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Principles for the acceptance of LCA data in the online database ÖKOBAUDAT

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The original of this document has been drawn up in German (Grundsätze zur Aufnahme von Ökobilanzdaten in die Online-Datenbank ÖKOBAUDAT). The German version shall be the authentic one and prevail over the English one in all matters of interpretation and construction. The English version shall be deemed to be only a translation for information purposes.

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Principles for the acceptance of LCA data in the online database ÖKOBAUDAT

1 General information

1.1 About ÖKOBAUDAT

The ÖKOBAUDAT platform is provided as a standardized database for ecological evaluations of buildings by the Federal Ministry for Housing, Urban Development and Building (BMWSB). Building materials, construction and transport processes are described regarding their ecological effects.

The provided data comply with DIN EN 15804 'Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products'. ÖKOBAUDAT can be found at www.oekobaudat.de. ÖKOBAUDAT is not designed for performing life cycle assessment of building products. In ÖKOBAUDAT, the information is presented in form of datasheets comprising numerical data as well as textual information. The package of data and information to be delivered is called 'LCA data set'.

1.2 The European standard DIN EN 15804

The European standard DIN EN 15804 provides basic product category rules (PCR) for type III environmental declarations (EPD) for construction products of all kinds. This standard can be used for construction products, processes and services. In recent years, EN 15804 has been largely harmonised with the Product Environmental Footprint (PEF) and the new DIN EN 15804:2012+A2:2019 (hereinafter "EN 15804+A2") has been published in February 2020. This replaces the previous version DIN EN 15804:2012+A1:2013 (hereinafter "EN 15804+A1").

For a transition period, data based on the previous version of the standard (DIN EN 15804+A1) are also shown on the ÖKOBAUDAT platform. The two databases are strictly separated from each other in the front end (for details see chapter 5.1.)

1.3 InData Working Group (International Open Data Network for Sustainable Construction)

The „International Open Data Network for Sustainable Construction“, „InData“ in short, was founded in 2015 on the initiative of the BBSR. 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. The common ILCD+EPD 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>.

In addition, InData has stipulated conformity rules for the provision of EPD datasets for construction products (Compliance Rules for Construction Products, CP for short). These conformity rules in the versions CPEN2018 and CP-2020 are part of the ÖKOBAUDAT rules (for details see Chapter 5.2).

2 The principles at a glance

2.1 Preliminary remarks

The principles for the acceptance of LCA data in the online database ÖKOBAUDAT were defined by BMWSB / BBSR as the owner of ÖKOBAUDAT and discussed and agreed on in the ÖKOBAUDAT users advisory group¹. References to 'DIN EN 15804' always relate to the most recent version (currently DIN EN 15804:2012+ A1:2013).

2.2 Overview of essential requirements

The following essential requirements apply for acceptance of LCA data in ÖKOBAUDAT:

- The required declarations / information shall be fully delivered (section 4.4 and 6).
- The data have been generated in compliance with DIN EN 15804.
- The data have been verified by independent third party (external verification according to ISO 14025 or external critical review). Non-reviewed data are not accepted in ÖKOBAUDAT.
- Relevant changes to the programme and verification rules or rules of the external review are reported immediately to the BMWSB / BBSR (section 4.3.1).
- The datasets shall preferably be delivered in German language / nomenclature. The data fields "Name" and "Technical purpose of product or process" must also be supplied in German and English (section 4.3.2).
- The datasets shall be delivered in the prescribed data format (ILCD+EPD, section 4.3.3).
- The owner of the dataset has released the data to be published in ÖKOBAUDAT (section 4.3.7).
- The data provider can provide information within a reasonable time if there are significant changes when the EPD is renewed (section 4.3.8).
- The ÖKOBAUDAT requirements for modelling and calculation of indicators shall be fulfilled (section 5).
- Before delivery, the datasets are checked using the Validation Tool.
- Note: Datasets for the Assessment System for Sustainable Building (BNB) shall be based on the background database GaBi.

Note: The list contains essential requirements for the acceptance of LCA data in ÖKOBAUDAT. The compilation is not complete. The whole document 'Principles for the acceptance of LCA data in the online database ÖKOBAUDAT' has to be considered.

¹ current formation of the users advisory group ÖKOBAUDAT: <http://www.oekobaudat.de/en.html>

2.3 Change documentation

Compared to the version of October 4th, 2021, the following changes have been incorporated into the principles:

- Federal Ministry for Housing, Urban Development and Building (BMWSB) (formerly BMI)
- Alternative texts for images
- Information about InData updated (chapters 1.3 and 5.2)
- Standards citations updated

Compared to the version of April 7th, 2020, the following changes have been incorporated into the principles:

- Comprehensive editorial integration of the new version of the standard EN 15804 + A2 and the InData requirements.
- Restructuring of the chapters (Chapter 1.4 → Chapter 2; Chapter 3 Criteria of acceptance of LCA data subdivided into Chapter 4 Criteria of acceptance for data suppliers and Chapter 5 Requirements for the modeling)
- Chapter 2.2 (previously 1.4.2): overview of essential regulations has been revised.
- Chapter 3: texts moved
- Chapter 3.3: Adaptation regarding uncertainty penalties (for more detailed information, see ÖKOBAUDAT manual)
- New chapter 4.3.5: Validity status of the datasets
- New chapter 4.3.6 Previous dataset version
- Chapter 5 (previously 3.3.): Requirements for the modeling
 - Requirements according to EN 15804 + A2 incorporated, deviations for EN 15804 + A1
 - New regulations:
 - Description of the scenarios – mandatory
 - Calculation PERM, PENRM – reformulated
 - Modules A1-A3– new rules for dealing with output flows
 - Modules C and D – Supplement with for modeling the disposal phase
- Chapter 6: paragraph added regarding the end of the recognition process

3 Categories of data

In general, LCA datasets can be distinguished by the categories according to Table 1:

Table 1: Categories of LCA Datasets

Category	Description
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 (B1) or LCA data with external critical review (B2), according to DIN EN 15804, but not generated in an EPD programme according to DIN EN ISO 14025
Category C	LCA data compliant to DIN EN 15804, non-reviewed (no verification or external critical review)
Category D	LCA data not compliant to DIN EN 15804

In principle, datasets of category A and category B are accepted in ÖKOBAUDAT.

In addition, a distinction is made between the following dataset types, which can apply to each data category:

- specific dataset - manufacturer/manufacturing company-specific dataset for a specific product of one factory¹⁾
- 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'²⁾

¹⁾ Project specific datasets are a special form of specific datasets. These are generated for product configurations that are specific to a specific project (e.g. building project) - usually automatically on the basis of pre-verified systems.

²⁾ Template EPD – For products with a similar material composition, the product with the greatest potential environmental impact (worst case product) may be selected and declared representatively of every other product in the same class or group. This type of declaration is also referred to as a worst case EPD. For products from the same class or group, individualised EPDs can then be issued, which differ from the worst case EPD only in the specific product data. Typically, template EPDs are created by associations that support their members in the area of sustainability in this way and make the resulting template EPDs accessible to all members.

The dataset type must be specified in the dataset.

The data category is decisive for the acceptance criteria. It is not specified in the dataset.

3.1 Datasets Category A (EPD with programme operator)

Datasets of category A are LCA data which have been generated in the frame of an environmental product declaration (EPD) with external verification according to DIN EN 15804. The EPD generation is backed by an EPD programme according to DIN EN ISO 14025. The programme rules and product category rules (PCR) shall be publicly available and shall also fulfil DIN EN 15804 and DIN EN ISO 14025.

3.2 Datasets Category B (Verified EPD or LCA data according to DIN EN 15804)

Datasets of category B have not been generated in the frame of an EPD programme according to DIN EN ISO 14025 or have not been published in the frame of an EPD. Like data of category A, they have been subjected to an external verification or critical review though.²

Basically, ÖKOBAUDAT is targeted on data of Category A. Category B was created, for example, to incorporate results from research studies of high national importance. The acceptance of datasets of category B therefore requires approval of the users advisory group of ÖKOBAUDAT. The conditions for the acceptance of these datasets are stipulated according to the case of need, depending amongst others on the origin of the delivered data.

Category B data can be verified EPD according to DIN EN 15804 but without program operation (category B1) or LCA data according to DIN EN 15804 with external review based on DIN EN ISO 14025 (category B2).

Basically a third party verification or external critical review has to prove the conformity with DIN EN 15804 also for this category of datasets. The applicant or provider of the LCA datasets respectively has to deliver the verification separately. Apart from that the requirements for datasets of category A shall be fulfilled accordingly.

3.3 Datasets Category C („Unspecified datasets“)

Datasets of category C are generated on the basis of DIN EN 15804, but have not been subjected to an external verification or critical review. This category comprises “generic data”.

In ÖKOBAUDAT, generic datasets are provided primarily for the calculation of LCA of buildings or building components, e.g. within the evaluation system for sustainable construction (Bewertungssystem Nachhaltiges Bauen BNB). These can be used as a substitute if specific datasets are missing.

Generic datasets are not verified according to EN 15804, but quality-controlled. However, they are generated, subjected an internal quality test and continuously updated

- from a single source
- following standardised, consistent procedures audited by independent third parties
- according to the requirements for modelling and calculation of LCA data stated in the principles.

The internal quality test is carried out by Sphera Solutions GmbH (formerly thinkstep) following the double check principle. In a quality check the LCA models are examined by an employee not involved in the LCA generation. The environmental impact of generic datasets is estimated assuming worst case conditions, adding an uncertainty penalties. In order to determine these uncertainty penalties, the data generator classifies the production data (modules A1-A3) into three levels regarding completeness of the model and representativeness (in terms of technology, time and geography). Depending on the completeness and representativeness of data, uncertainty penalties of 10 %, 20 % or 30 %, respectively, are added. The level is documented in the ÖKOBAUDAT dataset, including an explanatory statement (for more details, see the ÖKOBAUDAT manual, section 2.2.5).

The generic datasets are ordered by BMWSB / BBSR. Other datasets of category C are not accepted in ÖKOBAUDAT. In the table of definitions for the ILCD + EPD data format v1.2 it is noted for which data fields there are specific requirements for generic data. Datasets of category C will not be described in more detail in this document.

² For LCA data which have not been generated in the frame of an EPD an external critical review is required, according to DIN EN 14040. For the acceptance of LCA data of category B2 in ÖKOBAUDAT the critical review has to be carried out following the verification principles acc. to DIN EN ISO 14025 (section 4.2.3).

The ÖKOBAUDAT routine for checking generic datasets corresponds in principle to that for the product-specific datasets.

3.4 Datasets Category D

Datasets of category D are LCA data which are not compliant with DIN EN 15804 (Note: These data can also originate from a verified EPD according to DIN EN ISO 14025). Data which are not compliant with DIN EN 15804 will not be accepted in ÖKOBAUDAT.

4 Criteria of acceptance of LCA data

4.1 General information

For acceptance of LCA data the subsequent general requirements as well as those dependent on the category of data shall be fulfilled. An overview is given in Table 2.

Table 2: Rules and evidence for the acceptance of data in ÖKOBAUDAT

Rule / evidence	Data category		
	Category A Verified EPD acc. to DIN EN 15804 within EPD programme acc. to DIN EN ISO 14025	Category B1 Verified EPD acc. to DIN EN 15804 without programme operator	Category B2 LCA data acc. to DIN EN 15804 with ex- ternal critical review on the basis of DIN EN ISO 14025
(1) EPD programme operator (DIN EN ISO 14025)	X		
(2) Rules (PCR) (DIN EN ISO 14025)	X	X	(X) ³
(3) EPD verification (DIN EN ISO 14025) or external critical review (in principle following DIN EN ISO 14025)	X	X	X
(4) EPD (Cat A and B1) or LCA data (Cat B2) acc. to DIN EN 15804	X	X	X
(5) The formal ÖKOBAUDAT requirements are met (4.3)	X	X	X
(6) The data delivered meet the data modelling requirements.	X	X	X
Acceptance in ÖKOBAUDAT	If the criteria for acceptance are fulfilled EPD datasets are generally accepted.	Since general guidelines are missing, a critical review has to be provided for each data set	

³ If the LCA data have been generated using existing PCR documents, the requirements of DIN EN ISO 14025 shall be checked and proved. In case there are no PCR available the definition of the goal and scope of the LCA according to DIN EN ISO 14040 und 14044 has to be checked and confirmed.

4.2 Requirements dependent on the category of data

Depending on the category of data the following requirements shall be met.

4.2.1 Datasets Category A

For datasets of category A to be accepted in ÖKOBAUDAT compliance with DIN EN 15804 and with the verification requirements (according to DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930) shall be stipulated in the EPD programme. Evidence of the following general conditions (Table 2) shall be provided:

- (1) Programme rules used meet all mentioned standards (DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930). Attachment A, Table A.1 has to be considered.*
- (2) Product category rules (PCR) used meet DIN EN ISO 14025. PCR are in conformity with DIN EN 15804. Attachment A, Table A.2 has to be considered. *
- (3) Verification rules meet all mentioned standards (DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930). Attachment A, Table A.3 has to be considered. *
- (4) The LCA data have been generated in compliance with DIN EN 15804.
- (5) The ÖKOBAUDAT requirements for modelling and calculation of indicators for LCA datasets are fulfilled (section 5).
- (6) The LCA data are delivered in the stipulated data format (section 4.3.3).

* Note: Established 'ECO Platform EPD Programme Operators' can provide a successful auditing according to ECO Guidance Paper Verification as proof for the required quality assurance and verification measurements in frame of the EPD programme (subitem (1) to (3)). For these accepted EPD programmes the ÖKOBAUDAT requirements on modelling and calculation of indicators are to be proved in addition. Likewise, data shall fulfill formal demands of ÖKOBAUDAT (language, verification, completeness...).

Requirements for special dataset types:

Project specific datasets on the basis of pre-verified tools are not intended to be included in ÖKOBAUDAT. However, third-party verified specific or representative datasets on the basis of pre-verified tools may be accepted in ÖKOBAUDAT. In this case, the same requirements apply as for all other EPDs.

In the case of datasets based on a template EPD, only the dataset with the template EPD itself is recorded. A list of products that correspond to this template EPD can be given or can be referred to.

4.2.2 Datasets Category B1

For datasets of category B1 to be accepted in ÖKOBAUDAT compliance with DIN EN 15804 and with the verification requirements (according to DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930) shall be stated. Evidence of the following general conditions (Table 2) shall be provided:

- (1) Requirements on the programme operator are not applicable for datasets of category B1.
- (2) The product category rules (PCR) shall comply with DIN EN ISO 14025. Conformity of the PCR with DIN EN 15804 has to be ensured. Attachment A, Table A.2 has to be considered.
- (3) The verification rules shall comply with the requirements of the specified standards (DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930). Attachment A, Table A.3 has to be considered.
- (4) The LCA data have been generated in compliance with DIN EN 15804.

- (5) The ÖKOBAUDAT requirements for modelling and calculation of indicators for LCA datasets are fulfilled (section 5).
- (6) The LCA data are delivered in the stipulated data format (section 4.3.3).

4.2.3 Datasets Category B2

The acceptance of datasets of category B2 needs an affirmation in the users advisory group of ÖKOBAUDAT (see section 3.2). The conditions for the acceptance of these datasets are stipulated there individually. In general the following principles apply.

For acceptance of datasets of category B2 in ÖKOBAUDAT compliance with DIN EN 15804 shall be stated. Datasets of category B2 are LCA data which require a so-called “critical review” in DIN EN ISO 14040 – however the contents of the review are not clearly defined. In order to ensure high data quality also for LCA datasets of category B2, an external critical review along the lines of verification according to DIN EN ISO 14025 is required for acceptance in ÖKOBAUDAT. Attachment A, Table A.3 has to be considered.

If the datasets have been generated using existing PCR documents, the latter shall be analysed in the external review along the lines of the requirements of the verification process according to DIN EN ISO 14025.

Evidence of the following general requirements (Table 2) shall be provided:

- (1) Requirements on the programme operator are not applicable for datasets of category B2.
- (2) As with category B1, data shall be generated on the basis of specified rules (‘definition of the goal and scope’ according to DIN EN ISO 14040, section 5 and DIN EN ISO 14044, section 4.2). If existing PCR are used, compliance with the requirements of DIN EN ISO 14025 shall be examined and confirmed. It shall be ensured that the PCR or the specified rules comply with DIN EN 15804. Attachment A, Table A.2 has to be considered.
- (3) The process of external review of data shall principally comply with the requirements of the specified standards (DIN EN ISO 14025, DIN EN ISO 14040, ISO 21930). The applicant or provider of the datasets respectively is responsible for instructing an appropriate critical review. Attachment A, Table A.3 has to be considered.
- (4) The LCA data have been generated in compliance with DIN EN 15804.
- (5) The ÖKOBAUDAT requirements for modelling and calculation of indicators for LCA datasets are fulfilled (section 5).
- (6) The LCA data are delivered in the stipulated data format (section 4.3.3).

4.3 Formal ÖKOBAUDAT requirements and recommendations

The following formal requirements and rules shall be considered, fulfilled or approved respectively.

4.3.1 General requirements

The appropriateness of the LCA data delivered to ÖKOBAUDAT shall be stated in the verification report [or in the critical review report respectively].

Modifications of the programme rules, verification or external review rules, which are relevant for LCA and verification or external review processes respectively, shall be reported to BMWSB / BBSR immediately, in time ahead of delivery of relevant LCA datasets. Albeit the programme operator (the process workflow of data generation and delivery) shall be examined 3 years after acceptance in order to detect changes in the programme

operator (the process workflow of data generation and delivery) which might affect compatibility of the LCA datasets to be delivered with ÖKOBAUDAT.

LCA data generated in the frame of an EPD programme are to be imported into ÖKOBAUDAT exclusively by the programme operator.

4.3.2 Language

In the field of federal responsibility, datasets available in German should be used preferably. However, the data fields "Name (of data set)" and "Technical purpose of product or process" must be delivered bilingually in English and German. Only in this case the dataset can be made available in the international network node of InData (International Open Data Network for Sustainable Construction; prerequisite for "InData Compliance", see also section 5.2).

For English EPD or LCA datasets it is 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.

4.3.3 Data format

Data sets shall be provided in the prescribed data format ("ILCD+EPD" data format). Before delivery, the datasets must be checked using the Validation Tool. The requirements are stored in the ÖKOBAUDAT website (www.oekobaudat.de). Detailed information to data format and further technical requirements for ÖKOBAUDAT data see ÖKOBAUDAT-Manual, chapter 2 ILCD+EPD Data format and Compliance Rules).

4.3.4 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.

4.3.5 Timeliness of data

The data suppliers must ensure that the most recent data set is published in ÖKOBAUDAT.

4.3.6 Previous dataset versions

If there are previous dataset for EPD datasets, these must be specified (in the "previous dataset version" data field).

4.3.7 Availability of data

BMWSB / BBSR is the owner of ÖKOBAUDAT. The applicant must confirm that the owner has released consent for the use of his data within ÖKOBAUDAT under the following conditions:

The applicants give their consent that data published in ÖKOBAUDAT are published on www.oekobaudat.de publicly available at no charge and can be used for further calculation like life cycle assessment of building components and buildings. The owner of the datasets remains responsible for the datasets (contents, values).

4.3.8 Obligation to provide information in case of significant data changes

The data provider must be able to provide information within a reasonable time in the event of significant changes in EPD revisions. The data providers are recommended to anchor corresponding regulations in the programme rules. Programme operators who are unable to fulfil this condition will be de-authorized.

4.4 Applicant's declarations and supporting documents

The applicant provides the declarations and supporting documents (hardcopy form or electronically) mentioned in the application form (www.oekobaudat.de). These comprise amongst others

- Completed application form incl. Declaration of compliance with the „Principles for the acceptance of LCA data in the online database ÖKOBAUDAT“ (Data Category A, B, C)
- Programme rules (only Data Category A)
- List of members PCR panel incl. name, position, institution (only Data Category A)
- List of verifiers and external reviewers respectively, incl. name, position, institution (Data Category A, B,)
- Description of demands on verifiers and external reviewers respectively and verification process or external review (Data Category B – in case of Data Category A covered by programme rules)
- Verification reports and reports of external review respectively (at least on request)
- Access to the PCR documents; indication of internet link incl. required access data (Data Category A, B)
- List of submitted LCA datasets incl. valid time
- Consent of datasets' owner for use in ÖKOBAUDAT

5 Requirements for modelling and calculation of indicators for LCA data sets in ÖKOBAUDAT

5.1 Conformity with the European Standards 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 shown on the ÖKOBAUDAT platform. The two databases are strictly separated from each other in the ÖKOBUDAT front end.

After the transition period has expired, only datasets according to EN 15804+A2 will be accepted. After a further transition period, the BBSR reserves the right to no longer publish datasets according EN 15804+A1. The archive remains unaffected.

DIN EN 15804 allows different interpretations in some relevant areas with regard to modelling and evaluation. In order to maintain a high level of consistency and comparability of the ÖKOBAUDAT data sets, the following requirements, which are agreed by the ÖKOBAUDAT User Advisory Group, must be followed.

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

The InData Working Group (see also section 1.3) 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 3 shows the versions of the Compliance Rules previously approved by InData.

Table 3: Overview of the versions of Compliance Rules of the InData Initiative for the provision of EPD data sets of construction products

	CPEN2018	CPEN2018v2	CP-2020
Compliance system	EN 15804+A1	EN 15804+A1	EN 15804+A2
ILCD+EPD data format	Version v1.1 ¹	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

¹ originally without version designation

These conformity rules in the versions CPEN2018 and CP-2020 are part of the ÖKOBAUDAT rules.

For the acceptance of datasets in ÖKOBAUDAT, the requirements of the present principles as well as the technical / formal rules according to the ÖKOBAUDAT manual also apply.

Important note:

ÖKOBAUDAT data sets are InData-compliant if the data fields “Name” and “Technical purpose of product or process” are also available in English (see also Section 4.3.2 Language).

Conversely, InData-compliant data sets are not necessarily ÖKOBAUDAT-compliant.

5.3 Specific requirements for modelling and calculation of indicators for LCA data sets in ÖKOBAUDAT

5.3.1 Application of the product category rules of the CEN Product TC’s (Technical Committee)

- The complementary Product Category Rules developed by product-related CEN Technical Committees and examined by CEN/TC 350 shall be considered (e.g. DIN EN 16485 Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction; German version EN 16485:2014).

5.3.2 Averaging and representativeness

- The calculation rules for averaging and the representativeness of the data shall be indicated.

5.3.3 Declaration of life cycle phases (modules)

- For all building products and materials, modules A1-A3, modules C1-C4 and module D must be declared (EN 15804+A2, section 5.2). Exceptions to this rule are specified in EN 15804+A2, section

5.2. This regulation also does not apply to certain process data sets (transport processes, energy supply processes, etc.).

Deviation for EPD according to EN 15804+A1: Only the declaration of module A1-A3 is mandatory.

- Modules that generate input or output flows taken into account in the declaration of module D must also be declared (EN 15804+A2, section 7.2.2).
- In addition, the declaration of module C is mandatory as soon as module D is declared, regardless of whether material flows from module C are transferred to module D.

5.3.4 Description of the scenarios

- It is mandatory to describe the underlying scenarios for the declared modules A4 to D.

5.3.5 Output flows of module A1-A3

- If a co-product allocation in the foreground data is not possible in a meaningful way, e.g.
 - if a co-product allocation of production waste (e.g. in the case of scrap) makes a coherent recording of the net quantity for offsetting impossible,
 - if exported energy from the thermal utilisation of waste in a waste incineration plant can no longer be associated with the manufacturing process for an allocation,

the flows that leave the product system in modules A1-A3 are declared as outputs, as is usual for the C modules. The advantages and burdens without allocation can be declared outside the product system in module D as additional information (see ISO 21930-7.1.7.2.7).

5.3.6 Module B

- If module B is declared, a value for the reference service life is mandatory.
- In Module B1 only product inherent properties may be regarded.

5.3.7 Module C and D (end of life phase)

- End-of-life scenarios: It is allowed that several scenarios for module C and module D are given. Each scenario shall be calculated and declared separately. Example: Two end-of-life scenarios are given for waste wood: Scenario 1 'Material recovery/recycling' and Scenario 2 'Energy recovery' where Scenario 1 comprises also the energy recovery of waste wood which is not recyclable. Each scenario shall be displayed separately in ÖKOBAUDAT. In addition, mixed scenarios (e.g. Scenario 3 '80 % Material recovery/recycling (Scenario 1) and 20 % Energy recovery (Scenario 2)') can be described.
- For the modelling of the end of life phase, the rules described in Appendix B "Modelling of the end of life phase (modules C and D)" must be observed.

5.3.8 Characterisation factors

- The EC-JRC characterization factors must be used for all impact indicators (EN 15804+A2, Appendix C.4). Download from: <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.

Deviation for EPD according to EN 15804+A1: The characterisation factors according to DIN EN 15804, Annex C shall be used for the calculation of the life cycle impact indicators. Complementary and consistent factors may be used in order to achieve compliance between the Life Cycle Inventory data and the available characterisation factors.

5.3.9 Calculation rules for Global Warming Potential

- The total global warming potential (GWP-total) is the sum of three subcategories of the climate change. These three subcategories GWP-fossil, GWP-biogenic and GWP-luluc must be declared separately as described in EN 15804+A2, 7.2.3.1. It is permitted to omit GWP-luluc as separate information if its contribution is < 5 % of GWP-total over the declared modules excluding module D (EN 15804+A2, 7.2.3.).

Calculation rules for the global warming potential are given in EN 15804+A2, Appendix C.2.

Deviation for EPD according to EN 15804+A1: The total global warming potential (GWP-total) is the sum of the two subcategories GWP-fossil and GWP-biogenic. The GWP of biogenic carbon uptake has to be considered as a negative value in modules A1 to A3. Double counting over the life cycle is not allowed. Only the total value (GWP total) must be declared.

- The degradation of a product's biogenic carbon content in a solid waste disposal site, declared as GWP-biogenic, shall be calculated without time limit. Any remaining biogenic carbon is treated as an emission of biogenic CO₂ from the technosphere to nature (EN 15804+A2, 6.3.5.5).

Note: This rule also applies for newly delivered datasets according to EN 15804+A1. There may be a contradiction to this rule in existing datasets.

- The effects of the following processes are not part of the product system under study and may not be included in the calculation of the GWP (EN 15804+A2, 5.4.3):
 - compensation for an emission elsewhere (carbon offset)
 - temporary carbon storage and delayed emissions of CO₂ and other greenhouse gases
 - permanent biogenic carbon

5.3.10 Additional environmental impact indicators and Disclaimers

- If the additional environmental impact indicators (EN 15804+A2, 7.2.3.2, Table 4) are declared in the EPD, they must also be declared in the ÖKOBAUDAT. If they are not declared in the dataset, they will be marked with "ND" in the ÖKOBAUDAT frontend.
- EN 15804+A2 specifies disclaimers for the environmental impact indicators (7.2.3.3, Table 5). These disclaimers are stored in ÖKOBAUDAT with the respective indicators and do not have to be supplied with the dataset.

Note: These two paragraphs do not apply for EPD according to EN 15804+A1.

5.3.11 Calculation of primary energy which is used as raw material (PERM, PENRM)

- The amount of primary energy contained in a raw material is calculated by the mass multiplied by the lower heating value of the considered raw material.

5.3.12 Consumption of fresh water

- For every process the water flows are indicated in terms of volume extracted, volume re-emitted and source (e.g. surface water, ground water, sea water).
If tap water is taken (e.g. from the public water supply), the treatment and distribution of water must be taken into account as upstream processes with their corresponding resource consumptions and emissions. Analogously water disposed of in the sewage system has to be connected with wastewater treatment and distribution as downstream processes.

Other water flows, as evaporation water or water input into the product, should ideally be indicated in the inventory of processes in order to achieve a complete water balance.

For every process the water consumption is the amount of water withdrawn from the drainage

area/water catchment area. It can be calculated more easily than the sum of water evaporated, transpired by biomass, deposited in a product or transported into another drainage area/water catchment area. The amount of water which would have been withdrawn from the drainage area/water catchment area via a natural system before implementing the technical system will not be included in the balance, as mentioned above.

5.3.13 Information on biogenic carbon content at the factory gate

- Information on the biogenic carbon content at the factory gate must be declared separately for the product and for each associated packaging. The specification of the biogenic carbon can be omitted if the carbon content of the product or the packaging is below 5% of the total mass (EN 15804+A2, 7.2.5).

Note: This paragraph does not apply to EPD according to EN 15804+A1.

5.3.14 Template EPD

- If datasets are generated from template EPDs⁴ worst case scenarios shall be adopted. Other datasets are not accepted.

5.3.15 Additional requirement on background data

- All datasets used for the Assessment System for Sustainable Building (BNB) shall be based on GaBi background database. If data from other sources were used in the LCA (other background databases, literature data) this information must be given in the dataset, including an explanatory statement. The data used must not influence the result significantly or must be equivalent to GaBi data modelling regarding method and data quality.
- Additional datasets, which are in principle compliant with the ÖKOBAUDAT requirements, but based on ecoinvent background data, are published on the ÖKOBAUDAT platform as well. As they are only by exception to be used within the Assessment System for Sustainable Building (BNB), they are not part of the downloadable ZIP archive nor are they directly available by default in the eLCA assessment tool.

⁴ Template EPDs contain LCA data and verbal descriptions for a typical product of a product group. Manufacturers may use the template EPD as a template for the generation of specific product EPDs, if the product is verifiably represented by the product group.

6 Procedure of application and acceptance of LCA data in ÖKOBAUDAT

The procedure of application and acceptance of LCA data in ÖKOBAUDAT comprises the following steps:

1. The applicant classifies his LCA data with the correspondent category of data set according to section 2.
2. The applicant confirms the fulfilment of the requirements in writing in the application form (date, signature, company stamp).
3. The applicant delivers the required declarations and documents of evidence (section 3.5).
4. The check of the documents and data is carried out in responsibility of BMWSB/BBSR in consultation of the ÖKOBAUDAT users advisory group.
5. After the successful check the applicant may import the data into ÖKOBAUDAT.

Data of Category A

After the documents of evidence have been checked successfully the verified EPD data sets can be imported into ÖKOBAUDAT without essential check with regard to content.

Data of Category B (B1 and B2)

The acceptance of datasets of category B2 needs an affirmation in the users advisory group of ÖKOBAUDAT. The conditions for the acceptance of these datasets are stipulated there individually. After the documents of evidence have been checked successfully LCA data sets which have been generated acc. to DIN EN 15804 und externally verified can be imported into ÖKOBAUDAT. Since guidelines acc. to DIN EN 14025 are missing, an external review has to be brought forward again for every new data set.

6. The applicant delivers the data in the stipulated data format ("ILCD+EPD" data format)⁵. The instruction for this will be provided by BBSR or via the ÖKOBAUDAT website.
7. The imported data will be subjected a plausibility check and a random check in substance, where appropriate by BMWSB/BBSR. After the successful check the data sets will be published in ÖKOBAUDAT.

⁵ Detailed information to data format and further technical requirements for ÖKOBAUDAT data see ÖKOBAUDAT-Handbook – Technical description of ÖKOBAUDAT incl. guidance for delivery and use of datasets.

7 Literature and standards

- DIN EN ISO 14020 Umweltaussagen für Produkte und deren Programme - Grundsätze und allgemeine Anforderungen (ISO 14020:2022-12); German version DIN EN ISO 14020:2023-07, date of issue: 2023-07 (*Environmental statements and programmes for products - Principles and general requirements*)
- DIN EN ISO 14025 Umweltkennzeichnungen und –deklarationen – Typ III Umweltdeklarationen – Grundsätze und Verfahren (ISO 14025:2006), German and English version EN ISO 14025:2011, October 2011 (*Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures*)
- DIN EN ISO 14040 Umweltmanagement – Ökobilanz – Grundsätze und Rahmenbedingungen (ISO 14040:2006); German and English version EN ISO 14040:2006 (*Environmental Management – Life Cycle Assessment – Principles and Framework*)
- DIN EN ISO 14044 Umweltmanagement – Ökobilanz – Anforderungen und Anleitungen (ISO 14044:2006); German and English version EN ISO 14044:2006 (*Environmental Management – Life Cycle Assessment – Requirements and Guidelines*)
- DIN EN 15804+A1:2013 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 15804:2012+A2:2019-10+AC:2021 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 15942 Nachhaltigkeit von Bauwerken – Umweltproduktdeklarationen – Kommunikationsformate zwischen Unternehmen, German version DIN EN 15942:2021, date of issue: 2022-04 (*Sustainability of construction works – Environmental product declarations – Communication format*)
- DIN EN 15978 Nachhaltigkeit von Bauwerken – Bewertung der umweltbezogenen Qualität von Gebäuden – Berechnungsmethode, German version DIN EN 15978:2012-10 (*Sustainability of construction works – Environmental product declarations – Calculation methods*)
- ISO 14044 AMD 1 Umweltmanagement - Ökobilanz - Anforderungen und Anleitungen; Änderung 1; date of issue: 2017-12 (*Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 1*)
- ISO 21930 Hochbau - Nachhaltiges Bauen - Umweltdeklaration von Bauprodukten, (Sustainability in Building Construction - Environmental Declaration of Building Products), date of issue: 2017-07

ÖKOBAUDAT Manual – Technical and formal information and rules for the ÖKOBAUDAT database in the current version. Online: <https://www.oekobaudat.de/en/service/downloads.html>, section “Technical instructions”.

Appendix A Requirements on EPD Programme, PCR-Documents and Verification

A.1 Requirements on an EPD programme

The following Table A.1 lists requirements on an EPD programme as defined in DIN EN ISO 14025.

Table A.1 Requirements on an EPD programme according to DIN EN ISO 14025

Requirement	Basis DIN EN ISO 14025
Verification	
PCR review including review of the LCA, LCI, information modules and additional environmental information on which the PCR are based	section 5.7 and 8.1.2
Independent verification of the LCA, LCI, information modules and additional environmental information on which the declaration is based	section 5.7 and 8.1.3
Independent verification of the Type III environmental declaration	section 5.7 and 8.1.4
Transparency	
Availability of general programme instructions	section 5.9 and 6.4
A list of all published PCR documents within the programme	section 5.9
Availability of PCR documents	section 5.9
Availability of explanatory material	section 5.9 and 7.2.1/ 9.2.3
Programme instructions	
Scope of the programme defined	section 6.2
Responsibilities of the programme operator	
Preparing, maintaining and communicating general programme instructions (a)	section 6.3
Publishing the names of the organizations actually involved as interested parties in the programme development (b)	
Ensuring that the Type III environmental declaration requirements are followed (c)	
Establishing a procedure to safeguard the consistency of data within a programme (d)	
Maintaining publicly available lists and records of PCR documents and Type III environmental declarations within the programme (e)	
Publishing PCR documents and Type III environmental declarations within the programme (f)	
Monitoring changes in procedures and documents of related Type III environmental declaration programmes and revising procedures and documents when necessary (g)	
Ensuring the selection of competent independent verifiers and PCR review panel members (h)	
Establishing a transparent procedure for the PCR review, including the scope of the review, detail of the review and how the PCR review panel is constituted (i)	
Establishing procedures to avoid misuse of references to DIN EN ISO 14025, the Type III environmental declaration programme, its Type III environmental declarations and, where relevant, its logo (j)	
General programme instructions must include at minimum the following information:	
Scope of programme (a)	section 6.4
Objectives of the programme (b)	
Identification of programme operator (c)	
Intended audience of the programme, which may be business-to-business (B-to-B) or business-to-consumer (B-to-C), or both (d)	
Involvement of interested parties (e)	section 6.4
Procedure for definition of product categories (f)	

Procedure for the management of the data and documentation used; such procedures may be based on ISO 14001:2004, 4.4.5, or ISO 14044:2006, Clause 5 (g)	
Data confidentiality management (h)	
Procedure for development and maintenance of PCR (i) - Content of PCR - Rules for period of validity - Selection procedure for pre-determined parameters	
Procedure for independent verification (j) - Competence of verifiers - Competence of PCR review panel	
Funding sources and other resources provided for programme development and operation (k)	
Periodic review of the programme instructions (l)	
Fees, if relevant (m)	
The general programme instructions shall be available to any person on request.	
Involvement of interested parties	section 6.5
Procedure for definition of product categories Product categories defined using a transparent procedure; when products have similar functions and applications, the basis for assigning a group of products to a product category shall be that the same functional unit can be applied.	section 6.6

A.2 Requirements on PCR according to DIN EN ISO 14025 and additional requirements for ÖKOBAUDAT

The following Table A.2 lists requirements on PCR as defined in DIN EN ISO 14025 as well as additional requirements for ÖKOBAUDAT (*blue lettering, in italics*).

Table A.2: Requirements on PCR according to DIN EN ISO 14025 and additional requirements for ÖKOBAUDAT

Requirement	Basis
PCR compliant with DIN EN 15804 and complementary Product Category Rules developed by product-related CEN Technical Committees and examined by CEN/TC 350	ÖBD
Developing the contents of a PCR document	DIN EN ISO 14025, section 6.7.1
Explanations for not using readily available PCR documents in the same product category shall be reported in the PCR document (explain deviations).	
Product category definition and description (e.g. function, technical performance and use) (a)	
Goal and scope definition for the product LCA, according to the ISO 14040 series, including (b) - functional unit - system boundary - description of data - criteria for the inclusion of inputs and outputs - data quality requirements including coverage, precision, completeness, representativeness, consistency, reproducibility, sources and uncertainty - units	
Inventory analysis including (c) - data collection - calculation procedures - allocation of material and energy flows and releases	
Impact category selection and calculation rules, if applied (d)	
Predetermined parameters for reporting of LCA data (inventory data categories and impact category indicators) (e)	
Requirements for provision of additional environmental information, including any methodological	

requirements (e.g. specifications for hazard and risk assessment) (f)	
Materials and substances to be declared (e.g. information about product content, including specification of materials and substances that can adversely affect human health and the environment, in all stages of the life cycle) (g)	
Instructions for producing the data required to develop the declaration (LCA, LCI, information modules and additional environmental information) (h)	
Instructions on the content and format of the Type III environmental declaration (i)	
Information on which stages are not considered, if the declaration is not based on an LCA covering all life cycle stages (j)	
Period of validity (k)	
Competence of PCR review panel	DIN EN ISO 14025, section 8.2.3
General background knowledge of LCA	
General background knowledge of relevant sector, product and product-related environmental aspects	
Expertise in LCA and methodology for LCA work	
Awareness of relevant standards in the fields of environmental labelling and declarations and LCA	
Knowledge of the regulatory framework within the scope of the PCR	
Knowledge of the programme for Type III environmental declarations <i>Not applicable for datasets of category B and C</i>	
In addition, the programme operator shall ensure a reasonable mix of interested party perspectives and competencies.	
PCR review	DIN EN ISO 14025, section 8.1.2
PCR review conducted by a third party panel (at a minimum a chair and two members)	
PCR document includes the results of the PCR review as well as comments and recommendations made by the panel members	
PCR have been developed in accordance with the ISO 14040 series of standards and DIN EN ISO 14025, section 6.7.1 (see above)	
PCR fulfil the general programme instructions <i>Not applicable for datasets of category B and C</i>	
The LCA-based data, together with the additional environmental information prescribed by the PCR, give a description of the significant environmental aspects of the product	

A.3 Requirements on the independent verification according to ISO 14025 *or external critical review² respectively* and additional requirements for ÖKOBAUDAT

As LCA data in ÖKOBAUDAT are available for consumers, section 9.4 of DIN EN ISO 14025 applies („... *Type III environmental declarations used for business to consumer communication...*“), thus the verification is to be carried out by independent third party („... *The independent verifier ... shall not have been involved in the execution of the LCA or the development of the declaration, and shall not have conflicts of interests resulting from their position in the organization. ...*“).

For LCA data (non-verified EPD data, i.e. datasets of category B2) DIN EN ISO 14040 stipulates a so-called „critical review“ – however the contents of the review are not clearly defined. In order to ensure high data quality for LCA datasets of category B2, an external critical review along the lines of verification according to DIN EN ISO 14025 is required for acceptance in ÖKOBAUDAT (Table 3).

Table A.3: Requirements on the independent verification according to DIN EN ISO 14025 *or external critical review*² (in principle following DIN EN ISO 14025) respectively (highlighted in grey) and additional requirements for ÖKOBAUDAT (blue lettering)

Requirement	Remark
Identification of verifier / external reviewer (degree, name, institution, position, contact data)	Requirement ÖBD
Independence of verifier / external reviewer The verification is carried out by independent third party (i.e. the verifier shall not have been involved in the execution of the LCA or the development of the declaration, and shall not have conflicts of interests resulting from their position in the organization) For ÖKOBAUDAT external verifiers/reviewers shall be consulted (i.e. not internal to the organization).	DIN EN ISO 14025, 8.2.1/9.4 Requirement ÖBD
Verifier / external reviewer was not involved in the execution of the LCA	DIN EN ISO 14025, 8.2.1
Verifier / external reviewer was not involved in the development of the declaration	
Verifier / external reviewer does not have conflicts of interests resulting from their position in the organization Remark: As ÖKOBAUDAT requires external verifiers/reviewers, this paragraph does not apply.	
Verifier / external reviewer was not appointed by manufacturer or generator of LCA	Requirement ÖBD
Competence of verifiers / external reviewers	
Preferably university degree in engineering or natural science	Requirement ÖBD
Appropriate professional experience in the construction sector or a related field	Requirement ÖBD
Practice in using simulation tools for generating LCA (e.g. GaBi, Umberto, Simapro)	Requirement ÖBD
Knowledge of relevant sector, product and product-related environmental aspects	DIN EN ISO 14025, section 8.2.2
Process and product knowledge of the product category	
Expertise in LCA and methodology for LCA work Example: Evidence by at least 3 LCA generated independently using simulation tools (e.g. GaBi, Umberto, Simapro)	
Knowledge of relevant standards in the fields of environmental labelling and declarations and LCA	
Knowledge of the regulatory framework within which requirements for Type III environmental declarations have been prepared Example: Experience in the critical review of LCA/verification of EPD, evidence by 3 critical reviews of LCA or critical reviews of Type III environmental declarations Not applicable for datasets of category B2, here: Knowledge of the regulatory framework (PCR), for instance if the datasets have been generated using existing regulatory frameworks.	
Knowledge of the Type III environmental declarations programme Example: at least 2 completed EPD verifications under supervision in the frame of a Type III EPD programme according to ISO 14025 Not applicable for datasets of category B	
Knowledge of the ÖKOBAUDAT requirements for modelling and calculation of indicators (see section 4.3)	Requirement ÖBD
Independent verification / independent external critical review of data The independent verification / external critical review of data from LCA, LCI and information modules, and of additional environmental information (according to DIN EN ISO 14025) shall as a minimum confirm:	
- conformance of data with the current and relevant PCR documents or with the defined goal and scope respectively, if no PCR were used	DIN EN ISO 14025, 8.1.3
- conformance of data with general EPD programme instructions <i>Not applicable for datasets of category B</i>	
- conformance of data with DIN EN 15804	Requirement ÖBD
- conformance of data with ISO 14040 and ISO 14044	DIN EN ISO 14025, 8.1.3
- that data evaluation includes - coverage - precision - completeness - representativeness - consistency	DIN EN ISO 14025, 8.1.3

- reproducibility - sources - uncertainty	
- plausibility, quality and accuracy of the LCA-based data - quality and accuracy of additional environmental information - quality and accuracy of the supporting information	
Independent verification of the EPD (not applicable for datasets of category B2)	
Conformance of EPD with ISO 14020 and DIN EN ISO 14025	DIN EN ISO 14025, 8.1.4
Conformance of EPD with general programme instructions <i>Not applicable for datasets of category B</i>	
Conformance of EPD with current and relevant PCR documents	
Conformance of EPD with DIN EN 15804	Requirement ÖBD
Verification report / report on external critical review	
Verification report (at least on request) / report on external critical review available	DIN EN ISO 14025, 8.1.4
The verification report / report on external critical review documents the verification process / external review process .	
The verification report / report on external critical review confirms whether the information given in the Type III environmental declaration (<i>or EPD without programme respectively</i>) accurately reflects the information in the documents on which the declaration is based. <i>Not applicable for datasets of category B2 as LCA data are not necessarily generated as an EPD.</i>	DIN EN ISO 14025, 8.1.4 Requirement ÖBD
The verification report / report on external critical review confirms whether the information given in the Type III environmental declaration (<i>or EPD without programme respectively</i>) / LCA datasets is valid and scientifically sound	
The verification report / report on external critical review is available to any person upon request.	DIN EN ISO 14025, 8.1.4