ÖKOBAUDAT, datasets can be displayed in several languages whereas all contents in the different languages are always contained in one physical dataset. The language can be recognized by the flag symbol (search table).

Note 1: The data supplier is responsible for the correct reproduction of the dataset contents in all languages in which a dataset is to be published.

Note 2: In the field of federal responsibility, datasets available in German should be used preferably. However, datasets and corresponding textual information only available in English are acceptable in ÖKOBAUDAT since mid-2018. For English EPD or LCA datasets it would be desirable for the core information of each description field to be delivered in German language. Also abbreviated versions with links to more detailed information in English are appropriate.

Note 3: The data fields “Name” (of dataset) and “Technical purpose of product or process” must be delivered bilingually in English and German, since only in this case the dataset can be made available in the international network node of InData (see also sections 1.1.4 and 2.1.2; prerequisite for InData Compliance).

### 2.2.2 Names of datasets

There are no strict guidelines for the naming of datasets in ÖKOBAUDAT. To make it easier to find the datasets in ÖKOBAUDAT, the designation of EPD datasets is recommended in the suggested order:

Brand\_name Product\_name General\_product\_name\_if\_applicable Characteristics\_if\_applicable

Example: Ensinger Thermix TX Pro Spacers

Re. Brand name: This is the brand name, alternatively the company name. The name does not have to be complete, but the company should be clearly recognisable. The brand name should be the same for all EPD datasets of the same brand.

Re. Product name: The product name does not have to be complete, but as clear as possible.

Re. General product name if applicable: Since users can find ÖKOBAUDAT datasets in various environments, the associated ÖKOBAUDAT category is often only visible after viewing the data set. Some ÖKOBAUDAT categories are also so broad that the specific product type cannot yet be read from them. Therefore, if the product name does not indicate which product the EPD dataset applies to, it is recommended to include a general construction product name (e.g. "spacer", "adhesive") in the data set name. For products with standardised or common product type designations (e.g. "Type X" for fire resistant gypsum boards") it is recommended to use these.

<sup>7</sup> <https://www.oekobaudat.de/en/service/downloads.html>

Re. Characteristics if applicable: If the EPD dataset has certain technical or other properties that are relevant for the application of the dataset or for the selection of the product, it is recommended to include these in the dataset name. An example of such a property could be the thickness of a product if the declared unit is one square meter. The user can read the dimension directly from the name without having to look at the dataset beforehand. Non-identifying properties of the product, such as gross density without reference to the declared unit, etc., which are created as reference flow properties anyway, should not be mentioned in the name.

There are no restrictions on the use of special characters.

BBSR reserves the right to point out misleading designations of datasets to data providers and claim a renaming.

### 2.2.3 Product categories (‘classification’)

The datasets must be assigned to one of the given product categories in ÖKOBAUDAT. The current product categories can be found on the [ÖKOBAUDAT website](#)<sup>8</sup>.

**Table 2: Example of product categories in ÖKOBAUDAT. Source: BBSR**

1. Mineral building products
1.1. Binder
1.1.01 Cement
1.1.02 Lime
1.1.03 Gypsum
1.1.04 Clay

New product categories can only be established by the BBSR (see 3.3.5 Workflow for data delivery in detail). The product category file available for download on ÖKOBAUDAT is updated automatically as soon as the new category has been created.

### 2.2.4 Dataset types in ÖKOBAUDAT (‘subtype’)

ÖKOBAUDAT differentiates between the following dataset types (‘subtypes’ in the ILCD+EPD data format) in order to express the representativity of life cycle assessments:

- *specific dataset* – manufacturer/manufacturing company-specific dataset for a specific product of one factory
- *average dataset* – average datasets provided by industrial associations, several companies, several works or several products (i. e. on the basis of data on the industrial production of companies)
- *representative dataset* – data that is representative for a country/region (for example average for Germany)
- *template dataset* – unspecific datasets for specific products created on the basis of a “template EPD”
- *generic dataset* – generic datasets in accordance with EN 15804 and other data that is not modelled on the basis of industrial data (for example on the basis of literature, expert knowledge, etc.)

The type of dataset must be indicated for every dataset (in the “Subtype” field). The dataset type is of decisive importance for the applicability of life cycle assessment datasets and is therefore displayed in a separate column next to the dataset’s name in the data browser on the ÖKOBAUDAT website.

Besides, in the [Principles for the acceptance of LCA data in the online database ÖKOBAUDAT](#)<sup>8</sup>, three categories of data which are accepted in ÖKOBAUDAT are defined:

<sup>8</sup> <https://www.oekobaudat.de/en/service/downloads.html>

- Category A - Verified EPD according to DIN EN 15804 and generated in an EPD programme according to DIN EN ISO 14025
- Category B - Verified EPD data (B1) or LCA data with external critical review (B2), according to DIN EN 15804
- Category C - LCA data compliant to DIN EN 15804, non-reviewed (no external verification or critical review, “generic datasets”)

The type of “conformity check” required depends on the data category. It is not indicated in the data format.

Depending on what is being viewed, ÖKOBAUDAT data can also be divided into the groups: construction products and other life cycle data.

Table 3 shows the possible variations of data categories and dataset types occurring in ÖKOBAUDAT.

**Table 3: Data categories and dataset types in ÖKOBAUDAT**

Group	Category	Description	Database	Conformity check	Dataset type (“subtype”)
Construction product datasets	A	Construction product EPD in programme operation	Manufacturer, works location	Independent external verification via programme operation	specific dataset
			Association, country		average dataset
					template dataset
	B1	Construction product EPD without programme operation	Manufacturer, works location	Independent external verification without programme operation	specific dataset
			Association, country		average dataset
					template dataset
B2	Construction product dataset (no EPD)	Manufacturer, works location	Independent external critical review	specific dataset	
		Representative data for a country/region		representative dataset	
Other life cycle data	C	Construction product dataset (no EPD)	Replacement data for a country/region	No	generic dataset
		Transport processes			
		Use processes			
		General end-of-life processes			
		Energy supply			

Note on the selection of the appropriate data category for timber and timber products:

When selecting and using the appropriate data set, the individual goals of the life cycle assessment, the product system to be assessed and the data quality and origin must always be taken into account. Therefore, a general restriction or recommendation for the use of certain data sets and / or categories is generally refrained from. Exceptions are data sets for timber and timber products from the Thünen Institute (Category B). These are representative of production in Germany, this means that they are based on specific production data for

numerous German plants and have been subjected to an external review. These data sets should preferably be used in the BNB for life cycle assessments, provided that no product-specific EPDs can be assigned and used for the wood products used.

### 2.2.5 Uncertainty penalties for generic datasets

ÖKOBAUDAT provides generic data for the calculation of life cycle assessments of buildings or constructions, e.g. in the framework of the Assessment System for Sustainable Building (Bewertungssystem Nachhaltiges Bauen, BNB). These can be used in the planning phase if the specific products are not yet known or if no specific data is available.

#### Concept of uncertainty penalties

In ÖKOBAUDAT, an uncertainty penalty is added to the indicator values of the generic datasets. The uncertainty penalties are consistently applied across all declared modules of the life cycle to all indicators marked with an “X” in Table 4. There are no uncertainty penalties imposed on indicators that represent material-inherent properties and "pure" additional information of the life cycle assessment.

Uncertainty penalties are applied via the uncertainty factor (UF); this is the sum of the uncertainty penalty (UP) and the base number 1:

Example:  $UP = 20\% = 0,2$ ;  $UF = 1 + UP = 1 + 0,2 = 1,2$

In the case of positive values, the UF is multiplied (= increase in the base value), negative values are divided by the UF (= reduction in the base value), e.g. increase of loads in module C3, reduction of credits in module D.

**Table 4: Application of uncertainty penalties (UP) on the indicators of EN 15804/A2**

Core environmental impact indicators	Unit	UP
Global Warming Potential total (GWP-total)	kg CO2 eq.	(X)*
Global Warming Potential fossil fuels (GWP-fossil)	kg CO2 eq.	X
Global Warming Potential biogenic (GWP-biogenic)	kg CO2 eq.	
Global Warming Potential land use and land use change (GWP-luluc)	kg CO2 eq.	X
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq.	X
Acidification potential, Accumulated Exceedance (AP)	mol H+ eq.	X
Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	kg P eq.	X
Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine)	kg N eq.	X
Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	mol N eq.	X
Formation potential of tropospheric ozone (POCP)	kg NMVOC eq.	X
Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	kg Sb eq	X
Abiotic depletion for fossil resources potential (ADP-fossil)	MJ	X
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	m3 world eq. deprived	X

**Table 4 (continued): Application of uncertainty penalties (UP) on the indicators of EN 15804/A2**

<b>Additional environmental impact indicators</b>	<b>Unit</b>	<b>UP</b>
Potential incidence of disease due to PM emissions (PM)	Disease incidence	X
Potential Human exposure efficiency relative to U235 (IRP)	kgBq U235 Äquiv.	X
Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe	X
Potential Comparative Toxic Unit for humans (HTP-c)	CTUh	X
Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh	X
Potential soil quality index (SQP)	dimensionless	X
<b>Indicators describing resource use</b>		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	X
Use of renewable primary energy resources used as raw materials (PERM)	MJ	
Total use of renewable primary energy resources (PERT)	MJ	
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	X
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	
Total use of non-renewable primary energy resources (PENRT)	MJ	
Use of secondary material (SM)	kg	
Use of renewable secondary fuels (RSF)	MJ	X
<b>Indicators describing resource use</b>		
Use of non-renewable secondary fuels (NRSF)	MJ	X
Net use of fresh water (FW)	m <sup>3</sup>	X
<b>Environmental information describing waste categories</b>		
Hazardous waste disposed (HWD)	kg	X
Non-hazardous waste disposed (NHWD)	kg	X
Radioactive waste disposed (RWD)	kg	X
<b>Environmental information describing output flows</b>		
Components for re-use (CRU)	kg	
Materials for recycling (MFR)	kg	
Materials for energy recovery (MER)	kg	
Exported electrical energy (EEE)	MJ	
Exported thermal energy (EET)	MJ	

\*) The uncertainty penalties for GWP-total are the sums of the uncertainty penalties for GWP-luluc and GWP-fossil.

### Calculation of uncertainty penalties

These uncertainty penalties shall give a conservative estimate of the environmental impact, assuming worst case conditions and compensating for uncertainties in data quality.

In order to determine these uncertainty penalties, the datasets are classified into three levels regarding completeness of the model and representativeness (in terms of technology, time and geography; see Table 5). Depending on the completeness and representativeness of data, uncertainty penalties of 10 %, 20 % or 30 %, respectively, are added. Datasets that do not meet the requirements of level 3 in terms of completeness and representativeness cannot be accepted in ÖKOBAUDAT or have to be improved.

**Table 5: Classification of datasets regarding completeness and representativeness**

Level	Completeness	Representativeness
1	<b>Product system largely complete</b>	<b>Representative</b> (in terms of technology, time and geography)
2	<b>Few processes / flows are missing</b>  The generator of the dataset has documented during modelling that not all products / processes have been completely recorded (e.g. use of auxiliary materials or supplies, in-house transports, small parts of system products, packaging estimated) or not all flows have been fully captured (e.g. certain emissions into waste water or air are incomplete, waste quantities are not fully recorded). In principle, errors that arise should be less than 5% deviation from a complete modelling and occur at most twice in a system model.	<b>Partly representative</b>  (in terms of technology, time and geography) For the system model either only the technological, only the temporal or only the geographical representativity can be documented. For instance, the very latest data of one plant with one type of production may be available for a product. Or a country's technology mix for a production type is used, but it's outdated. In principle, it should be ensured that no significant deviations (less than 10% in environmental impacts) can be expected from more up-to-date data, other types of production / technologies or geographical details (e.g. import mixes). The assessment is usually done by experts only.
Level	Completeness	Representativeness
3	<b>Important processes / flows are missing</b>  The generator of the dataset has documented during modelling that due to lack of information, processes relevant for the results (with regard to mass and environmental indicators) were ignored or result-relevant flows in air, water or soil are missing. Even though important processes or flows are missing in the system model, the resulting error should be less than 10% deviation from a complete modelling and should occur at most twice in a system model.	<b>Ignorance of representativeness</b>  Neither technology nor currentness nor geographical representation of the situation can be assessed. Deviations should be within the range of less than 20% with regard to environmental impacts. This classification is usually done by experts only.

For determining the uncertainty penalty, the lower rating is decisive (**Table 6**).

**Table 6: Uncertainty penalties**

Uncertainty penalty		Classification completeness		
		Level 1	Level 2	Level 3
Classification representativeness	Level 1	+ 10%	+ 20%	+ 30%
	Level 2	+ 20%	+ 20%	+ 30%
	Level 3	+ 30%	+ 30%	+ 30%

The uncertainty penalties are determined by the data provider (Sphera Solutions GmbH, formerly thinkstep) and are already included in the indicator values in ÖKOBAUDAT. The level of uncertainty penalties, including an explanatory statement for uncertainty penalties of 20 % or 30 %, is documented in the corresponding datasets.

### 2.2.6 Name of conformity system

Standards and / or other conformity systems with which the data set conforms can be indicated here. What must be specified in this data field in any case are



- the version of standard EN 15804 the data set is based on
- the standards which were the basis for the verification.

Note: Up to now, in the ILCD+EPD data format only “DIN EN 15804” has been implemented as source data set. With the adoption of the new ILCD+EPD data format v1.2, “EN 15804” is therefore to be understood as the version EN 15804:2012+A1:2013.<sup>9</sup> For data sets according to the new standard DIN EN 15804:2012+A2:2019 or DIN EN 15804:2012+A2:2019+AC:2021, “EN 15804+A2” is to be selected as the source data set.

### 2.2.7 ÖKOBAUDAT “Stamp”

ÖKOBAUDAT data sets are subject to a special quality management system: Initially, the data providers are accepted by the BBSR after the application and verification. Then content-related random checks are carried out. The data sets are checked for completeness and plausibility and the data providers are regularly checked. The BBSR only releases data for ÖKOBAUDAT after successfully completing quality management. This approval by the BBSR is an important quality feature.

The ÖKOBAUDAT data is used internationally and in various calculation tools. The so-called ÖKOBAUDAT stamp makes transparent which data sets belong to ÖKOBAUDAT and helps to distinguish them from others which do not meet the ÖKOBAUDAT requirements or have not been checked by the BBSR.

Only the BBSR is authorized to issue the ÖKOBAUDAT stamp. The BBSR administrator assigns the stamp to the data in the ÖKOBAUDAT backend before approval. In the public detailed view of the data set, the ÖKOBAUDAT stamp “This data set is part of ÖKOBAUDAT” is displayed at the top. In addition, the ÖKOBAUDAT logo is displayed as the page background.

## 2.3 Modules, indicators and parameters

### 2.3.1 Life cycle modules in accordance with DIN EN 15804 in ÖKOBAUDAT

In DIN EN 15804 the life cycle of building products is divided into modules A to D (Figure 2).

Product stage			Construction process stage		Use stage					End of life stage				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Construction- installation process	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling - potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
					B6	Operational energy use								
					B7	Operational water use								

Figure 2: Life cycle modules in accordance with DIN EN 15804

The ÖKOBAUDAT datasets list only those modules for which data are available.

As in DIN EN 15804, Modules A1 to A3 (product stage) may be indicated individually and/or in aggregated form; all other modules must be presented individually. The total of A1 to A3 must be calculated from the individual values A1 to A3 (no rounded data).

<sup>9</sup> The renaming of the previous selection value “EN 15804” to “EN 15804+A1” was not done, because data sets according to EN 15804+A1 would have different values (designations) in different revisions of the data format and because the transition period for the coexistence of A1 and A2 data sets is assumed to be relatively short.

If no data is available for individual modules, these modules will not be presented in the ÖKOBAUDAT frontend. “0” means a calculated or proven “0”.

### 2.3.2 Indicators

Basically, the environmental indicators required in accordance with DIN EN 15804+A1 or DIN EN 15804+A2 are shown in ÖKOBAUDAT. Declaration of the “Additional environmental impact indicators” according to EN 15804+A2 is voluntary. Their specification in ÖKOBAUDAT is only permitted if these indicators are declared in the EPD.

If, as an exception, no data is available for individual indicator values, the value is marked as not declared (“ND”) in the ÖKOBAUDAT frontend. “0” means a calculated or proven “0”.

At least three significant decimal places must be entered.

#### Restrictions (“Disclaimers”)

EN 15804+A2 specifies restrictions (“disclaimers”) for individual impact indicators (7.2.3.3, Table 5):

**Table 7: Restrictions for individual impact indicators according to EN 15804+A2**

Indicator	Abb.	Disclaimer
Potential Human exposure efficiency relative to U235	IRP	1
Abiotic depletion potential for non-fossil resources	ADP- minerals&metals	2
Abiotic depletion potential for fossil resources	ADP-fossil	2
Water (user) deprivation potential, deprivation-weighted water consumption	WDP	2
Potential Comparative Toxic Unit for ecosystems	ETP-fw	2
Potential Comparative Toxic Unit for humans	HTP-c	2
Potential Comparative Toxic Unit for humans	HTP-nc	2
Potential Soil quality index	SQP	2

Disclaimer 1 — This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 — The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

These restriction notices are stored in ÖKOBAUDAT with the respective indicators and do not have to be supplied with the data set.

#### Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)

EN 15804+A2 contains a unit error in the definition of the EP-freshwater. The correct unit should be “kg P equiv.” (i.e. phosphorus). In the standard, however, the wrong unit “kg PO4 equiv.” (i.e. phosphate) is given. The unit erroneously stated in EN 15804+A2 for the EP-freshwater “kg PO4 equiv.” must be replaced by “kg P equiv.”. The calculation must be carried out correctly using the correct characterisation factors for “kg P equiv.”.

### 2.3.3 Biogenic carbon content

For data sets according to EN 15804+A2, the flow properties “Biogenic carbon content in product” and “Biogenic carbon content in accompanying packaging” are mandatory (see also section 2.4.1 ).

Exception rule:

According to EN 15804+A2, the declaration of biogenic carbon content may be omitted if the mass of biogenic carbon containing materials in the product or in the packaging is less than 5 % of the total mass. In this case, the value “ND” is displayed in the ÖKOBAUDAT frontend. However, since the data format for flow properties only allows numerical values, a workaround is required for the data delivery to ÖKOBAUDAT:

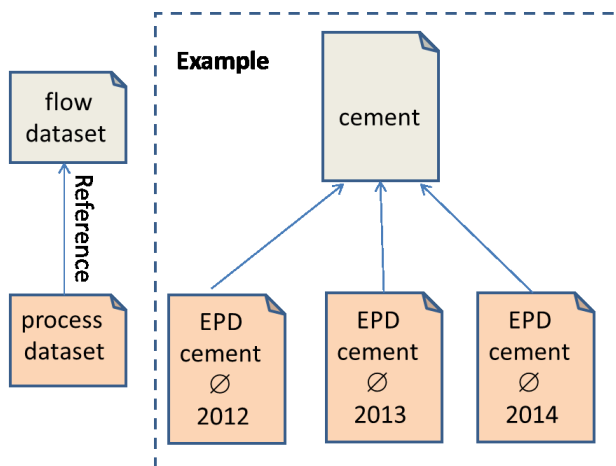
- The specification of the biogenic carbon content is mandatory. If the exception rule according to EN 15804+A2 applies, a “-1000” must be entered instead of “ND”. “0” means a calculated or proven “0”.

## 2.4 Material properties

### 2.4.1 Concept of reference product ("Reference flow")

An EPD dataset contains the environmental parameter values for all life stages of the product as well as the relevant metadata (description of processes, material properties). This is composed of two physical datasets: the actual "EPD dataset" ("process dataset" of ILCD+EPD data format) and the product flow dataset of the reference product ("flow dataset" of ILCD format).

Each EPD dataset is assigned exactly one "reference flow". In contrast, a "reference flow" can be assigned to several EPD datasets. The separation of the different product information allows the modelling of product hierarchies, in which several concrete process datasets can represent a "reference product".



**Figure 3: Every product dataset is composed by a flow dataset and a process dataset.**

The reference flow stores the characterizing properties of the product. These are: name, classification (i.e. ÖKOBAUDAT main product categories), version, UUID, last change, flow type (here always "product") and flow properties (i.e. declared unit).

The flow properties comprise a number of possible properties (e.g. technical properties as gross density – see 2.4.2 Material properties – or “environment-oriented ones” like “Biogenic carbon content” – see 2.3.3), which can be extended as desired.

If characteristic properties of the product change, such as the declared unit or the gross density, a new reference flow must be created.

## 2.4.2 Material properties

The following material properties are currently supported by the technical infrastructure:

**Table 8: Material properties**

Parameter	Unit	Description
Bulk density	kg/m <sup>3</sup>	Mass in kilograms per volume in cubic meters
Surface weight	kg/m <sup>2</sup>	Mass in kilograms per area in square meters
Gross density	kg/m <sup>3</sup>	Mass in kilograms per volume in cubic meters
Layer thickness	m	Length in meters
Linear density	kg/m	Mass in kilograms per length in meters
Conversion factor	kg/unit	Mass in kilograms per declared unit

The specification of a conversion factor in mass is mandatory in ÖKOBAUDAT. If the indicator value for the declared unit is divided by the conversion factor, the result must be the indicator value for 1 kilogram of product. The conversion factor must not contradict any other values.

In the document "[ÖKOBAUDAT Instructions on material information](#)" the material specification, depending on the declared unit, which is required for building life cycle assessment with eLCA is described in detail. The following table provides an overview of the declared units and the associated conversion factors:

**Table 9: Conversion factors depending on the declared unit**

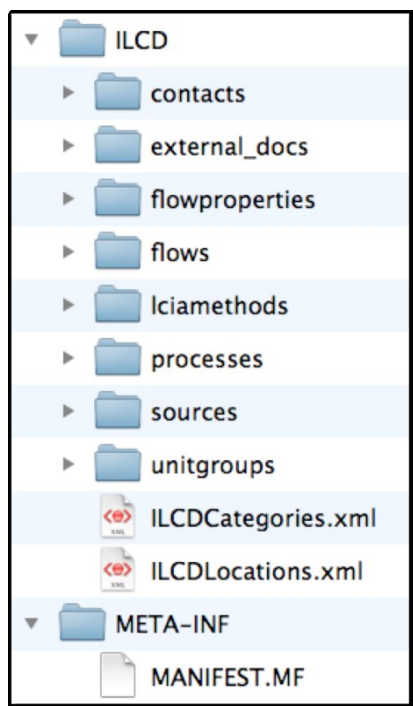
Declared Unit	Conversion factor
kg	-
m <sup>3</sup>	kg/m <sup>3</sup> (= density)
m <sup>2</sup>	kg/m <sup>2</sup> (= surface weight)
m	kg/m (= linear density)
piece	kg/piece (= piece weight)

Note: In the ILCD+EPD format the material property is defined in the product flow and not in the EPD dataset (see section 2.4.1 Concept of Reference flow above).

## 2.5 References

All product, contact and source datasets referenced from the actual EPD dataset and, if necessary, connected external documents ("external\_docs" like for example PDF documents and diagrams) must be provided if these are not already contained in ÖKOBAUDAT. Alternatively this data can also be provided on a publicly accessible internet web server. The corresponding links must be specified in the dataset. It must be ensured that these documents are available there permanently and long-term and in the appropriate version.

Several datasets can also be summarized in a ZIP archive. This must be structurally compliant with the ILCD standard for ZIP archives, i.e. contain an "ILCD" folder with subfolders for each dataset type, as shown in the following figure:



**Figure 4: ILCD standard for ZIP archives**

The file names of external documents should also be unique (e.g., include dataset name, UUID, or equivalent). Blank spaces, umlauts or special characters (except for hyphens and underscores) should not be used in the names of external documents.

## 3. Data management

### 3.1 Updates, changes and archiving

#### 3.1.1 Updates and archiving

In mid-2018, the specifications for the release of a new ÖKOBAUDAT version were changed: Accepted EPD programme operators can now transfer datasets to ÖKOBAUDAT on an ongoing basis. A new ÖKOBAUDAT release still takes place approx. once a year with the update of the generic datasets.

On-going minor additions or corrections are dated and documented in a correction list. At regular intervals the current version is documented in the archive.

These ÖKOBAUDAT database versions are uniquely identified by the year number, issue number of the corresponding year and date, e.g. ÖKOBAUDAT 2019-I of 27.02.2019. Data from previous versions is archived online to ensure no information is lost. These databases can be accessed via the "Database / Archive" tab and downloaded in XML format as ZIP or as CSV datasets. Browsing through these databases on the ÖKOBAUDAT platform is no longer possible.

#### 3.1.2 Valid time of datasets and handling of expired datasets

Upon initial delivery the datasets are checked formally (all) and contentwise (random samples) for conformity with the ÖKOBAUDAT requirements. The successful inclusion of data in the ÖKOBAUDAT is then valid until its expiry date according to the EPD. The data providers are integrated into the further development of ÖKOBAUDAT through the ÖKOBAUDAT Users Advisory Group and thus directly learn about adaptations of the ÖKOBAUDAT requirements. The datasets must be adapted to the latest ÖKOBAUDAT requirements as soon as possible, but at the latest after expiry of the valid time.

EPD datasets are in principle removed from ÖKOBAUDAT upon expiry of the valid time. In exceptional cases, i.e. in the event of impending elimination of crucial datasets in the context of building LCA, BMWSB / BBSR reserves the right to keep these datasets in ÖKOBAUDAT in order to ensure calculations of building life cycle assessments.

The user can filter datasets by year of expiry in the product search. The expiration year is also noted in the data sheet under "Data set valid until".

### 3.1.3 Modifications in datasets

As the operator of the ÖKOBAUDAT database, BMWSB and BBSR do not make any changes to datasets, but instead put the respective data provider (e.g. EPD programme operator) in charge. Modified datasets get a new version number and are listed as "New Datasets".

## 3.2 Software and interfaces

### 3.2.1 Soda4LCA

In technical terms, the ÖKOBAUDAT database is based on the software soda4LCA and is equipped with a standardised interface (API) for data exchange. Via the interface, other applications and software tools can read datasets from ÖKOBAUDAT and import them directly into ÖKOBAUDAT with the corresponding authorisations. The API documentation is provided on the [ÖKOBAUDAT website](#)<sup>10</sup> in HTML and PDF formats.

Further information for programmers and the software repository for soda4LCA can be found at <http://www.iai.kit.edu/soda4LCA>

Examples of queries via the API can be found in section 3.4.4.

### 3.2.2 EPD Editor

In the EPD Editor, a stand-alone software tool, datasets in the ILCD+EPD format can be generated. Alternatively data can be delivered to the ÖKOBAUDAT backend directly via the online interface.

Note: The EPD Editor is based on the previously available plugin for openLCA and has replaced it since 2017. While the EPD Editor is constantly being developed, the further development of the openLCA plugin was discontinued.

The link to the EPD Editor and the download of the corresponding manual can be found on the ÖKOBAUDAT website under [Downloads](#)<sup>10</sup>.

From version 5.0, the new ILCD + EPD data format in revision v1.2 and the indicators according to EN 15804+A2 are implemented in the EPD Editor. The previous versions of the EPD Editor can only be used for data sets in accordance with EN 15804+A1 and the former ILCD+EPD data format.

### 3.2.3 Validation

Compliance of datasets with ILCD+EPD format can be validated using a standalone, cross-platform validation tool which is available on the ÖKOBAUDAT website under [Downloads](#)<sup>10</sup>. It is important to always ensure that the current check profile (which can also be found on the website) is used (see also section 3.3.4 Validation of datasets).

---

<sup>10</sup> <https://www.oekobaudat.de/en/service/downloads.html>

### 3.3 Data delivery to ÖKOBAUDAT

#### 3.3.1 Content requirements for importing datasets into ÖKOBAUDAT

ÖKOBAUDAT usually sources its data from EPD programme operators. Before datasets are read into ÖKOBAUDAT, authorisation must be given by the BBSR. Details on the content requirements and the procedure for importing datasets can be found in [Principles for the acceptance of LCA data in the online database ÖKOBAUDAT<sup>11</sup>](#).

#### 3.3.2 Ways to import data

If the check of the contents for the acceptance of life cycle assessment data has been successfully completed, corresponding access data for importing the data can be requested from the BBSR. The programme operator is responsible for the EPD generation and verification and then transfers the data to the ÖKOBAUDAT.

There are in essence two ways to import data:

1. Import via the EPD editor
2. Direct import via an interface

In any case, prior validation of the datasets is required (see section 3.3.4)

##### 1. Import via the EPD editor

The LCA data can be entered in the freely available "EPD editor" and imported from there into the ÖKOBAUDAT backend.

The EPD editor including operating instructions is available under [Downloads<sup>11</sup>](#).

##### 2. Direct import via an interface

EPD programme operators can import life cycle assessment data directly into ÖKOBAUDAT online from their own database systems via a suitable interface.

#### 3.3.3 Selection of a product category

If there is no suitable product category available in ÖKOBAUDAT, the responsible data provider (EPD programme operator) can propose to the BBSR the establishment of a new category. The proposal must include the German and English designation of the category. If necessary, the data provider coordinates with the dataset owner. If the BBSR accepts the category (categories), it will be added by BBSR and the data provider will be informed. The dataset can now be imported.

If the BBSR does not accept the proposal, the data supplier will deliver a new proposal. If this proposal is also not accepted, further coordination is required. The datasets cannot be submitted until an acceptable solution for the product category is found.

The BBSR is responsible for a timely implementation.

#### 3.3.4 Validation of datasets

Before datasets are transferred to the ÖKOBAUDAT, the data format and product category assignment must be validated for correctness.

A check profile is provided for this validation. There are currently two different ÖKOBAUDAT check profiles for data sets according to EN 15804+A1 / ILCD+EPD data format v1.1 and for data sets according to EN 15804+A2 /

---

<sup>11</sup> <https://www.oekobaudat.de/en/service/downloads.html>

ILCD data format v1.2, respectively.

The latest version of the stand alone validation tool as well as a short user manual is available under [Downloads](#)<sup>12</sup>. The stand-alone validation tool runs on a cross-platform basis, is highly user-friendly and intuitive.

In order to check the files against the specific format extensions and categories of ÖKOBAUDAT, the check profile must be stored in the validation function or tool respectively. This can also be downloaded from the ÖKOBAUDAT website<sup>12</sup>.

Only after successful validation can the data provider export the data to the backend of ÖKOBAUDAT.

### 3.3.5 Workflow for data delivery in detail

1. Data provider generates ÖKOBAUDAT compliant datasets. This means:

- a) The data provider only submits datasets that comply with the ÖKOBAUDAT principles. The data supplier must check this conformity for each dataset before handover ("content-related check")
- b) The data provider submits the datasets in the current ÖKOBAUDAT format (ILCD + EPD).
- c) Prior to data transfer, the data provider checks the datasets with the tools provided by the BBSR in the latest version (validation tool).

2. Data provider takes action if the check report shows incorrect datasets:

- a) "Category" error: select existing product category or, if necessary, propose new product category to BBSR (see 3.3.3)
- b) "Module D without C" error: Datasets with a module D without a module C are no longer accepted since 2019.
- c) "Forbidden negative Value" error: Data provider checks the displayed indicator values for non-permitted negative values and carries out corrections. Datasets with this error will not be accepted.
- d) "No material properties declared" error: The data provider prepares a list of the relevant datasets with a supplementary proposal and hands it over to the BBSR in advance. The BBSR informs the data provider which properties are missing or to be supplemented (specific to each dataset).

3. Data provider transfers data:

- a) The data provider prepares a final check report<sup>1)</sup> and sends this to the BBSR.
- b) The data provider transfers the data to the BBSR.

4. BBSR checks the delivered data:

- a). The BBSR checks the data technically in the ÖKOBAUDAT INBOX.
  - i. Detected errors are reported to the data provider; if the errors are not corrected or resolved, the datasets will not be published.
- b) The BBSR checks randomly selected datasets in content<sup>2)</sup>.
  - i. Error-free datasets are published.
  - ii. Datasets with errors are not published.
  - iii. The data provider has the possibility to correct and re-deliver the datasets.

1) e.g. screen shot

2) Random check of datasets

---

<sup>12</sup> <https://www.oekobaudat.de/en/service/downloads.html>



The period of time from the delivery of error-free datasets to the release and publication by the BBSR is estimated at approx. 6 weeks.

## 3.4 Using ÖKOBAUDAT datasets

### 3.4.1 Use of the ÖKOBAUDAT datasets in life cycle assessment tools

With the help of life cycle assessment (LCA) tools, the entire life cycle of a building can be reconstructed with the ÖKOBAUDAT database.

BBSR provides the eLCA<sup>13</sup> online LCA tool free of charge in German, English and Spanish. Here the basis for the calculation and assessment is the calculation rules in the BNB system, which basically follow the European building LCA standard EN 15978. To ensure that ÖKOBAUDAT building material datasets according to EN 15804+A1 that do not represent the entire life cycle can also be used directly in life cycle calculations, the missing data is completed in eLCA with the aid of generic disposal datasets (and the required ÖKOBAUDAT version is selected here in each case). Datasets according to EN 15804+A2 usually also include modules C and D.

Other LCA tools and BIM applications worldwide have read in the ÖKOBAUDAT datasets.

### 3.4.2 Terms of use

The BMWSB provides the ÖKOBAUDAT data free of charge and without any restrictions. They are primarily intended for performing life cycle assessment of buildings.

Data in ÖKOBAUDAT are provided with great care. The data providers undertake to comply with the conditions of admission. The data is subjected a random check for conformity, completeness and consistency. However, BMWSB/BBSR assume no responsibility for the accuracy of the data. Responsibility for content and values remains with the owner of the records. A liability for deficiencies in the data, in particular also for consequential damages, is not taken over by BMWSB/BBSR. This also applies in the case of the transfer of data to data users (third parties). The free distribution of unmodified data is permitted, provided that the source is named.

With regard to the correct use of the ÖKOBAUDAT datasets for construction products, reference is made to DIN EN 15804: "[...] comparison of the environmental performance of construction products [...] shall be based on the product's use in and its impacts on the building, and shall consider the complete life cycle (all information modules)."

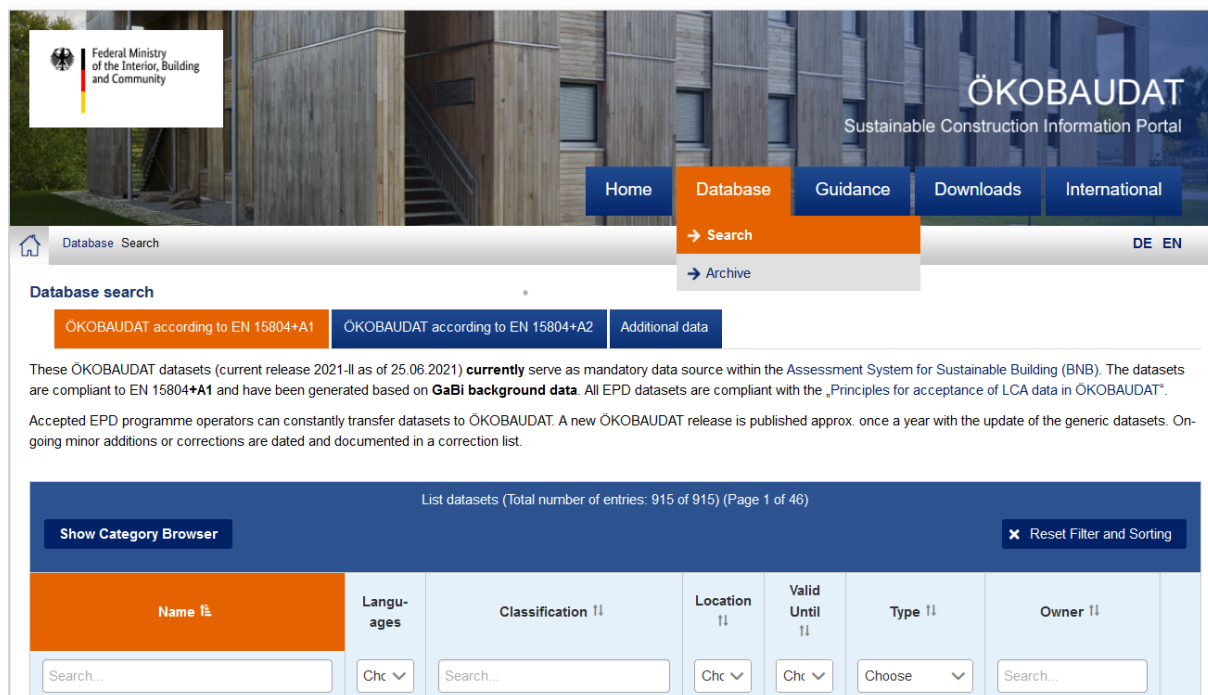
ÖKOBAUDAT is not permitted for performing life cycle assessment of building products.

### 3.4.3 Data search in the ÖKOBAUDAT database

The ÖKOBAUDAT database can be found on the website under the "[Database](#)"<sup>14</sup> tab. In the start setting you can see the three database views "ÖKOBAUDAT according to EN 15804+A1", "ÖKOBAUDAT according to EN 15804+A2" and "Additional data", in which the user can alternatively browse. To ensure consistency, BNB-compliant data must be based on the background database GaBi. These data can be found under "ÖKOBAUDAT". Currently, the data sets "ÖKOBAUDAT according to EN 15804+A1" are still used in the BNB system. It is planned to switch to the data stock "ÖKOBAUDAT according to EN 15804+A2" soon. The "additional data" were generated on the basis of the background database "ecoinvent". With this exception, this data fully adheres to the ÖKOBAUDAT requirements in terms of quality and data format and, in justified cases, can therefore be used for BNB life cycle assessments.

<sup>13</sup> <https://www.bauteileditor.de/>

<sup>14</sup> <https://www.oekobaudat.de/en/database/database-search.html>



**Figure 5: Data search and filtering in ÖKOBAUDAT**

The ÖKOBAUDAT database system with its search and filter functions enables user-friendly online searches of the datasets. With the URL <https://www.oekobaudat.de/en/database/database-search.html> or by selecting "Search" in the "Database" tab, the data search in the ÖKOBAUDAT is called up (Figure 5).

For targeted searching, the database can be searched and filtered according to the following criteria:

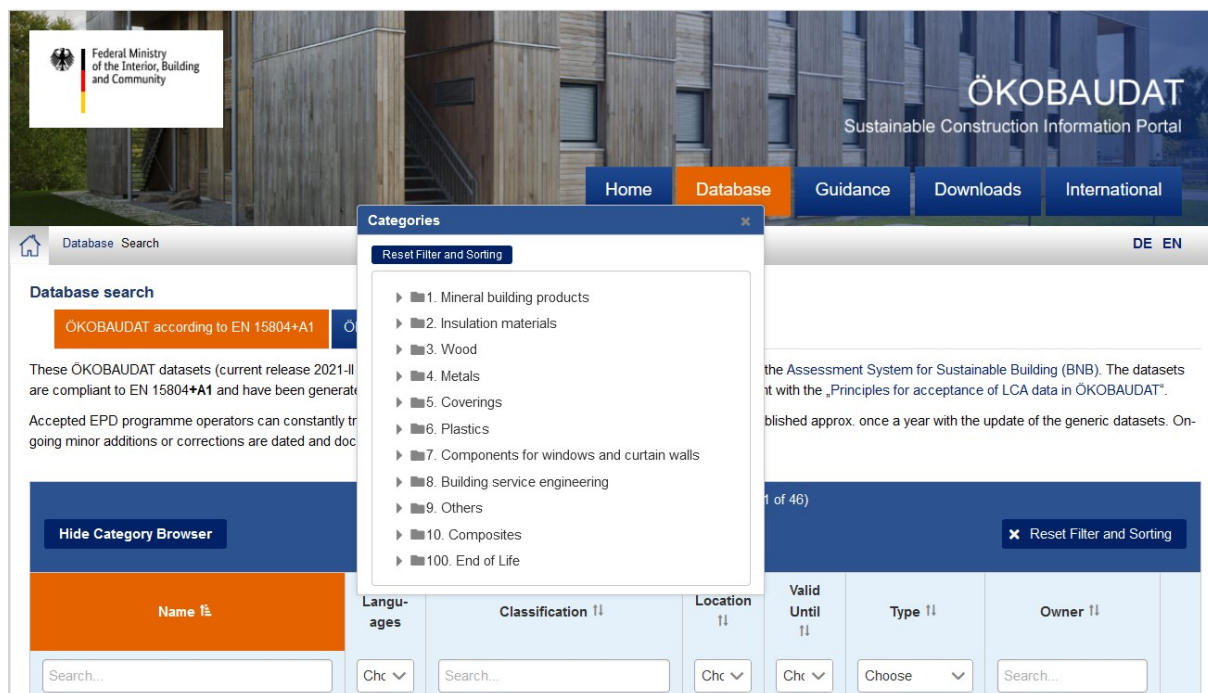
- name of dataset (free text search)
- available language
- ÖKOBAUDAT category (free text search)
- geographical representativeness (country or region code)
- valid time (year of expiration)
- dataset type ("subtype")
- owner of dataset (free text search)

The search results list then contains all datasets matching the specified search criteria. All columns can be sorted in ascending or descending order.

By clicking on the name of the dataset or the link "View" in the column "Export" the familiar detail view of the respective dataset can be called up. Downloading is possible by selecting the link "Download".

Moreover, by selecting the "Show Category Browser" button, an overlay window can be displayed in which the user can navigate through the category structure by folding and unfolding the category trees, in order to select a specific category or even just to see the existing categories. If a specific category is selected, the corresponding datasets are displayed in the data browser. Clicking on the "Reset" button in the category browser returns the data browser to the display of all datasets (see Figure 6).

To reset all filters and sorts, the global button "Reset Filter and Sorting" can be used.



**Figure 6: Overlay window for selection of construction product category**

### 3.4.4 Access to the ÖKOBAUDAT database

For read access to ÖKOBAUDAT via the service interface, the base URL <https://www.oekobaudat.de/OEKOBAU.DAT/resource> has to be entered as the address in the software tools provided for this purpose. The interface allows data to be queried according to various criteria. Some API accesses to ÖKOBAUDAT are shown below as an example. The complete API documentation is available for download on the ÖKOBAUDAT website and can also be found in the soda4LCA software repository (link see section 3.2.1).

*List of all data stocks:*

<https://www.oekobaudat.de/OEKOBAU.DAT/resource/datastocks/>

*All data sets from ÖKOBAUDAT release 2020-II:*

<https://www.oekobaudat.de/OEKOBAU.DAT/resource/datastocks/448d1096-2017-4901-a560-f652a83c737e/processes/>

*All data sets from ÖKOBAUDAT release 2020-II according to EN 15804(+A1):*

<https://www.oekobaudat.de/OEKOBAU.DAT/resource/datastocks/448d1096-2017-4901-a560-f652a83c737e/processes?search=true&compliance=b00f9ec0-7874-11e3-981f-0800200c9a66>

*All data sets from ÖKOBAUDAT release 2020-II according to EN 15804+A2 (currently none):*

<https://www.oekobaudat.de/OEKOBAU.DAT/resource/datastocks/448d1096-2017-4901-a560-f652a83c737e/processes?search=true&compliance=c0016b33-8cf7-415c-ac6e-deba0d21440d>

The identification numbers for different ÖKOBAUDAT versions can be provided on request<sup>15</sup>.

<sup>15</sup> wb6@bbr.bund.de

The complete ÖKOBAUDAT database can be downloaded in XML format as a ZIP file or as a CSV extract. The data stock can be filtered into data sets according to EN 15804+A1 and EN 15804+A2 via the "Conformity system" column.

The ÖKOBAUDAT versions released in recent years can also be found under the "Database/Archive" tab.

No authorisation is required to export data from the database.

## 4. References

### 4.1 Links to further software and instructions

- ÖKOBAUDAT: [www.oekobaudat.de](http://www.oekobaudat.de)
- eLCA: <https://www.bauteileditor.de/>
- Link to the EPD editor and manual: <https://www.oekobaudat.de/en/service/downloads.html>
- Link to the validation tool: <https://www.oekobaudat.de/en/service/downloads.html>

### 4.2 Links to documents

On the ÖKOBAUDAT website, the following additional descriptions and instructions are published under [Downloads](#)<sup>16</sup>, each in the current version:

- Principles for the acceptance of LCA data in the online database ÖKOBAUDAT
- Table of definitions, ILCD+EPD Data format
- FAQ: Table of Definitions ILCD+EPD Data Format v1.2 for InData Compliance CP-2020 and CPEN2018v2 (Construction Products according to EN 15804)
- ÖKOBAUDAT Instructions on material information
- Brochure "ÖKOBAUDAT - Basis for the building life cycle assessment"

### 4.3 Standards

DIN EN ISO 14025	Umweltkennzeichnungen und –deklarationen – Typ III Umweltdeklarationen – Grundsätze und Verfahren (ISO 14025:2006), German and English version EN ISO 14025:2011 ( <i>Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures</i> ), October 2011
DIN EN 15804+A1	Nachhaltigkeit von Bauwerken – Umweltproduktdeklarationen – Grundregeln für die Produktkategorie Bauprodukte, German version EN 15804:2012+A1:2013, date of issue: 2014-07 (Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products)
DIN EN 15804+A2	Nachhaltigkeit von Bauwerken – Umweltproduktdeklarationen – Grundregeln für die Produktkategorie Bauprodukte, German version EN 15804:2012+A1:2013+A2:2019-10+AC:2021, date of issue: 2022-03 (Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products)
DIN EN 15978	Nachhaltigkeit von Bauwerken – Bewertung der umweltbezogenen Qualität von Gebäuden – Berechnungsmethode, German version EN 15978:2011, January 2012 ( <i>Sustainability of construction works – Assessment of Environmental Performance of Buildings – Calculation Method</i> )

---

<sup>16</sup> <https://www.oekobaudat.de/en/service/downloads.html>

## 5. Table of figures

Figure 1: Digital data exchange via standardised processes – data generation, delivery, distribution and use. Source: BBSR .....	6
Figure 2: Life cycle modules in accordance with DIN EN 15804 .....	17
Figure 3: Every product dataset is composed by a flow dataset and a process dataset. ....	19
Figure 4: ILCD standard for ZIP archives .....	21
Figure 5: Data search and filtering in ÖKOBAUDAT .....	26
Figure 6: Overlay window for selection of construction product category .....	27

## 6. List of tables

Table 1: Overview of the versions of Compliance Rules of the InData Initiative for the provision of EPD data sets of construction products .....	10
Table 2: Example of product categories in ÖKOBAUDAT. Source: BBSR.....	12
Table 3: Data categories and dataset types in ÖKOBAUDAT .....	13
Table 4: Application of uncertainty penalties (UP) on the indicators of EN 15804/A2 .....	14
Table 5: Classification of datasets regarding completeness and representativeness .....	16
Table 6: Uncertainty penalties .....	16
Table 7: Restrictions for individual impact indicators according to EN 15804+A2 .....	18
Table 8: Material properties.....	20
Table 9: Conversion factors depending on the declared unit .....	20

## 7. Glossary

ILCD data format	International Reference Life Cycle Data System, Joint Research Centre (JRC) of the European Commission
ILCD+EPD data format	Adaptation of the ILCD data format with extensions for EPD data that cannot be presented in the ILCD format
specific dataset	Manufacturer/manufacturing company-specific dataset for a specific product of one factory
average dataset	Average datasets provided by industrial associations, several companies, several works or several products (i. e. on the basis of data on the industrial production of companies)
representative dataset	Data that is representative for a country/region (for example average for Germany)
template dataset	Unspecific datasets for specific products created on the basis of a “template EPD”
generic dataset	Generic datasets in accordance with EN 15804 and other data that is not modelled on the basis of industrial data (for example on the basis of literature, expert knowledge, etc.)
Life Cycle Assessment/LCA	Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (definition according to EN 15804)
EPD	Environmental product declarations (EPDs) provide environmental data on the basis of predetermined parameters. An EPD contains life cycle assessment data as an essential element.
EN 15804	EN 15804 “Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products” provides the key rules for drawing up environmental product declarations (EPDs) for construction products.
eLCA	Online software provided by the BBSR for building life cycle assessment
BNB	Assessment System for Sustainable Building (Bewertungssystem Nachhaltiges Bauen) of the Federal Ministry for Housing, Urban Development and Building; integral quantitative assessment method for office, administrative, teaching and laboratory buildings
InData	“International Open Data Network for Sustainable Construction”; informal, non-profit working group of interested stakeholders with the main objective of harmonising the digitalisation of EPDs and life cycle assessment results in the construction sector
Users Advisory Group	Advisory body for ÖKOBAUDAT on topics like the enhancement of ÖKOBAUDAT, recommendations regarding the inclusion of LCA data, role of ÖKOBAUDAT within the Assessment System for Sustainable Building or digitalisation