

AUSTRIAN EPD-PLATFORM FOR CONSTRUCTION RELATED PRODUCTS AND SERVICES

GENERAL PRINCIPLES AND GUIDELINES

according to the EPD programme of BAU EPD GmbH, Austria



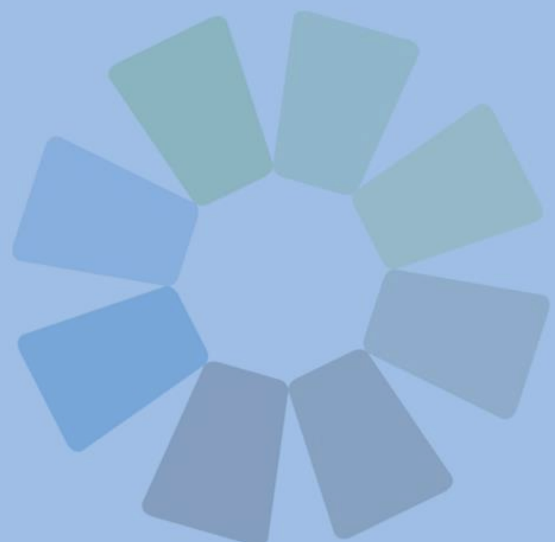
Management-System Handbook

Quality Management and Verification
General Product Category Rules for EPD
General LCA Calculation Rules for EPDs

for creation of Type III EPD (Environmental Product Declarations)

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Index

1	GENERAL INFORMATION	5
2	INTRODUCTION	7
3	APPLICATIONS	8
3.1	Application of the document on hand	8
3.2	Application of the programme for environmental product declarations	8
4	ORGANISATIONAL STRUCTURE AND QUALITY MANAGEMENT SYSTEM FOR EPD CREATION	8
4.1	Target groups and objectives	8
4.2	Organization of the Austrian EPD Platform for construction related products and services	10
4.2.1	Programme Operator	11
4.2.2	Producers	12
4.2.3	PCR review panel (advisory board)	12
4.2.4	Product Group Panels (Product Group Forum)	13
4.2.5	Interested parties	14
4.2.6	Technical Advisory Board (TAC)	14
4.3	Procedures for preparation, verification and maintenance of Product Category Rules (PCR) and EPD documents	14
4.3.1	Procedures for preparation, verification and maintenance of Product Category Rules (PCR) B	14
4.3.2	Procedure of application of the LCA method	17
4.3.3	Project Report	17
4.3.4	Environmental Product Declaration	17
4.3.5	Procedure of verification of the environmental product declaration	18
4.3.6	Validity of the environmental product declaration	19
4.3.7	Confidentiality, data protection and publication of EPD data	20
4.3.8	Periodical check and maintenance of the BAU EPD MS-HB and product specific PCR	20
4.4	Quality Management System	21
4.4.1	Description of the Quality Management System	21
4.4.2	Control of documents	22
4.4.3	Control of records	23
4.4.4	Responsiveness to complaints and appeals, tasks of the arbitration body	24
4.4.5	Detection of errors and corrective actions	24
4.4.6	Preventive actions	25
4.4.7	Management of actions and measures	26
4.4.8	Impartiality	26
4.4.9	Non-discriminatory conditions	27
4.4.10	Periodical internal and external audits and management reviews	28
4.4.11	Surveillance of competence of the Head of the Conformity Assessment Body (HCB)	29
4.4.12	Data backup	29
5	GENERAL PRODUCT CATEGORY RULES AND LCA CALCULATION RULES	30
5.1	Scope of application of the PCR and LCA rules	30
5.2	Product description	30
5.3	Functional unit, declared unit and reference unit	31

5.4	System boundaries.....	31
5.4.1	General.....	31
5.4.2	Life cycle stages.....	31
5.4.3	Product Stage	32
5.4.4	Construction process stage	33
5.4.5	Use stage, related to the building fabric.....	34
5.4.6	Use stage related to the operation of the building	34
5.4.7	End-of-life stage	34
5.4.8	Benefits and loads beyond the product system boundary	34
5.5	Inventory analysis	35
5.5.1	Selection of data for product stage.....	35
5.5.2	Generic Data	35
5.5.3	Cut-off rules and exclusions.....	36
5.5.4	Data quality	36
5.5.5	Scenarios	37
5.5.6	Rules for EPD as average performance.....	37
5.6	Allocation rules	38
5.6.1	Allocation of material inherent properties:.....	38
5.6.2	Allocation of co-products.....	38
5.6.3	Allocation procedure of reuse, recycling and recovery	38
5.6.4	Documentation	39
5.7	Impact assessment.....	40
5.8	Indicators	40
5.8.1	Declaration of LCA indicators.....	40
5.8.2	Specific rules for calculation of indicators	40
6	DECLARATION OF INDICATORS AND PROJECT REPORT	41
6.1	Declaration of environmental indicators from the LCA.....	41
6.2	Project report describing the LCA	41
6.3	Reference service life (RSL)	42
6.4	Information Transfer Matrix resp. EXCEL templates for electronic data processing.....	42
7	SPECIFIC RULES WITH REFERENCE TO GENERIC DATA FOR COMMONLY OCCURRING PROCESSES	42
7.1	Special rules for chemicals.....	42
7.2	Special rules for energy supply	42
7.3	Special rules for transport.....	43
7.4	Special rules for packages	43
7.5	Special rules for emissions and disposal of emissions	44
7.6	Special rules for waste treatment.....	44
7.7	Special rules for waste water	44
7.8	Special rules for Infrastructure	44
8	REQUIREMENTS ON APPROVED DATA BASES FOR GENERIC DATA	44
9	FINANCING AND FEES	45
10	APPLICABLE DOCUMENTS (ANNEXES OF THE BAU EPD MS-HB)	46

11	ABBREVIATIONS AND DEFINITIONS	47
12	REFERENCES	48

1 GENERAL INFORMATION

The EPD Management-System Handbook of Bau EPD GmbH, in the following text shortly referred to as BAU EPD MS-HB or MS-HB is the basis for the creation of Environmental Product Declaration for construction related goods and services. It can be extended to other goods and services depending on demand and interest.

Publicly available information:

The MS-HB and the applicable documents extending it are published on the website of Bau EPD GmbH without cuts. An overview listing all applicable documents, format templates and forms can be found in chapter 10.

Chapter 4 contains the description of the structure of the organisation and quality management system including all required process flows of the conformity assessment programme and explains the internal and external control of documents and records. It contains rules and references with regard to the rights and obligations of clients, with special focus on the rules for the use of Logos and conformity certificates as well as the regulations how to handle complaints and appeals.

Chapter 5 contains the General Product Category Rules as well as General LCA Calculation Rules (applicable on all construction goods and services). These rules exceed the requirements found in current standards, normative documents, technical regulations, guidance documents of the head organisation ECO Platform or any other valid documents.

Chapter 6 describes the declaration of indicators and preparation of the project report.

Chapters 7 and 8 specify rules regarding the choice of generic data and requirements of accepted upstream databases.

Chapter 9 contains information on financing and fee regulations of the conformity assessment body.

The requirements in the BAU EPD MS-HB for preparation of LCA analyses and EPD documents are based on the following standards, the current version on the date of publication of the handbook was considered and integrated:

- [1] ÖVE/ÖNORM EN ISO/IEC 17065:2013 – Conformity assessment – Requirements on bodies certifying products, goods and services (ISO/IEC 17065:2012)
- [2] ÖVE/ÖNORM EN ISO/IEC 17029:2020 – Conformity assessment — General principles and requirements for validation and verification bodies (ISO/IEC 17029:2019)
- [3] ÖNORM EN ISO 14025:2010 – Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures (ISO 14025:2006)
- [4] ÖNORM EN ISO 14020:2002 – Environmental labels and declarations - General principles
- [5] ÖNORM EN ISO 14040:2009 – Environmental management - Life cycle assessment -- Principles and framework (ISO 14040:2006)
- [6] ÖNORM EN ISO 14044:2018 – Environmental management - Life cycle assessment -- Requirements and guidelines (ISO 14044:2006 + Amd 1:2017)
- [7] ÖNORM EN 15804:2020 – Sustainability of construction works - environmental product declarations. Core rules for the product category of construction products (EN 15804 + Amd 2:2019)

- [8] CEN/TR 15941:2010 – Sustainability of construction works - Environmental product declarations - Methodology and data for generic data
- [9] ÖNORM EN 15942:2011 – Sustainability of construction works - environmental product declarations - Communication format business-to-business
- [10] ÖNORM EN 15978:2012 – Sustainability of construction works - Assessment of environmental performance of buildings – Calculation methods
- [11] ISO 21930:2017 – Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- [12] CEN/TR 16970:2016 – Sustainability of construction works. Guidance for the implementation of EN 15804
(Note: with the following 3 exceptions as per decision of ECO Platform:
 - 1. Programme Operators may define additional indicators and publish the results if marked as „additional information/indicators“. All indicators can be declared in any section of the EPD document.
 - 2. Programme Operators may interpret the “Polluter pays”-principle dealing with the use of waste according to their own rules (modelling as disposal or recycling process)
 - 3. Default values from CEN TC product-PCRs do not have to be taken automatically, default values are subject to a case-by-case discussion.)
- [13] Audit and Verification Guidelines for ECO EPD Programme Operators (editor: ECO Platform, version 3 April 2018)

The regulations in the BAU EPD MS-HB are complementary to the requirements in above mentioned documents and are meant to specify, give details or show examples of defined ways of calculation within the programme.

Note: For each specific product category the complementary c-PCR documents apply (PCR-B parts of Bau EPD GmbH, based on the c-PCR documents of CEN TC 350 and product TC standardisation bodies resp. ISO/TC 59 SC 17 WG3 standardisation body)

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Update of versions:

version	comments	Date of issue
V 0.0.0	Merging of the single documents «basis document» and «LCA calculation rules», integration of necessary management system components and document control mechanisms in view of a future accreditation of Bau EPD GmbH, removal of redundant text passages from underlying standards, limitation on complementary passages.	2017-07-17
V.0.0.1	Adaptation as per requirements of EN 15804:2019 + Amendment 2, specifications and clarifications following the latest decisions from the meetings of the PCR Advisory Board and respective comments, removal of some redundant text passages from underlying standards, some redundancies were left for clarification. Chapter 5.6 Allocation was updated.	2020-08-24
V.1.0.0	Revision of allocation rules in cooperation with the OEKOBAUDAT user circle, publication for EPD creation	2021-01-14
V.2.0.0	Changes, adaptations and additions based on the requirements of ÖNORM EN ISO 17065 – Conformity assessment – Requirements on bodies certifying products, goods and services in cooperation with Accreditation Austria	2022-04-20
V.3.0.0	Changes Green Energy and further changes Process and Quality Management, structural description for accreditation	2022-06-27

2 INTRODUCTION

The Austrian EPD platform for construction related products and services sets the framework for the preparation of Type III environmental product declarations for building related products according to the Austrian standards ÖNORM EN ISO 14025 and EN 15804, as well as standards in relation to it.

Bau EPD GmbH is a member of ECO Platform (head organisation of EPD programme operators, www.eco-platform.org) and follows its Guidance documents and audit and verification rules (these complement and specify the existing CEN and ISO standards and technical specifications).

Bau EPD fulfils the requirements of ISO 17065 – Conformity assessment – requirements on bodies certifying products, processes and services. We hereby note that the term “certificate” resp. “certification” defined in this standard is used analogically for Type III Environmental Product Declarations (EPD), although these do not contain comparative assertions or benchmarks like Type I or Type II Environmental Certificates do.

Type III environmental product declarations are principally designed to guarantee the exchange of information within construction economy (Producers, planners and executive construction companies), although their application as a basis for the exchange of information between the economy and consumers shall not be precluded according to ÖNORM EN ISO 14025.

The environmental product declarations are based on third party verified data from LCA, inventory analysis or information modules and additional information that shall together cover the essential environmental aspects of the product.

3 APPLICATIONS

3.1 Application of the document on hand

The Austrian standard ÖNORM EN ISO 14025, describing the principles and procedures for preparation, actualisation and publication of Type III environmental product declarations as well as the interaction of the required actors, demands the written formulation and publication of the rules that are necessary for operating the programme for environmental product declarations. ÖNORM EN ISO/IEC 17065 contains additional requirements on the quality management system of a conformity assessment body of products. These requirements are described in chapter 4 of the document on hand.

Chapter 5 regulates additional programme specific requirements of Bau EPD GmbH on LCA and EPD creation that are not (yet) covered by any other existing and valid standards or regulative documents.

3.2 Application of the programme for environmental product declarations

The programme for environmental product declarations has been created as a service for producers of construction related products. Within the term “construction related products” come building materials, materials for interior fittings, components of building services and techniques (domestic services) and sanitary fittings or building elements for buildings or other structures.

The construction related products are aggregated into product categories or product groups that fulfil equivalent functions in the building or structure. EPD are not considered to be tools for comparing quality criteria of single building related products or services.

Within the application of an EPD the whole life cycle of a product must be considered, and so the EPD Type III environmental product declaration can only be useful for comparison within the whole system of the building. The same basis documents (PCR) and upstream databases must be used to enable comparative assertions.

A well-structured summary of the individual steps in the process flow on the path to an EPD can be found in M-Document 26 “Conformity assessment programme for EPD – process flow”.

Applicable documents:

BAU EPD M-Document 26 “Conformity assessment programme for EPD – process flow”

4 ORGANISATIONAL STRUCTURE AND QUALITY MANAGEMENT SYSTEM FOR EPD CREATION

4.1 Target groups and objectives

The goal of the Austrian EPD Platform for construction products is to create rules for the preparation of EPD within a widely accepted corporative consensus to enable aggregation on building element or building level and with that application of EPD data. These rules can be considered as a coherent basis for the declaration of construction products in accordance to the EPD programme of Bau EPD GmbH and give a solid ground for recognition in different user applications and databases.

The EPD programme is scheduled for communication between companies (business to business) but its application as a basis for a normative regulated information exchange between businesses and consumers in future shall not be precluded. For this application Bau EPD GmbH provides an online platform for publication of (www.bau-epd.at).

Following ISO 14025, the superordinated goal of EPD is to support supply and demand of less pollutive products by verifiable, exact and by no means misleading information about environmental aspects. With that the potential of a market orientated, continuous improvement shall be achieved. EPD allow professional purchasers and planners to estimate environmental aspects of construction materials. EPD shall contain information based on LCAs according to ISO 14025 and additional information that are not based on LCAs according to ISO 14025 to cover the environmental aspects of products through their whole life cycle.

EPD can be used as documentation to fulfil the requirements of the Construction Product Regulation (CPR Regulation EU 305/2011). (Regulation (EU) No 305/2011 of the European Parliament and of the Council (recital 56).

Environmental Product Declarations (EPD) form the basis for the data for assessing buildings on an ecological level. This is currently laid down in the new European Standards project “Sustainability of buildings” (EN 15978).

EPD are recognized by all current Building Assessment Schemes.

Environmental Product Declarations are based on ISO standards and are therefore internationally aligned. They are suitable as proof of environmental claims in the public procurement arena.

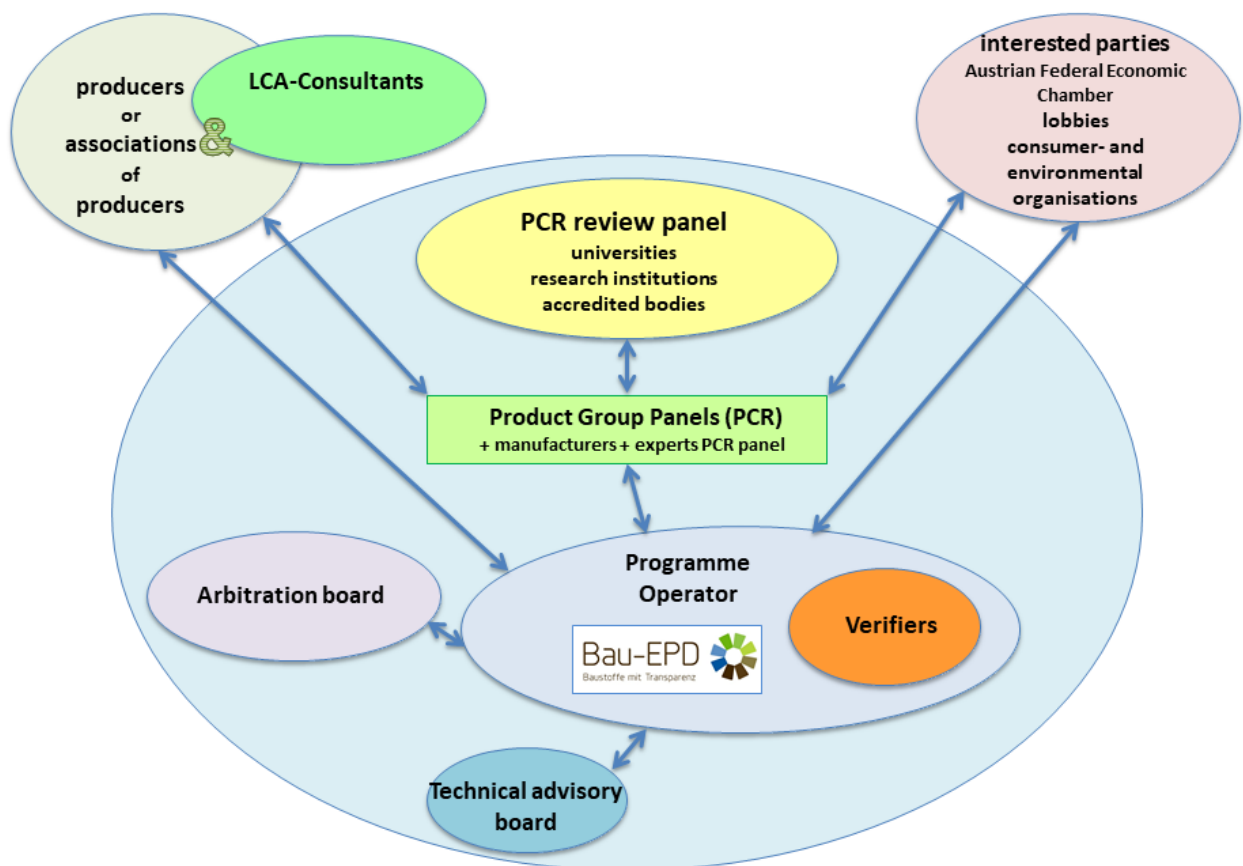
EPD can serve for weak point analysis over the product life cycle, for comparison in context of its application in the building etc.

4.2 Organization of the Austrian EPD Platform for construction related products and services

The essential elements of organisation within the EPD programme are:

- a. the Bau EPD GmbH as programme operator;
- b. industry and producers of construction materials and their associations, supported by LCA experts if need;
- c. the PCR review panel (advisory board, in Austria called PCR-Gremium);
- d. the product group panels;
- e. interested parties.
- f. the technical advisory board
- g. an arbitration body that can be installed if need (representatives must be chosen in a well-balanced way from members of the organizational elements)

The following chart shows the interaction of actors:



4.2.1 Programme Operator

The Bau EPD GmbH operates with the Austrian EPD platform for construction materials the objective programme for Type III environmental product declarations. The Bau EPD GmbH is according to ISO 14025 responsible for the set-up and administration of this programme.

The administration contains the following list of tasks which may not be complete:

- a) preparing the General Principles and Programme Rules, their maintenance and communication;
- b) publishing the names of organisations and persons participating in the program development (publication of names of individual persons and logos of institutions only with permission of the persons concerned);
- c) ensure that requirements on Type III Declarations according to ISO 14025, clause 7, are met;
- d) establish a procedure to ensure consistency of data within the programme;
- e) keep lists and documentations of PCR documents and EPD and offer access to these lists to the public
- f) publish PCR documents and EPD of the programme
- g) follow changes in procedures and Type III environmental product declarations in other programmes and, if necessary, adapt own procedures and documents;
- h) ensure the selection of competent and independent verifiers as well as members of the PCR review panel;
- i) establish a transparent procedure for the verification of PCR, in which the scope of the verification and the rules of assembling the team of verifiers is shown;
- j) Develop a procedure to avoid misuse of these international standards as a reference to the Type III EPD programme or its logo
- k) ensure that Programme Rules are respected

Bau EPD GmbH is a member of the ECO Platform (head organisation of EPD Programme Operator) and is obliged to follow the association's guidelines and decisions. Recurring audits allow Bau EPD GmbH to apply the ECO Platform Quality Logo on published EPD.

Applicable Documents:

BAU EPD-M-DOCUMENT-1- Organisation, function holders, competences

BAU EPD M-DOCUMENT 34-External contractors competence assessment

BAU EPD M-DOCUMENT 28-Matrix of powers and competences

4.2.2 Producers

The producer or association of producers is the single holder of an environmental product declaration. The producer is responsible and liable for the content.

It is the producer's task to provide an LCA that was prepared in compliance with the BAU EPD MS-HB, the life cycle inventory, the project report as well as additional data and information required in particular PCR B documents under the condition of confidentiality. The draft of the EPD is also to be delivered to the programme operator.

The producer is entitled to delegate this work to external LCA experts and can reduce his own part to collecting and forwarding data from production sites/suppliers and business partners.

The producer has the duty to inform the programme operator, if changes in technology or other aspects occur that have an impact on the content or representativity of an existing EPD and with that require revision or adaptation.

The producer is obliged to pay the fees for verification, publication of the declaration and participation in the Programme as defined in the fee regulation – see chapter 9 "Financing and fees".

The producer is obliged to accept the requirements on use of the logo of ECO Platform.

Applicable Documents:

BAU EPD M-Document 2: Requirements on LCA and EPD – text template

BAU EPD M-Document 27-Application for EPD verification

BAU EPD M-Document 3: contract verification and participation in EPD Programme Bau EPD

BAU EPD M-Document 4: Rules ECO Platform EPD logo use

BAU EPD M-Document 4a: Rules for use of Bau EPD logo

4.2.3 PCR review panel (advisory board)

The PCR review panel, in Austria called PCR-Gremium, is an independent, competent third party presenting the chief and at least two members. It benefits from instruction-freedom and organises itself independently from the programme operator. It chooses its members, chief and other entities independently. The chief of the PCR-Gremium and his or her deputy chief are elected by the PCR-Gremium. The tasks of the chief can generally also be executed by his deputies, if needed.

Within the Austrian EPD Platform the PCR review panel is formed by employees of universities, research institutions and accredited bodies or employees of companies specialized on preparation of LCA or verification of EPD.

Bau EPD GmbH keeps a list of all persons sent by these organisations.

In compliance with ISO 14025, clause 8.2.3, the qualification of the verifiers shall comprehend:

- a) General knowledge of industry and product-related environmental matters.
- b) Good process and product knowledge within the relevant product or service.
- c) In-depth knowledge of the principal LCA methodology, knowledge of the relevant standards in the field of environmental labelling and declarations, and life cycle assessment.
- d) Knowledge in the overall regulatory framework in which the concept of EPD has been introduced and the scope of the PCR documents.
- e) Knowledge of the Type III EPD programmes

The PCR review panel decides about the recruitment of new members resp. member organisations under consideration of the qualifications mentioned above. Precondition for the admission of organisations into the PCR review panel is the

affiliation to a university, research institute or inspecting authority or company. Precondition for the admission of individual persons is the employment in one of the member organisations or, in case of individual entrepreneurs the proof of long-term experience in LCA and sustainability matters. Employees of product manufacturers or manufacturer associations can apply if they have the necessary expertise and become extraordinary members without voting rights.

Tasks of the PCR review panel:

- a) Workout of product category rules (Summarization of products with similar or equal function and application into groups of equal functional units).
- b) Election of experts into product group panels where product category rules (PCRs) are worked out.
- c) Verification of the PCR. This is carried out by those members of the PCR review panel who are not involved in the process of working out the PCR. For the verification of PCRs the chief of the PCR review panel and at minimum one other member are required.
- d) The individual and independent verification of the environmental product declaration. This is in any case done by a member of the PCR review panel who is neither involved in the preparation of the LCA nor in the process of developing the EPD and who is not confronted with conflicts of interest. The person must have in-depth knowledge of process and product characteristics of the product category in question. Registered verifiers of Bau EPD GmbH must be members of the PCR Panel. A declaration must at least be checked by one approved verifier.
- e) Continuing education

Applicable Documents:

BAU EPD M-DOCUMENT 5: list of members of PCR panel plus evidence of education

BAU EPD M-DOCUMENT 06: list of registered LCA practitioners in PCR Advisory Panel

BAU EPD-M-DOCUMENT 15: list of approved verifiers

4.2.4 Product Group Panels (Product Group Forum)

The product group panel is in charge of the preparation of PCRs for the Programme Operator. The panel is constituted on recall of the Bau EPD GmbH and the chief of the PCR review panel suggests the experts. The panel obtains a chairman who is supported by at minimum one other member as well as experts from interested parties and/or industry.

Tasks of the product group panel:

- a) exact definition of a product group;
- b) identification of the characteristic impact on the environment;
- c) determination what documents for evidence must be provided;
- d) preparation of the draft of the PCR;
- e) presentation of the draft in front of the PCR review panel;
- f) adaptation of the PCR according to the comments received.

Applicable Documents:

BAU EPD M-Document 9: overview list product group panels-members (contact and competences)

4.2.5 Interested parties

As interested parties for Type III EPD-programmes the following groups can be considered according to ISO 14025 (raising no claim to completeness): producers, suppliers, associations, purchasers, users, consumers, non-governmental organisations, public institutions and, if relevant, independent parties and certification bodies.

Involving the interested parties in the process of developing the programme according to ISO 14025, clause 6, ranges from the workout of the PCR to conclusion following the rules set in the General Principles for PCR preparation. The General Principles have to be published on the internet for 4 weeks to give interested parties the chance and possibility to transmit written comments. In the process of preparation of the PCR-B parts support of members of interested parties is designated. In addition to that here also a 4-week-period of publication on the internet gives all stakeholders the possibility of written remarks. The eventually necessary compromise shall be achieved in extra set meetings where interested parties, the product group panel and representatives of the PCR review panel come together.

Natural persons as well as organisations can be listed in the mailing list “interested parties” of Bau EPD GmbH.

4.2.6 Technical Advisory Board (TAC)

The Technical Advisory Board (TAC) is an additional panel supporting the programme operator and fulfilling tasks to ensure impartiality. Detailed descriptions on composition of members, goals and tasks can be found in *BAU EPD M-Document 24-Internal regulations TAC* as well as in *BAU EPD M-Document 25-contract cooperation TAC*. A list of active members of the TAC can be found in *BAU EPD M-Document 23-Members TAC*.

Applicable documents:

BAU EPD M-Document 23-Members TAC

BAU EPD M-Document 24-Internal regulations TAC

BAU EPD M-Document 25-contract cooperation TAC

4.3 Procedures for preparation, verification and maintenance of Product Category Rules (PCR) and EPD documents**4.3.1 Procedures for preparation, verification and maintenance of Product Category Rules (PCR) B**

The Product Category Rules (PCR) give the basis for the environmental product declarations. They define all that has to be declared in accordance to the specific PCR and are developed in Product Group Panel under involvement of interested parties.

Following ISO 14025 the possibility of adopting readily available PCR documents for equal product categories from appropriate market regions shall be checked. The product group panel will therefore make an appropriate research and adopt existing PCR documents if possible. Especially standards from the CEN- und ISO committees (CEN/TC 350 und ISO/TC 59 SC 17 WG3) shall be considered. CEN TC c-PCR overrule Programme Operator related PCR documents.

PCR according to EN 15804 published as EN standards by CEN for a product family shall have prevalence over any other PCR, unless technically justified.

The content of a national and/or Programme Operator related PCR should refer to the corresponding CEN TC c-PCR.

Regarding the procedure of preparing PCR documents ISO 14025 recommends in clause 6.7.1 to prepare the PCR after the definition of the product category by reference to a fitting LCA.

4.3.1.1 *Content of PCR-B for specific construction materials/elements/systems*

4.3.1.1.1 **General Rules**

Requirements on content and format of the project report are dealt with in chapter 4.5. Requirements on reporting the content and format of the EPD document are dealt with in chapter 4.6. respective in product specific PCR B for construction materials. Bau EPD GmbH offers Microsoft Word templates for both project report and EPD.

4.3.1.1.2 **Definition of the Product Category**

- a) definition and description of the product, applying correct number of numbering system, description of function and application of the products
- b) List of standards applicable for the product (harmonised EN standards, European technical approvals/admission/valuations or the standard made mandatory in the ÜA (Übereinstimmung Austria) list of products. Declaration of product features to be declared according to these standard as well as self-declarations and third-party verifications.
- c) Listing of additional product features that have to be declared
e.g.:
 - dimensions,
 - bulk density,
 - equilibrium moisture content (EMC),
 - mechanical characteristics (compressive strength, tensile strength, bending tensile strength, E-modulus),
 - fire protection: inflammableness, generation of smoke, burning dripping / fire resistance
 - acoustic protection: sound reduction index
 - thermal protection: thermal conductivity, heat transfer coefficient
 - protection against moisture: water vapour diffusion resistance factor

(This information can also be stated in the Austrian national Annex to the EPD. It is allowed to reference to technical product data sheets. Especially with average EPDs such a reference is useful, if not all products of a product range can be described in detail).

- d) List of materials and substances that can affect human health and/or the environment through all stages of the product life cycle, if not declared within LCA and if true, requirement of further proof. (see ISO 14025, concerning radioactivity, way of gaining raw materials etc.)
- e) In the context of PCR creation the Product Group Panels may decide to integrate text examples, examples of figures and/or flow charts.

4.3.1.1.3 **Requirements on the LCA**

General rules for LCA applicable on all product categories following ISO 14025 summarized in chapter 5.

In the PCR Part B the functional unit resp. the declared unit must be defined and it is to declare, which modules of EN 15804 are unimplemented, if the EPD does not cover the whole life cycle. If necessary other specification, e.g. requirements on data quality, cut-off criteria or allocations can be stated.

4.3.1.1.4 Additional information about emissions of dangerous substances into (indoor) air, soil and water during use stage

If relevant for the product category, the PCR makes it compulsory to declare emissions of regulated substances into water and soil, if the products are in contact with water and soil during use stage). The check must be fulfilled with reference to the document „Guidelines for emissions into indoor air and environment“.

This requirement of EN 15804 can also be applied on non-regulated substances if they are relevant.

The required testing for that must be executed by accredited bodies or institutions of equal character and qualification.

This part can be declared in the EPD as additional information (new chapter or annex), if no mandatory passages derive from the PCR B documents and producers want to declare the information.

4.3.1.2 PCR-Verification and involvement of interested parties

The verification of PCR is done by a member of the PCR review panel who is neither involved in the preparation of the PCR.

Following ISO 14025 the chief and at minimum one other member of the PCR review panel have fulfil this task together. If the chief is involved in the Product Group Panel, the PCR-review can also be lead by a deputy chief.

The verification of the PCR has to show in compliance with ISO 14025 that the PCR developed is in accordance with the range of standards ISO 14040 and ÖNORM EN ISO 14025, the General Principles for Type III environmental product declarations were followed and that the information made compulsory in the PCR give a description of all essential environmental aspects of the product. In addition to that the PCR must be compliant to EN 15804.

After the first check on the PCR by the PCR review panel the documents will be presented for 4 weeks on the internet homepage of the Bau EPD GmbH to gather comments of interested parties. Comments shall be directed to Bau EPD GmbH in a written way. After respective corrections and/or improving adaptations with reference to the comments received the approval of the PCR by the PCR review panel will follow. The publication is done on the homepage of Bau EPD GmbH and the rules can be used for EPD creation.

4.3.1.3 Maintenance of PCR documents

The validity of a PCR document is 5 years. After 5 years the Bau EPD GmbH induces either an extension or revision through the PCR review panel. Changes of the standards underlying the PCR or new research results concerning environmental features of materials, substances or processes can make a revision necessary at a sooner date.

Applicable Documents:

BAU EPD-M-DOCUMENT-10-product categories PCR B numbering system overview

Product specific PCR B documents (latest versions can be downloaded from the website www.bau-epd.at)

BAU EPD-M-DOCUMENT-11-general rules for PCR creation

BAU EPD-M-DOCUMENT-12: procedure for PCR creation for specific product groups and PCR verification flow diagram

4.3.2 Procedure of application of the LCA method

See chapter 5.

4.3.3 Project Report

4.3.3.1 General

The project report is the systematic and detailed summary of the project documentation, a support for the verification of the EPD. It must show that the information based on the LCA as well as additional information are in compliance with EN 15804. It must be accessible to the verifier under conditions of confidentiality. It is not part of the public communication.

4.3.3.2 Project report: LCA

The project report must contain the content elements described in chapter 5 and the templates for content and format.

Applicable Documents:

BAU EPD-M-DOCUMENT-13A1-project report content and format template-EN15804+A1

BAU EPD-M-DOCUMENT-13A2-project report content and format template-EN15804+A2

4.3.3.3 Project report: Additional information

The project report must contain all documentation about further environmental impact that has to be declared in the EPD. These documents (verification reports, test reports and additional technical information about each stage in the life cycle that were not considered in the LCA) can be added in form of a copy. Verifiers must check on additional information whether it has been 3rd party verified and confirmed by recognized, independent testing centers.

4.3.4 Environmental Product Declaration

According to ISO 14025 all Type III environmental product declarations of a product category must have the same format and contain the same data with reference to the PCR.

4.3.4.1 Contents of the Environmental Product Declaration

General information, product description and life cycle description, scenarios, information about system boundaries, allocation and cut-off criteria, additional technical information, declaration of environmental parameters derived from the LCA analysis and all other required information as per ISO 14025 resp. EN 15804:

See respective product specific PCR, that can be used as a content and format template. In addition to that Bau EPD GmbH offers a template for EPD content and format.

Applicable Documents:

BAU EPD-M-DOCUMENT-14A1-EPD content and format template MS Word Document-EN 15804+A1

BAU EPD-M-DOCUMENT-14A2-EPD content and format template MS Word Document-EN 15804+A2

4.3.5 Procedure of verification of the environmental product declaration

4.3.5.1 General

The third party verification of the environmental product declaration and the independent verification of the data are completed by members of the PCR-Panel who are, in compliance with ISO 14025, clause 8.2.1 neither involved in the process of developing the declaration nor do they belong to the same organisation as the LCA-Practitioner.

The system is carried out by individual persons that can be registered as independent external verifiers and/or registered LCA-practitioners at the Bau-EPD GmbH. To guarantee the independence of the verifiers, an LCA-practitioner must not be linked to or working for the same institution or company as the verifiers. The verification is carried out under the principle of dual control. The verifiers must not belong to the same organisation. Persons who want to act as external verifiers or registered LCA practitioners can apply any time and have to undergo a certain procedure of quality assurance.

The procedure for approval and supervision of approved LCA practitioners and verifiers are carried out under the auspices of the programme operator.

The procedure of the verification must be transparent.

The qualification of the verifiers must include the following points:

- knowledge of relevant sector, product and product-related environmental aspects;
- process and product knowledge of the product category;
- expertise in LCA and methodology for LCA work;
- 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;
- knowledge of the Type III environmental declarations programme.

The verifier resp. the team of verifiers is suggested by Bau EPD GmbH, the manufacturer and/or LCA-practitioner is entitled to reject the suggestion in case of possible bias. The independent verification of the project report and the verification of the EPD are carried out by the same persons.

Applicable documents:

BAU EPD-M-DOCUMENT-15-list of approved verifiers

BAU EPD-M-DOCUMENT-16-application form for independent third-party verifiers

BAU EPD-M-DOCUMENT-17-evaluation process verifiers for EPD project+procedure EPD verification

BAU EPD-M-DOCUMENT-18-template contract for verifiers of an EPD project

4.3.5.2 External verification of life cycle inventory, project report, EPD document and publication of the declaration, ownership rights

The independent verification as per ISO 14025 must confirm that the documents are fulfil the requirements of standards and rules they are based on, are in compliance with the general programme rules and guidelines and fulfil all rules defined in current product-specific PCR documents for the product groups under study. The verification must confirm that the declaration shows exactly the data calculated in the documents, on which it is based. It must also check on plausibility. Verifiers must go through a checklist while performing the verification process. The checklist is based on the guidelines for verification and quality of ECO Platform. It is integrated in the verification report template.

The verification report shall document the verification process, while adhering to the obligations of covering rules for data confidentiality. This report shall be available to any person upon request. It must be communicated to Bau EPD GmbH.

The head of the conformity assessment body evaluates the statements of the verifiers.

If Bau EPD GmbH determines, based on the verification report or any other verification statements, that the data supporting the Type III environmental declaration are inadequate, incorrect or incomplete the declaration shall not be published.

The decision of release of the declaration falls to be determined by Bau EPD GmbH only.

The ownership rights of the declaration remain at Bau EPD GmbH. The declaration certificates are awarded to the client and can be withdrawn in case of violations against the contractual rights and duties based on the MS-HB and its applicable documents.

The decision of external publication and communication within the period of validity must be decided by the holder of the declaration.

Applicable Documents:

BAU EPD M-Document 19-template verification report including checklist for verification A1+A2

BAU EPD M-Document 19a: Template verification report additional comments

BAU EPD M-Document 26 Conformity assessment programme for EPD – process flow

4.3.6 Validity of the environmental product declaration

According to EN 15804 an EPD is valid for a 5-year period from the date of issue, after which it shall be reviewed and verified. An EPD shall only be reassessed and updated as necessary to reflect changes in technology or other circumstances that could alter the content and accuracy of the declaration. An EPD does not have to be recalculated after 5 years if the underlying data has not changed significantly. After a maximum period of 10 years a review and new issue of the EPD is necessary.

Treatment of changes affecting the certification:

Requirement as per clause 9 in EN 15804: A reasonable change in the environmental performance of a product to be reported to the verifier is +/-10 % on any one of the declared indicators of the EPD (see Clause 7). Such a change may require an obligatory update of the EPD, even before the 5 years of validity are over.

Examples for changes occurring within the sphere of the manufacturer:

- energy consumption (Electricity, gas, fuels), if contracts with energy providers change within the validity period of the EPD, a yearly proof of energy contracts and delivery is necessary if a marked based energy calculation approach is used (calculation with real energy mixes instead of country specific average mixes)
- changes in production processes, new assets/plants/equipment,
- use of different raw material mixes
- production in different/additional plants
- new markets with significantly longer transport scenarios

Changes not resulting from the sphere of the declaration holder (changes in the EN 15804, ISO 21930 resp. ISO 14045 or connected PCR documents) are communicated to the client as soon as the standards are published. In this case a new issue of the EPD is only necessary after the expiration of the validity period of 5 years.

4.3.7 Confidentiality, data protection and publication of EPD data

The conformity assessment body has established general rules and legally enforceable commitments to ensure confidentiality and protection of data collected under the framework of the conformity assessment work. This gives protection to all involved parties.

Rules concerning confidentiality can be found in *BAU EPD M-DOCUMENT 3: Contract verification and participation in EPD programme Bau EPD for clients, for verifiers in BAU EPD-M-DOCUMENT-18-template contract for verifiers of an EPD project* as well as in *BAU-EPD-M-DOCUMENT-31-NDA-non-disclosure agreement*.

The EPD document is published on the website of Bau EPD GmbH and download is made available for all interested parties. The result tables are provided in machine-readable format.

The inventory analysis and project report are given only to the verifiers. The verifiers are obliged to keep the information confidential.

Precondition to act as a verifier is the signing of a confidentiality statement. In the verification report, that shall be available to any person upon request, no confidential data shall be made public.

Note: When the conformity assessment body is required by law or authorised by contractual arrangements to release confidential information, the client is notified about content of the provided information, unless prohibited by law.

Applicable documents:

BAU EPD M-DOCUMENT 3: Contract verification and participation in EPD programme Bau EPD

BAU EPD-M-DOCUMENT-18-template contract for verifiers of an EPD project

BAU-EPD-M-DOCUMENT-31-NDA-non-disclosure agreement.

4.3.8 Periodical check and maintenance of the BAU EPD MS-HB and product specific PCR

The period of validity of the MS-HB and product specific PCR documents is 5 years. After 5 years the Bau EPD GmbH reminds the PCR review panel to decide about extension of the validity period or revision and adaption. Changes of the standards underlying the documents in question or new research results concerning environmental features of materials, substances or processes can make a revision necessary at a sooner date.

4.4 Quality Management System

The conformity assessment body's top management has established mandatory rules to fulfil the requirements of ISO 17065 including introduction, documentation and maintenance of the QM system. The top management is obliged to maintain the necessary standards and guidelines and fulfil steps of the improvement cycle as well as regularly checks on effectiveness.

This includes:

- ensuring that the management system leads to the intended results
- acceptance of accountability for the effectiveness of the management system
- conception of policies and goals
- definition of roles, powers and competences as well as responsibilities
- integration of requirements of standards and creation of necessary guidelines
- application of a risk based and process-oriented approaches
- provision of necessary resources

All employees have access to all QM documents concerning their tasks and commit themselves to full implementation of all requirements and measures. The top management is committed to act as a role model.

Proof of implementation is provided by maintaining the status as an accreditation body.

4.4.1 Description of the Quality Management System

The chapter describes elements of the QM System such as rules for control of documents and records. It describes the processes concerning internal and external audits as well as corrective measures. Concepts for detection of errors and preventive measures are developed, a certain amount of flexibility and pragmatic must be applied to deal with the fact that LCA is still a very new matter and object to scientific discourse and discussion. The fact that current standards and guidelines as well as requirements from laws concerning LCA leave room for interpretation and logical requirements i.e. concerning improvement of circularity are not or not clearly formulated. The fulfilment of programme-internal rules and decisions is generally the highest claim, but the critical review of such rules must also be an approach among all stakeholders.

Responsible positions/functions within the programme operation

HCAB:	Head of conformity assessment body as per ISO 17065
HPr-EPD:	Head of EPD programme operation as per ISO 14025
QM:	Head of quality management
Int. Auditor:	Internal Auditor as per 17065
C-PCR:	Chair PCR review panel as per ISO 14025
M-PCR:	Member PCR review panel
C-PGP:	Chair PGP Product group panel
M-PGP:	Member Product group panel
V-EPD:	Verifier EPD/LCA
V-TAC:	Chair of technical advisory board (TAC, consulting panel)
M-TAC:	Member of TAC
MI:	Mechanism for safeguarding impartiality and non-discrimination

Responsibilities within the QM System:

HCAB, QM: responsible for internal audits, creation, adaptation and control of documents, review and approval of QM documents concerning management and process flows

C-PCR: Approval of new members in the PCR review panel, approval of MS-HB chapter LCA rules and approval of new product specific PCR

Applicable documents:

BAU EPD-M-DOCUMENT-1- Organisation, function holders, competences

4.4.2 Control of documents

Traceability of QM documents:

An overview of all documents can be found in *BAU-EPD-M-DOCUMENT-33-Overview valid QM-Documents-documentation of track changes*.

In *BAU-EPD-M-DOCUMENT-29-File index data saving* an overview on the file structure of saved documents and records on the server of Bau EPD GmbH can be found.

For the employed verification personnel as well as for other stakeholders the Content Management System (CMS) on the website is the only relevant place to search for latest versions of documents.

All QM documents, forms and templates are published in the CMS without cuts. No restrictions or registration requirements differentiate between stakeholders. Everyone is welcome to deposit suggestions for improvement at Bau EPD GmbH, the programme supports open-source strategies.

For each single EPD project the latest documents can be downloaded from the CMS. Print versions must be compared (version, date...). When submitting an EPD document for verification the latest version of guidelines should be considered.

During the process of creation or revision of existing PCR or QM documents intermediate versions can be distributed per E-mail, those are not published on the website. Such versions must be numbered in clear and chronological ways. Changes and comments must be submitted in track change mode.

Structure and content of the MS-HB, applicable documents, forms and templates as well as explaining material is understood to be used among experts ("business2business"). The content and format templates for EPD documents to be published can also be used to communicate with consumers ("business2consumer").

All documents are provided in the latest Microsoft office formats and as pdf formats.

Development, approval and control of QM documents:

The development and adaptation on documents can be carried out by all function holders within the programme. For product specific PCR documents the Product Group Panels are responsible (see chapter 4.3). All documents created or adapted in this way must be presented to the head of quality management at least, in case of LCA-relevant questions the PCR Panel must be consulted. Deadlines for comments of created/adapted documents must be communicated in a written way by the creators. Non-reacting is considered as consent.

Documents for recurring process flows of the programme operation must be integrated into the numbering system of the applicable documents (M-docs). An overview of existing M-docs can be found in MS-HB chapter 10 as well as on the website (General PCR documents).

The approval of documents must be carried out as per *BAU EPD M-DOCUMENT 32-Control of documents and records*.

The approval of all documents mentioned above can only be communicated in written form (E-Mail to all creators and users of the documents in question).

After approval by the head of the EPD Programme, the documents are published on the website.

Training and education concerning use of QM documents and requirements of the QMS

The quality managers are responsible for training and education of new employees or applicants fulfilling functions of registered LCA-practitioners or verifiers. In practice new personnel must read the documents and give feedback. The execution of the rules is assessed within the first EPD project.

Applicable documents:

BAU EPD M-DOCUMENT 28-Matrix of powers and competences

BAU-EPD-M-DOCUMENT-29-File index data saving

BAU EPD M-DOCUMENT 32-Control of documents and records

BAU-EPD-M-DOCUMENT-33-Overview valid QM-Documents-documentation of track changes.

4.4.3 Control of records

Records are filled resp. project specific adapted M-documents, as well as in draft versions or notes of intermediary results and end versions. The rules for records can also apply on additional notes.

Records of the programme operation are saved following M-doc 29 on the server and kept confidential. The identification of electronic data files requires an indication of date and/or version in the file name to be stored systematically. Initials of the persons working on records can facilitate the use and control of records.

Records of QM documents are saved by the head of the conformity assessment body in the digital storage system only. The rules for distribution of such documents can be found in the process flows of the matter in question.

Records concerning EPD projects must be kept by verifiers as well as the programme operator at minimum for 10 years. This contains the submitted version of the EPD document, the corresponding project report and M-doc 8 as well as all verification reports and enclosures. The EPD document and M-doc 8 must be published on the website and/or databases. The other project records must be kept confidential.

External auditors of ECO Platform or Accreditation Austria can have insight at any point in time following strict non-disclosure agreements.

Applicable documents:

BAU-EPD-M-DOCUMENT-29-File index data saving

BAU EPD M-DOCUMENT 32-Control of documents and records

4.4.4 Responsiveness to complaints and appeals, tasks of the arbitration body

In case of dispute (doubt of correctness of EPD results, of one or more indicators in one or several life cycle modules) an arbitration panel must be gathered. Participants must be members of the PCR panel and management direction as well as representatives from the disputing parties. The members of the arbitration body must be nominated in a balanced way to represent all interested parties. No single interest must be dominant (internal and external personnel of the Programme Operator are considered to show single interest and should not be the majority.) The members of the arbitration body must represent all interested parties and shall be neutral and unbiased at the same time. The programme operator must provide access to all information the arbitration body may need to fulfil its task.

General:

The PCR review panel will be entitled to deal with appeals concerning EPD result, if need an arbitration panel will be established.

The Technical Advisory Board will be entitled to deal with complaints.

The decision, which panel to entitle lies with the head of the conformity assessment body.

The process management concerning complaints and appeals can be found in M-Document 35 – management of complaints and appeals.

If the management direction of the Programme Operator does not follow the consulting of this arbitration mechanism, the arbitration body is entitled to take independent measures (such as information of authorities, accredited bodies, or any other representatives of interest stakeholders). When taking such action, the requirements of confidentiality of the EPD client and programme must be taken into account.

Applicable documents:

BAU EPD M-Document 35 – management of complaints and appeals

4.4.5 Detection of errors and corrective actions

In case of internal complaints or detection of an internal error (internal audits, verification processes) resp. when receiving a complaint/error notice from an external party (LCA-experts, consultants from the EPD user scene, data base providers...) this is communicated in most cases to the LCA-practitioner team contracted by the client or management director of Bau EPD GmbH. In rare cases, verifiers are contacted at first hand. The managing director must document the complaints/non-conformities and inform all necessary function holders (QM, C-PCR, C-TAC).

Non-conformities within the programme are discussed and documented within the project teams in question and the quality manager or during a PCR panel meeting, TAC meeting or in rare cases meetings of the company owners. The quality management is always part of clarification processes.

Error notices and the necessary suggestions and decisions concerning improvement are communicated without formal requirements per E-Mail distribution.

At the same time errors shall be documented as “non-conformity-report”. For that *BAU EPD M-Document 30 management of action and measures* can be used. The non-conformity report serves as a basis for evaluation of effectiveness of measures as well as catalogue of corrective actions. QM and C-PCR can document records separately, the comparison can be done in internal audits. C-PCR can use, if relevant, M-Documents 19 or 19a or extractions from there.

Depending on pressure corrective actions are taken immediately after realisation of non-conformities (documents are withdrawn or released at a later point in time, information is spread internally and externally) or discussed in a PCR panel meeting, communicated to the employees of the participants and dealt with in the MS-HB if relevant. The complaining party is informed. When evaluating corrective measures the management must decide if similar topics must be handled (i.e. rules for all/several product categories to be altered).

Note: most questions/complaints arise due to a lack of comparability of LCA-results and/or lack of transparency within a representative market region or over time. The detection of non-conformities is sometimes limited to a transparent way of representing interpretations and assumptions, whereas sometimes more than one presentation can or must be considered as compliant. The best communication possible about such facts and complex facts must be a part of corrective actions and must be seen as a floating bridge to preventive actions.

In case of follow-up-projects the concerned function holders must look at execution of corrective actions (i.e. use of new templates and checklists).

In the yearly management review the head of the conformity assessment body must check if the measures set are effective. It is noted that sometimes similar situations/projects are carried out only after several years and the topic can only be evaluated after that...

Applicable documents:

BAU EPD M-Document 30 management of action and measures

4.4.6 Preventive actions

The procedures for preventive actions, if needed, shall define requirements for the following:

- a) identifying potential nonconformities and their causes;
- b) evaluating the need for action to prevent the occurrence of nonconformities;
- c) determining and implementing the action needed;
- d) recording the results of actions taken;
- e) reviewing the effectiveness of the preventive actions taken.

The documentation of these steps can be found in M-Dok 30 Management of actions and measures.

Preventive actions taken shall be appropriate to the probable impact of the potential problems.

1. Internal sphere in existing programme

With that the prevention of recurring error structures or the occurring of similar error structures is meant. The procedures under 4.4.5 can be equally applied in most cases.

2. External sphere (international market, changes in framework conditions)

Here non-conformities can occur that do not manifest themselves as non-compliance within the existing programme due to violation of rules and guideline but can result from pressing new requirements coming from external stakeholders (law makers on national or international level, market pressure, EPD user scenarios on which the programme operator has only partly a chance to influence. At this point, detailed procedures are less important, the focus should rather be laid on best observation and networking within the scene.

As preventive actions the assurance of enough resources for function holders entitled to work within, support and contribute to national and international groups of experts/decision makers (Standardisation panels, research work, information and exchange of knowledge with law making institutions).

Visions and planned actions going with future perspectives must be documented in internal audits and management reviews.

Applicable documents:

BAU EPD M-Document 30 management of action and measures

4.4.7 Management of actions and measures

The management of actions and measures contains all measures and an evaluation of those measures resulting from:

- Internal audits
- External audits
- Management-Reviews
- Corrective actions
- Preventive actions
- Etc.

This must be documented in a table in *BAU EPD M-Document 30 management of action and measures*

Applicable documents:

BAU EPD M-Document 30 management of action and measures

4.4.8 Impartiality

4.4.8.1 Obligation of the top management to impartiality

The top management and all employees are obliged to safeguarding impartiality in all certification work-flows of products. The top management understands the importance of impartiality while carrying out certification actions. The conformity assessment body handles all occurring conflicts of interest professionally to safeguard objectiveness within the tasks of certification. The conformity assessment body obliges the personnel to show all conflicts of interest openly to avoid influence on impartiality, independence or objectiveness, before the certification process is started. The conformity assessment body does not carry out any verification action where objectiveness or independence is threatened by any kind of connection between the involved parties.

4.4.8.2 Mechanism for safeguarding impartiality (MI)

In the Technical Advisory Committee a mechanism for assessment and safeguarding impartiality (MI) is implemented. It deals with general complaints of clients and other stakeholders and checks on a yearly basis whether the rules and PCR-documents created and used by Bau EPD GmbH do not discriminate against any branches or clients systematically. The casting of the MI is regulated in *BAU EPD M-DOCUMENT 24-Internal regulations TAC*. M-Document 23 shows the list of members that have voting rights in the MI. Hints from other external sources concerning impartiality must be communicated to the top management by all function holders.

Applicable documents:

BAU EPD M-Document 23-Members TAC

BAU EPD M-Document 24-Internal regulations TAC

BAU EPD M-Document 25-contract cooperation TAC

4.4.8.3 Risk analysis for handling impartiality

The scenarios for identification of risks to impartiality are evaluated based on ISO 17065 annex 2, this can be done and documented in the minutes of a TAC meeting (those are held at least once a year) and/or in the annual management review carried out by the top management.

For individual EPD projects new and specific contracts are signed with the teams of verifiers incorporating rules and commitments to safeguard impartiality.

Continuous surveillance of impartiality is granted with that.

Bau EPD GmbH principally only gives first information about EPD topics but no detailed consulting if and how EPD clients can improve their result. Clients are advised to consult LCA practitioners and can have a list of approved LCA experts contributing to the work of the PCR Advisory panel from *BAU EPD M-DOCUMENT 6: list-of-registered-LCA-practitioners in PCR Advisory Panel*

A detailed description of different tasks and interfaces are given in *BAU EPD M-DOCUMENT 7: application form for registered LCA practitioners PCR Panel resp. BAU EPD-M-DOCUMENT-16-application form for independent third-party verifiers*

Bau EPD GmbH does not outsource any work to subcontractors.

Applicable documents:

BAU EPD M-DOCUMENT 6: list-of-registered-LCA-practitioners in PCR Advisory Panel

BAU EPD M-DOCUMENT 7: application form for registered LCA practitioners in PCR Panel

BAU EPD-M-DOCUMENT 16-application form for independent third-party verifiers

BAU EPD M-DOCUMENT 24-Internal regulations TAC

4.4.9 Non-discriminatory conditions

Bau EPD GmbH is committed to create and follow all policies, rules and procedures and administration in a non-discriminatory way to exclude discrimination of individual applicants or clients.

Bau EPD GmbH does not exclude any clients from the possibility and service to get an EPD and extends its programme at need from construction materials to furniture, construction machinery, energy supply, mobility or any other products. The competences are extended continuously. For products that cannot reference to any standards individual PCR documents (SOP, Standard Operation Procedures) are created.

The process of conformity assessment is not depending upon the size of the client or membership in any association or group, nor is the number of issued EPD data sets a conditional.

The decline to accept an application is possible when documented illegal, criminal or dishonest or unethical business activities exist.

Any cases of rejection are passed to the TAC for evaluation and assessment of justifications.

The access to the process of conformity assessment is regulated for all clients in the same way in *BAU EPD M-DOCUMENT 27-Application for EPD verification*.

Further, the fee regulations apply to all clients in the same way. The fee regulation is a tiered system to offer the possibility to get EPDs also to the smallest of institutions. Within a fee classification level all institutions (clients) are treated the same way.

The access to the service of Bau EPD GmbH is not linked to the number of already declared and published EPDs. EPD publication is not limited to a certain number of declaration holders. Members of associations can issue group-EPDs (branch-EPD) as well as individual EPDs at the very same time, the conception of average data may be different.

Generally, each institution can become a member of the TAC. Bau EPD GmbH cares for a balanced composition of members.

Possibilities to work within the PCR review panel are broadly given but depending on individual expertise. The application procedure and criteria are the same for all applicants.

The participation in product group panels is possible for every person showing specific expertise. The focus of this expertise may lay on other, especially competitive branches and product groups.

Interested parties can comment on all PCR, also the handbook on hand and ask for a justified revision. All comments to the guidelines and standards of Bau EPD GmbH must be treated the same.

Applicable documents:

BAU EPD M-DOCUMENT 27-Application for EPD verification

Fee regulation

4.4.10 Periodical internal and external audits and management reviews

Internal Audits

Internal audits are executed occasion-related, at least once a year. The whole operational programme is checked by an external auditor. *BAU EPD-M-DOCUMENT-21-template internal audits* must be applied. The audit scope considers the content of M-DOC 21, one audit day per year preceding the external audits of Accreditation Austria or the yearly meeting of company owners shall be carried out. The head of the conformity assessment body and a member of the quality management must be audited as a minimum.

The auditor of internal audits must fulfil the requirements of competence listed in M-Dok 01.

Auditing of competence requirements of verifiers:

Verifiers basically check each other, as they independently write their non-conformity lists and reconcile/summarise them (see M-Docs 19 and 19a). The management of the conformity assessment body assesses these records on a random basis as part of the internal audit. The teams of verifiers constantly alternate in teams of two. Target: each verifier should be audited once within an accreditation period.

In addition, the LKBS randomly checks the reports according to M-Doks 19 and 19a and evaluates the competences according to M-Dok 01 and keeps records for this purpose based on M-Dok 05.

External Audits

Externals audits are carried out by teams of auditors of ECO Platform in sensible intervals (in case of fundamental changes of referenced standards or ECO Platform Guidelines).

In addition, external audits are carried out by Accreditation Austria.

The results of such audits are considered and evaluated in the yearly management review. The review is done by the head of the conformity assessment body following *BAU EPD-M-DOCUMENT-22-template management reviews*. In preparation to the management reviews inputs from members of the PCR review panel, the TAC or other relevant stakeholders must be considered.

Applicable documents:

BAU EPD-M-DOCUMENT-21-template internal audits

BAU EPD-M-DOCUMENT-22-template management reviews

4.4.11 Surveillance of competence of the Head of the Conformity Assessment Body (HCB)

The competence of the management of the HCB shall be reviewed at least once within 5 years. This can be done within the framework of the internal audit by external auditing personnel. Records of this shall be kept in accordance with M-Document 05.

4.4.12 Data backup

Data is stored on a NAS server and mirrored, stored and backed up only to encrypted PCs/laptops/hard drives (Synology Drive Client). The backup is performed automatically at least every 4 hours. Hard drives are stored in fireproof safes or lockable rooms. Access to data from the outside is given to authorised personnel via secure channels.

Bau EPD GmbH has its own cloud solution (transfer folder) for handling verification projects. Persons who have not signed confidentiality declarations cannot access/view the data. Reducing the transmission of data via e-mail to a necessary minimum is an overriding goal. E-mails are always handled in accordance with the DSGVO and secured by the host providers in accordance with legal requirements.

5 GENERAL PRODUCT CATEGORY RULES AND LCA CALCULATION RULES

5.1 Scope of application of the PCR and LCA rules

Chapter 5 defines rules for LCA calculation as well as requirements on the project report to be submitted that go beyond EN 15804 and regulations in relation to it.

5.2 Product description

Declaration of classes of construction products:

The „General Rules for LCA” hold both for collecting data for specific processes and the collection of average data, e.g. when the functional unit is used for a group of similar products from different manufacturers or the same product from different production sites.

It is also possible to declare a reference product describing a specific (typical) product.

The EPD can – depending on the definition of the functional or declared unit – be classified into the following types of declaration. The type of declaration must be indicated in the project report.

1. Manufacturer-Declaration:

- 1a) Declaration of a specific product from a production site of a manufacturer,
- 1b) Declaration of an average result of the same specific products from several production sites of a manufacturer
- 1c) Declaration of an average product of a manufacturer,
- 1d) Declaration of an average result of average products from several production sites of a manufacturer

2. Manufacturer-Group-Declaration:

- 2a) Declaration of an average result of the same specific product from several production sites of several manufacturers,
- 2b) Declaration of an average result of average products from several production sites of several manufacturers

A **specific** product can be:

- A typical product, e.g. the best-selling product from a product family/product class
- A product with the highest mass and with that often the highest environmental impact, from one product family/product class
- A sample product whose declared indicators can be assigned on a product family/product class by documenting additional criteria.

In case of **average** products, the following information must be given:

- The type of average (horizontal, vertical)
- A description of similar products of different producers, different production sites or the range of product families/classes of one producer and one site
- The range of variation of the indicator results in the evaluation of the project report or, at least, a qualitative evaluation in the EPD.

Generally, the representativity of a reference product resp. the declared unit must be described and justified.

5.3 Functional unit, declared unit and reference unit

Functional and declared unit represent reference quantities for the material flows of a construction product. Guidelines for the determination of the declared or functional unit are given in the Product Category Rules. These are based on clause 6.3.2 (functional Einheit) resp. clause 6.3.3 (declared unit) of EN 15804+A2.

In the project report the physical unit (reference unit) and the produced products, for which the life cycle inventory data in the production stage have been surveyed, must be indicated in addition¹.

The sampled product must be described accurately according to its technical and functional features (field of application, range of bulk density). The relevant technical and functional features are defined in the related product specific PCR documents.

It is not accepted to declare proportional shares of a declared/functional unit, e.g. 0.1 m³ insulation materials. However, it is possible to declare commonly used units (e.g. 1 m² of a defined thickness and density of an insulation material). In that case a conversion into the declared/functional unit designed in the PCR Part B document must be possible.

The chosen declared/functional unit is to be stated in the project report. In any case the mass relation to the declared unit is to declare.

5.4 System boundaries

5.4.1 General

The setting of the system boundaries follows two principles (see EN 15804+A2, 6.3.5.1):

- The “modularity principle”: Where processes influence the product’s environmental performance during its life cycle, they shall be assigned to the module of the life cycle where they occur; all environmental aspects and impacts are declared in the life cycle stage where they appear;
- The “polluter pays principle”: Processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached („complete waste treatment”).

Principally the system boundaries shall be set in a way that all relevant inputs and outputs can be considered. The time-period over which inputs to and outputs from the system shall be accounted for is 100 years from the year for which the data set is deemed representative (see EN 15804+A2 clause 6.3.8.2). An exception is made for solid materials waste disposal, if the products contain biogenic carbon that is declared as biogenic global warming potential (EN 15804+A2, clause 6.3.5.5)

5.4.2 Life cycle stages

The life cycle of the evaluated product system is to be subdivided according to the modules and life stages in figure 1 in EN 15804. All construction products- and materials must declare modules A1-A3, modules C1-C4 and module D.

The LCA based information in an EPD may cover:

- a) Cradle to gate with modules C1-C4 and module D (A1-A3 + C + D);
- b) Cradle to gate with options, Module A1-A3, C1-C4 and D (A1-A3 + C + D and additional modules chosen from A4 to B7);
- c) Cradle to grave and module D (A + B + C + D)

¹ Life cycle inventory data is often surveyed in a mass-related way and recalculated into the declared unit -e.g. volume – at a later point.

Exceptions from these rules are regulated in EN 15804+A2, clause 5.2.

CONSTRUCTION WORKS ASSESSMENT INFORMATION																
CONSTRUCTION WORKS LIFE CYCLE INFORMATION														SUPPLEMENTARY INFORMATION BEYOND CONSTRUCTION WORKS LIFE CYCLE		
A1 - A3			A4 - A5		B1 - B7							C1 - C4				D
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacturing	Transport	Construction - Installation process	Use	Maintenance	Repair	Replacement ¹	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Entsorgung	Reuse, recovery, recycling, potential
scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario	scenario
Cradle to gate with modules C1-C4 and module D	Mand.	Mand.	Mand.									Mand.	Mand.	Mand.	Mand.	Mandatory
Cradle to gate with options, modules C1-C4 and module D	Mand.	Mand.	Mand.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Mand.	Mand.	Mand.	Mand.	Mandatory
Cradle to grave and module D	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mand.	Mandatory
Cradle to gate ²	Mand.	Mand.	Mand.													
Cradle to gate with options ²	Mand.	Mand.	Mand.	Opt.	Opt.											

Key

- 1 replacement of components, parts or systems 2 only possible if the conditions to exclude the declaration of modules C1-C4 and module D are met

Figure 1: stages of the life cycle of a construction product (EN 15804, Figure 1)

5.4.3 Product Stage

5.4.3.1 Included processes

The product stage includes the modules A1 (raw material extraction), A2 (transport to the manufacturer) and A3 (manufacturing). The included processes can be taken from EN 15804+A2, clause 6.2.2 and 6.3.5.2.

Module A1, A2 and A3 may be declared as one aggregated module A1-3.

5.4.3.2 Interpretation

Processes:

- The product stage is completed with the finalization of the product ready for delivery (including all packages and expenditures for storage on site).
- The system boundary is set to include all relevant input and output processes. Therefore, all upstream processes shall be traced back without consideration of geographical boundaries.
- In the case of input of secondary materials or energy recovered from secondary fuels, the system boundary between the system under study and the previous system (providing the secondary materials) is set where outputs

of the previous system, e.g. materials, products, building elements or energy, reach the end-of-waste state (EN 15804+A2, clause 6.3.5.2).

- d) Loads from the upstream product system shall be exclusively transmitted into co-products
- e) Operating supplies (hydraulic oils, cleaning substances etc.) are only calculated, if stated in the cut-off criteria or in the PCR-B defined
- f) Package materials are balanced together with all upstream processes. The deposit is carried out according to the real channel of deposit resp. ARA statistics (Altstoff Recycling Austria AG – leading specialist for recycling of package materials in Austria)
- g) Transport of goods within the production site or between production sites shall be declared for all upstream processes.
- h) Transport of persons does not need to be considered
- i) The energy demand for conditioning office buildings does not need to be considered. If included in the manufacturer's data without a chance to subtract it out, the data can be used without adaptation if estimated that the effect on the LCA is minimal (see cut-off criteria)
- j) Emissions into air must be declared either as after filter figures or, if no filters are implemented – as direct emissions (e.g. dust particles). The remaining filter dust is treated as waste.
- k) Industrial waste heat does not need to be declared. It is balanced indirectly in the energy demand.
- l) Production waste that is lead back into the production process replaces primary materials and therefore it must be included within the system boundaries. („closed-loop“). It does not count as secondary material.
- m) Streams that leave the product stage (A1-A3) at the boundary of complete waste treatment must be considered as co-products. Loads and benefits that are allocated to co-products must not be declared in module D. If such an allocation is not possible in a clear way, other methods can be chosen but must be explained. However, for the purpose of a general rule, loads and benefits from A1-A3 are not taken into account in D.
- n) Co-product-allocation: see clause Allocation rules
- o) Heat and electricity from thermal use of production waste in modules A1-A3 can be calculated as closed loop, but only up to the amount of MJ that respectively is needed as energy quality for production (assumption: whole product stage, A1-A3, considered as one module). For energy gains that go beyond this closed loop a co-allocation must be executed.

5.4.4 Construction process stage

5.4.4.1 Included processes

The construction process stage includes module A4 (Transportation from the production gate to the construction site) and A5 (Installation of the product into the building). The processes included can be taken from EN 15804, clauses 6.2.3, 6.3.5.3 and 7.3.2.2)

5.4.4.2 Interpretation

- The „transport to the building site“ includes an estimation of all transports of goods necessary from the „end of the product stage“ to the building site, including any transports to distributors, stores etc.
- Transport of persons does not need to be considered.
- The scenarios and fundamental principles of the calculation must be documented (see EN 15804, clause 7.3.2.1 and 7.3.2.2).

5.4.5 Use stage, related to the building fabric

5.4.5.1 Included processes

The use stage related to the building fabric includes modules B1 (use), B2 (maintenance), B3 (repair), B4 (replacement), B5 (refurbishment). The processes to be considered are described in EN 15804, clause 6.2.4 and 6.3.5.4.2.

5.4.5.2 Interpretation

- The life stage B1 includes according to EN 15804 also emissions into air, water and soil. Emissions, that are not part of the LCA, are regulated in the document „Guidelines for emissions into indoor air and environment“.
- B1: In the Product Category Rules scenarios to determine „all emissions into the environment“ must be regulated (see „Guidelines for emissions into indoor air and environment“).
- B2: The needed water and energy use must be considered like in any other module.

5.4.6 Use stage related to the operation of the building

5.4.6.1 Included processes

The use stage related to the operation of the building includes modules B6 (use of energy for operating of the (product in the) building) and B7 (use of water operating of the (product in the) building).

Further details can be found in EN 15804, clause 6.3.5.4.2.

5.4.6.2 Interpretation

Exclusively energy and water demand that goes hand in hand with the direct use of the construction material evaluated can be considered (e.g. the heat energy saved by implementing insulation material is NOT to be declared.)

Emissions, that come out due to operating a product (e.g. emissions of nitrous gases) must be allocated to this use stage module.

Note:

The difference between the two use stage modules can be shown by taking the example of a „bio mass boiler plant“:

Use stage related to the building fabric includes e.g. use of lubricants, repair work, VOC-emissions from the coating of the boiler.

The use stage related to the operation of the building includes electricity demand and biomass demand for operating the boiler and nitrous gas emissions as a consequence of operating the boiler.

If the indicator figures are declared in the EPD, the scenario for the use of energy in the building must be described.

5.4.7 End-of-life stage

5.4.7.1 Included processes

The end-of-life stage includes modules C1 (deconstruction, demolition), C2 (Transport), C3 (waste processing), C4 (disposal). The processes to be considered can be found in EN 15804+A2, clauses 6.2.6 and 6.3.5.5.

5.4.8 Benefits and loads beyond the product system boundary

5.4.8.1 Included processes

Module D includes reuse, recovery and/or recycling potentials and is described in EN 15804, clauses 6.2.7 and 6.3.5.6.

5.4.8.2 Interpretation

In case of products made only from secondary material:

In the processing of recycling material to a product it can occur that more recycling masses are used than product masses come out. In this case the loads of the difference must be declared as additional information in the project report (the declaration in the EPD document is voluntary). The environmental loads for this additional demand must be declared on input side as positive values (loads), calculating the loads for the production of primary material and can be shown in module D in a separate table.

5.5 Inventory analysis

5.5.1 Selection of data for product stage

Data for product stage must be evaluated by the LCA practitioner on the production site. This rule includes all kind of data that can be influenced by the manufacturer.

The energy and material flows shall be based on 12 months averaged data sets. Continuous measurements, regulations for dosage or metering, energy monitoring, purchase lists or waste lists can be taken as a data basis.

Outputs, e.g. emissions, that do not undergo any continuous measurement, can be collected via representative single measurements. These measurements shall be executed in the same reference year as the collected energy and material flow data and shall be executed with representative amounts of products. If no measurements exist and it is allowable by scientific and technical view, emissions can be estimated by using stoichiometric equations.

The evaluated 12 months shall correspond with the last completely balanced business year.

Accidents and extraordinary incidents do not have to be considered.

The procedure of data collection must be described in the project report.

If the manufacturer wants to consider future production conditions already when preparing the EPD, the following rules are mandatory:

- a) Processes that do not influence the process of production (e.g. adaptation of delivery) can be integrated into the declaration. The declaration must not be issued before the exact date of adaptation of the process.
- b) For processes that do influence the process of production (e.g. a new kiln), the data collection must be documented for a representative period of time for the new process. This does not need to be a whole year's period, 3-4 months can be sufficient.

5.5.2 Generic Data

Generic data is information that is not specific for the evaluated system. It can represent a specific process or be average data.

EN 15804 allows the use of generic data for processes that cannot be influenced by the manufacturer (EN 15804+A2, clause 6.3.7).

Generic data used for calculations must be valid for the year in question and reflect a reference year within the last 10 years.

More requirements on the evaluation of the data quality of generic data can be found EN 15804+A2, clause 6.3.8.3.

One of the main conditions for preparing consistent EPD is the use of consistent data for general processes like energy systems, transport systems, basis material, forestry, disposal and package materials.

Until pre-verified data sets are available, an EPD must be based on a consistent data base. That means only ONE database can be chosen. Mixing data sets from different data bases shall be avoided. Missing or old data sets can be added from other sources if justified (see chapter 8 “requirements on approved data bases”)

The used generic data must be declared in the project report in a comprehensible way stating the exact source.

The used data base and version must be marked prominently on the EPD (e.g. „EPD on basis of ecoinvent data“). In the middle resp. long-term the consistent use of pre-verified data is to achieve.

The general rule is, that specific data from specific production processes or average data deduced from specific processes must be given priority to when preparing the EPD.

If an upstream product induces more than 10 % impact (e.g. cement in concrete), specific data must be collected. If this is impossible, e.g. due to lack of cooperation of the manufacturer of the upstream product, reasons have to explained in the project report. For generic data either an excellent representativity for the specific product or a worst-case-scenario for generic data must be calculated.

Documentation:

- a) The used data sets and their sources have to be declared (e.g. name of the data base, source of literature),
- b) The representativity of the used data sets must be documented,
- c) The handling of missing data sets must be documented,
- d) The data quality must be evaluated.

5.5.3 Cut-off rules and exclusions

Cut-off criteria and rules for any disregard (exclusion) of inputs and outputs are found in EN 15804, clause 6.3.6.

EN 15804+A2, clause 6.3.6:

“The following procedure shall be followed for the exclusion of inputs and outputs:

- All inputs and outputs to a (unit) process shall be included in the calculation, for which data are available. Data gaps may be filled by conservative assumptions with average or generic data. Any assumptions for such choices shall be documented;
- In case of insufficient input data or data gaps for a unit process, the cut-off criteria shall be 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that unit process. The total of neglected input flows per module, e.g. per module A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D (see Figure 1) shall be a maximum of 5 % of energy usage and mass.

Conservative assumptions in combination with plausibility considerations and expert judgement can be used to demonstrate compliance with these criteria;

- Particular care should be taken to include material and energy flows known to have the potential to cause significant emissions into air and water or soil related to the environmental indicators of this standard. Conservative assumptions in combination with plausibility considerations and expert judgement can be used to demonstrate compliance with these criteria.”

Specification:

For each (unit-) process cut-off criteria of 5 % of the total amount of the indicator in question shall be met.

5.5.4 Data quality

The requirements on data quality can be found in EN 15804, clause 6.3.8.

Note: CEN TR 15941 is currently under revision, a first draft for an EN 15941 can be expected in 2022. Comprehensive and detailed requirements on data quality for data on product and building level will be formulated.

5.5.5 Scenarios

See EN 15804+A2, clause 6.3.9 development of scenarios on product level.

Scenarios concerning End of Life: It is possible to describe several scenarios for modules C and D in the same EPD document. Each scenario must be calculated and described separately.

Example: For waste wood two different end-of-life scenarios can be calculated:

Scenario 1: "Recycling" and Scenario 2 "energetic utilization" (whereas scenario 1 also includes energetic utilization of waste wood materials that cannot be recycled). Each Scenario must be described separately. In addition mixed scenarios (i.e. scenario 3: "80% recycling (scenario 1) and 20% energetic utilization (scenario 2)") can be described.

5.5.6 Rules for EPD as average performance

Average EPD describe the case of a functional unit defined for a group of similar products of different manufacturers or the same product from one manufacturer but from different production sites ("Branch-EPD", "Group EPD" or "EPD from Associations"). The data of an Average EPD must be representative for the average of the declared products.

Average EPD must include the following information in the project report as well as on the last page of the EPD document:

- a) The market related to the Average EPD;
- b) A list of all production sites and products that were evaluated;
- c) A note if the list of evaluated sites is incomplete, e.g. if individual sites or countries of a manufacturer were not evaluated;
- d) It is also to explain, whether the EPD is valid resp. representative ONLY for the sites and locations that provided data OR if it is stated to be representative for other market or branch segments. A detailed explanation must be given (i.e. used technologies, market situation...). If further representativity is given, this shall be described in a separate clause below the list of sites participating in the study.

Further tips concerning required documentation in the project report and EPD document:

- a) Technical and functional features: Declaration of ranges AND average values used for calculation in the LCA (for those the approach of building the average must be explained).
- b) Composition, base materials: Declaration of ranges AND average values used for calculation in the LCA (for those the approach of building the average must be explained)
- c) Application field, use: listing of all products as a separate clause or table
- d) Information on representativity in project report: Declaration of shares of a single product with reference to overall average
- e) Variances for products (from different manufacturers and/or from different production sites) as far as indication is possible for the processes in scope.

The data of Average EPD should be averaged relating to the production mass. It is to declare on what product masses indicators have been calculated.

The production of „Model-EPD“ (individual EPD on the basis of generic data, like „templates“, Worst-Case-EPD) is principally possible in the focus of this EPD Programme. Worst-Case EPD on the basis of specific data are not recommended for in most constellations a representative average can be calculated with similar effort.

Note 1: All production sites calculated into average values must be indicated to the individual product group categories, as an alternative an overview can be packed into an annex (mandatory in the project report, optional in the EPD document). The geographical representativity must be described in the EPD document in a comprehensive way.

Note 2: Manufacturers may want to compare products on product level (e.g. with benchmarks for Type I Environmental Product Declarations, ECO labels etc.), therefore average data must be transparent. The building and documentation of averages must be traceable to single results of product lines/sites/manufacturers.

5.6 Allocation rules

Allocation rules can be found in EN 15804, clause 6.4.3. Some extracts and additions are given below:

5.6.1 Allocation of material inherent properties:

EN 15804+A2, clause 6.4.3.1: „Irrespective of the allocation approach chosen for a co-production process or for secondary flows crossing the system boundary between product systems, specific inherent properties of such coproducts or flows, for example calorific content, composition [biogenic carbon content, CaO/Ca(OH)₂ content, etc.], shall not be allocated but always reflect the physical flows..“

5.6.2 Allocation of co-products

See EN 15804, clause 6.4.3.2

In case that co-product allocation of foreground data is not possible, i.e.

- If co-product allocation of production waste (i.e. in case of scrap) makes a coherent calculation of the net amount impossible,
- If exported energy from thermal treatment of waste in a waste incineration plant can be no longer connected to the production process for an allocation

A closed-loop calculation cannot be carried out, with that, flows that leave the product system in A1-A3 must be declared as outputs, as common for C-modules. The benefits and loads without allocation can be declared in module D outside the system boundary as additional information (see ISO 21930-7.1.7.2.7)

- Production waste
 - Production waste that is brought back to production does not need allocation for it can be seen as closed loop. The waste substitutes primary material and is therefore included in the inventory analysis.
 - Flows leaving the system at the end-of-waste boundary of the product stage (A1-A3) shall be allocated as co-products (Loads and benefits from allocated co-products shall not be declared in module D (see EN 15804, clause 6.4.3.2).
- Production waste for which a sales revenue can be achieved must be considered as co-products. (see also EN 15804, clause 6.4.3.2 Note 3: Products and functions are the outputs and/or services provided by the process, having a positive economic value). Production waste that cannot be sold on the market must be calculated as waste, even if transferred to extern recycling or energy recovery processes. In no case benefits are given for the substitution of other energy carriers.
- Waste from one-way packages, that accumulate in production and are disposed must be treated as waste even if transferred to an extern recycling or energy recovery process.

5.6.3 Allocation procedure of reuse, recycling and recovery

See EN 15804, clause 6.4.3.3

5.6.3.1 Secondary materials and fuels:

- For allocation of secondary fuels coming from a previous product system it is to clarify if the material has reached the end-of-waste state and, with that, can be classified as “waste” or “secondary fuels”:
 - For waste, the product system generating the waste is responsible and carries the emissions linked to waste treatment.
 - The emissions resulting from use of secondary fuels are allocated to the product system that is evaluated.
 In communication of LCA-results of modules A1 to A3 two values must be declared:
 - The environmental impact caused by the emissions, including treatment, burning and co-burning of waste (gross figures); and
 - The environmental impact without burning of waste (net figures).
- For allocation of secondary materials the following rules of EN 6.4.3.2 must be considered: „Joint co-product allocation shall be allocated as follows:
 - Allocation shall be based on physical properties (e.g. mass, volume) when the difference in revenue from the co-products is low;
 - In all other cases allocation shall be based on economic values.“
 If such an allocation is not possible, other methods may be applied but shall be justified.
- EN 15804, 6.3.5: „In principle waste processing is part of the product system under study. In the case of materials leaving the system as secondary materials or fuels, such processes as collection and transport before the end-of-waste state are, as a rule, part of the waste processing of the system under study.“

5.6.3.2 Waste on building site

- Waste from the building site that is brought back into production can be considered as closed loop and does not need any allocation. In that case waste substitutes primary materials and therefore is included in the inventory analysis.
- Waste from the building site that cannot be sold on the market must be calculated as waste, even if transferred to external recycling or energy recovery processes.

5.6.3.3 Product waste

EN 15804, clause 6.4.3.3: „The amount of secondary material output, which is for all practical purposes able to replace one to one the input of secondary material as closed loop is allocated to the product system under study and not to module D.“

5.6.3.4 Energy recovery

In case of energy recovery of electricity the average electricity mix must be applied (ecoinvent: „market for electricity, medium voltage, /respective region“; GaBi: “Electricity grid mix” for respective region), for heat „thermal energy from natural gas“ (ecoinvent: „heat and power co-generation, natural gas, combined cycle power plant, 400MW electrical“ for the region in question“; GaBi: „thermal energy from natural gas“ for the region in question) shall be applied.

If a manufacturer can demonstrate that it has control over the energy references in modules A4-A5, B or C and D, it can proceed in accordance with prEN 15941.

5.6.4 Documentation

Allocations, that exceed the General Principles for LCA or Product Category Rules, must be documented.

5.7 Impact assessment

Information on the impact categories to be applied and indicators connected with those, methods and characterisation factors are given in EN 15804+A2, annex C.

For all indicators mentioned in annex C characterisation factors from EC-JRC must be used. The characterisation factors can be downloaded on the following website:

<http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>

(see EN 15804+A2, clause 6.5.2).

5.8 Indicators

5.8.1 Declaration of LCA indicators

The following LCA indicators are core indicators and must be content of each module declared in the EPD:

- core environmental impact indicators (EN 15804+A2, clause 7.2.3.1)
- Indicators describing resource use (EN 15804+A2, clause 7.2.4.2)
- Environmental information describing waste categories (EN 15804+A2, clause 7.2.4.3)
- Environmental information describing output flows (EN 15804+A2, clause 7.2.4.4)
- Informationen zum biogenen Kohlenstoffgehalt (EN 15804+A2, Punkt 7.2.5)

The „Additional environmental impact indicators“ as per EN 15804+A2, clause 7.2.3.2 must be calculated and included into the project report – for each declared module. In general, these indicators should be part of the EPD. If additional indicators are not declared, they shall be mentioned in the EPD, e.g. as an entry of "ND". The disclaimers to the declaration of environmental impact indicators as per Table 5 (EN 15804+A2, clause 7.2.3.3) must be mentioned in the project report as well as in the EPD document.

5.8.2 Specific rules for calculation of indicators

If the solid contingent in primary energy cannot be taken from the inventory analysis, it can be calculated from the product composition. Any requirements concerning the lower heating value are defined in the product specific complementary Product Category Rules.

Note: Exported energy from landfill is, contrary to EN 15804, NOT assessed as utilization potential (In Austria the deposit of organic materials is only allowed as contamination particles).

Clarification for the calculation of potable water:

For each process the water flows are determined and described with reference to the taken volume, the water emissions and the origin (i.e. surface water, ground water, sea water).

If drinking water is taken (i.e. from public water supply), treatment and distribution of the water must be considered as upstream processes with their own individual resource consumption and emissions. According to this, water that is lead to the waste-water system must be connected to processes of waste-water treatment and distribution as downstream processes.

Other water flows, i.e. evaporated water or water that is incorporated into the product, must be stated in the inventory of the processes, so that a complete water-bill is the result.

For each process the water consumption the sum of water that is lost to the drainage area. This can be calculated easier than the sum of water that is evaporating, transpiring from biomass, incorporated into a product or transferred to another

drainage area. Doing so, as mentioned above, water is not balanced, if it would have left the drainage area in a natural system before implementation of the technical system.

6 DECLARATION OF INDICATORS AND PROJECT REPORT

6.1 Declaration of environmental indicators from the LCA

The declaration of the environmental indicators from the LCA in the EPD must be done in compliance with the content requirements in the product specific complementary PCR documents and any templates for project report and EPD document.

EN 15804+A2, clause 7.2.2: „Modules and indicators not declared shall be marked as “ND”. If an indicator value has been calculated to be “zero” or if the value of “zero” is plausible for this indicator e.g. there is no activity in the scenario, then “0” is declared for this indicator. The declaration of “-” is not allowed.“

It follows from the foregoing that:

- The result tables shall only contain numeric values or the abbreviation „ND“ (for modules and/or indicators Not Declared).
- There are no blank cells, horizontal lines or any abbreviations except ND. ND wird lediglich für

ND is used only for indicators, that are not quantifiable due to a lack in data basis or that are allowed to be excluded following cut-off rules (i.e. GWP-luluc, if the contribution over modules A1 to C4 < 5% of GWP total).

Footnotes must be installed to explain, why results cannot be delivered in certain cases, how the result are to interpret and which aspects are not assessed. Approximations are always preferable to any ND-results.

EN 15804+A2, clause 7.2.2: „If an indicator is declared, it shall be declared in all the chosen modules. If an optional module is declared, all the chosen indicators shall be declared.“

Presentation of the modules

- If modules are declared, all mandatory indicators as per EN 15804+A2 must be quantified. In exceptional cases the declaration of ND is allowed, see above.
- If a module is not relevant for a product, it should not be mentioned in the result tables. If it is mentioned the results of the parameters must show ND. This leaves all options for LCA calculation on building level.
- If no process flows are expected within a module, the results of the parameters must show a calculated 0, for no mass flows occur. This would constrain the options on building level to a likely scenario. In this case the module shall not be marked as ND.

6.2 Project report describing the LCA

The project report is the systematic and comprehensive summary of the project documentation supporting the verification of an EPD. The project report must contain the indications noted in EN 15804+A2, clause 8.

The project report shall be made available to the verifier with the requirements on confidentiality stated in EN°ISO°14025. The project report is not part of the public communication.

Applicable Documents:

BAU EPD-M-DOCUMENT-13A1-project report content and format template EN15804+A1

BAU EPD-M-DOCUMENT-13A2- project report content and format template -EN15804+A2

6.3 Reference service life (RSL)

See EN 15804+A2 clause 6.3.4 and Annex A „Requirements and guidance on the reference service life“.

If no reference service life can be calculated following the rules of EN 15804+A2 (Annex A), default values from complementary product specific PCR from the CEN/TC-Product Panels must be used. If no complementary PCR are available, the reference service life can be taken from service life catalogues, citing the source, i.e. from BAU EPD-M-DOCUMENT-19-reference service life-20150810 (Austria) resp. the BBSR-Table „Service life of building components“ (Germany).

Applicable documents:

BAU EPD-M-DOCUMENT-20-reference service life-20150810

6.4 Information Transfer Matrix resp. EXCEL templates for electronic data processing

The LCA information is to declare following EN 15942 annex A and the determined positions in the Information Transfer Matrix (ITM). Alternatively, *BAU EPD M-Document 8: Excel-file for electronic data transfer baubook OEKOBAUDAT ECO Platform* provided by Bau EPD GmbH must be used.

Applicable documents:

BAU EPD M-DOCUMENT-8: Excel-file for electronic data transfer baubook OEKOBAUDAT ECO Platform

7 SPECIFIC RULES WITH REFERENCE TO GENERIC DATA FOR COMMONLY OCCURING PROCESSES

7.1 Special rules for chemicals

If neither specific nor generic data exist for a chemical substance, it is recommended to try – following the cut-off rules – to model the chemical either stoichiometrically over the basis chemicals or with basis data from the data base „ecoinvent – chemicals, organic“ resp. “chemicals, inorganic”. The plausibility of the assumptions must be controlled by persons with respective special knowledge.

7.2 Special rules for energy supply

PrEN 15941 Annex E for energy supply shall apply.

The market-specific product mix shall be modelled for all manufacturers; if this cannot be verified, the supplier mix of the energy provider must be modelled. In Austria and Switzerland there are electricity labelling regulations (note: if manufacturer's plant is located within the Austrian or Swiss national border, the metering point is also within the national border). Therefore, no residual mix is applicable. Evidence for "book and claim"-type cancellation scenarios of the guarantees of origin are only necessary in these countries, if there are justified doubts about the information provided by the manufacturers/energy producers and can be requested in Austria from E-Control. Otherwise, contractual papers between producers and energy suppliers, and the latter with other energy suppliers, are sufficient.

Evidence of the mix purchased must be provided by the producer for a period of 5 years. This can be done by means of long-term contracts or annual proofs to the programme operator. The programme operator checks the contracts on a random basis, but in any case, retroactive proof of the energy purchased must be provided when the EPD is reissued after 5 years.

7.3 Special rules for transport

The calculation procedure must be as follows: manufacturer's data must be gathered and used wherever possible. Else it is mandatory to find out which lorry types (Euro classes) are allowed in each country. For transports without transparent manufacturer's claims the worst-case fleet mix with the lowest Euro class admitted must be assumed.

Transport data must be gathered in mass-related approached. In case of materials whose gross density differs a lot from the model, a sensitivity analysis must be carried out. As appropriate another reference value (i.e. volume relation) or the fuel consumption in direct figures may be used.

If the manufacturer does not provide data concerning transport distances, the distances within Europe can be calculated with route planners. Distances to locations not included in these route planners can be estimated by distances to the next bigger location with a respective addition. Results must be rounded up by 5 km steps. Distances of shipping overseas can be taken from <http://www.dataloy.com>, or the software „google earth“.

Principally the origin of raw materials should be known. In some cases this cannot be found out (purchase on commodities exchange, origin of raw materials in upstream products not traceable...). If the exact origin of raw materials or transport routes is unknown, the relevance of raw material transport is to estimate with a sensitivity analysis.

Generic data sets mostly include assumptions for transport distances. These can be taken, if the relevance of the transport is minimal (see cut-off criteria) or if the Product Category Rules determine it that way.

For product specific modelling of raw material transports realistic szenarios shall be made and they must be described transparently in the project report. The szenarios shall include:

- Description of the transport goods,
- Transport distances,
- Means of transport (if known: load capacity, loading factor, fuel use, emission values resp. EURO emission class)
- Assumptions concerning empty runs

7.4 Special rules for packages

The following basis datasets are used in ecoinvent-database for different materials:

- Polyethylen package → market for Packaging film, low density polyethylene {GLO}|
 - Cardboard → market for Corrugated board box {RER}|
 - Paper → market for Kraft paper, unbleached {GLO}|
 - Wood → market for Sawnwood, softwood, raw, dried (u=10%) {RER}
- If no specific datasets can be found, for reusable standard Euro-Pallets 10 circulations are defined.
- Metal → market for Steel, low-alloyed, hot rolled {GLO}|

The following basis datasets are used in GaBi-database for different materials:

- Polyethylen package → Polyethylene film (PE-LD) [technology mix] [production mix, at producer] RER
- Cardboard → Corrugated board (2012) [technology mix] [production mix, at plant] [paper input grade per kg corrugated board changeable] EU-27
- Paper → Kraft paper (EN15804 A1-A3) [technology mix] [production mix, at plant] [1 kg] EU-27

The primary energy embodied in packaging materials (PERM bzw. PENRM) should be included in stage A3.

7.5 Special rules for emissions and disposal of emissions

For all construction products showing essential thermic fractions and/or process specific emissions and for which a measurement of emissions is required by law, the product specific emissions must be collected. For processes with emissions of low ecological impact without specific data, generic data might be used.

7.6 Special rules for waste treatment

The waste treatment or disposal process must be oriented to modern state of the art.

For waste treatment or disposal the ecoinvent data sets mentioned in the ecoinvent report^o1, page18 must be used.

The ecoinvent processes for waste treatment or deposition of construction waste (in Switzerland) are applicable on Austrian circumstances (system boundaries, technical data, emission values for pollutants into air, soil and water) (PLADERER, MÖTZL et al, 2009). The ecoinvent model of a domestic waste incineration plant is corresponding to the version of the swiss waste incineration plants. It references to one kg waste input as a functional unit.

The user might alter the following parameters:

- Waste fractions
- Fractions of organic or fossil C in waste
- Fractions of magnetic iron in waste
- Used DeNOx-technique (SCR, SNCR etc.)

7.7 Special rules for waste water

If the size of a waste water treatment plant is not defined for the treatment of occurring waste water a worst-case-scenario must be calculated.

7.8 Special rules for Infrastructure

For infrastructure and production plants like e.g. machinery, wear parts or buildings respective ecoinvent modules or data from literature must be used, if relevant.

8 REQUIREMENTS ON APPROVED DATA BASES FOR GENERIC DATA

Generic data can be taken from the following data bases (only with the stated minimum version):

database 1: ecoinvent

As a system model „cut-off by classification“ is defined. In any case the newest version of an ecoinvent data set provided by established tools for LCA assessment (SimaPro, GaBi, Umberto etc.) must be used. Use of single data sets from previous versions is allowed only in special cases (see chapter on generic data) and only if an explanation is given. Effective date is the date of the order of the EPD.

database 2: GaBi

The newest version provided by the host of the database on the effective date (date of order of EPD) must be used

For both data bases it is mandatory to declare the version number of the data base as well as the version number of the software used. For GaBi software the version year is not enough, all additional codes must be stated (i.e. SP 30).

9 FINANCING AND FEES

To finance the EPD programme, Bau EPD GmbH has created a scale of charges and fees for manufacturers/clients that can be downloaded from the website www.bau-epd.at.

We consider ourselves to be a Programme Operator for the common good with the objective to provide transparent environmental data for the public and to give manufacturers valuable information how to organize their production processes in environmentally friendly and cost-efficient ways.

The fees of the programme must cover all costs for programme operation, PCR creation, maintenance of PCR documents, cooperation with head organisations and membership fees asked by those institutions, translation fees, general consulting services, specific consulting services for clients, organisation of information events, further education for registered LCA practitioners and independent third-party verifiers, verification of EPD documents as well as costs for declaration and publication. The cooperation with database providers and users (providers of databases for construction products, building assessment schemes) is an essential part of the programme operation. Support in standardisation and legislation completes the programme.

To help SMEs and small association to publish EPD the fees are scaled according to the size of the companies/institutions.

10 APPLICABLE DOCUMENTS (ANNEXES OF THE BAU EPD MS-HB)

The following applicable documents must be considered for the EPD creation within the programme of Bau EPD GmbH:

BAU EPD-M-DOCUMENT-1-organisation, function holders, competences
BAU EPD M-DOCUMENT-2-requirements on LCA and EPD – text template
BAU EPD M-DOCUMENT-3-contract verification and participation in EPD programme Bau EPD
BAU EPD M-DOCUMENT-4-rules ECO Platform EPD logo use
BAU EPD M-DOCUMENT-4a-rules for use of Bau EPD logo
BAU EPD M-DOCUMENT 5-list of members of PCR panel plus evidence of education
BAU EPD M-DOCUMENT 6-list of registered LCA practitioners in PCR advisory panel
BAU EPD M-DOCUMENT 7-application form for registered LCA practitioners for PCR panel
BAU EPD M-DOCUMENT 8-excel-file for electronic data transfer Editor baubook ECO Platform
BAU EPD M-DOCUMENT 9-overview list product group panels-members (contact and competences)
BAU EPD-M-DOCUMENT-10-product categories PCR B numbering system overview
BAU EPD-M-DOCUMENT-11-general rules for PCR creation
BAU EPD-M-DOCUMENT-12- procedure for PCR creation for specific product groups and PCR verification flow diagram
BAU EPD-M-DOCUMENT-13A1-project report content and format template-EN15804+A1
BAU EPD-M-DOCUMENT-13A2-project report content and format template-EN15804+A2
BAU EPD-M-DOCUMENT-14A1-EPD content and format template MS Word Document-EN 15804+A1
BAU EPD-M-DOCUMENT-14A2-EPD content and format template MS Word Document-EN 15804+A2
BAU EPD-M-DOCUMENT-15-list of approved verifiers
BAU EPD-M-DOCUMENT-16-application form for independent third-party verifiers
BAU EPD-M-DOCUMENT-17-evaluation process verifiers for EPD project + procedure EPD verification
BAU EPD-M-DOCUMENT-18-contract for verification of an EPD project
BAU EPD M- DOCUMENT-19-template verification report including checklist for verification A1 + A2
BAU EPD M-DOCUMENT-19a-template verification report additional comments
BAU EPD-M-DOCUMENT-20-reference service life-20150810
BAU EPD-M-DOCUMENT-21-template internal audits
BAU EPD-M-DOCUMENT-22-template management reviews
BAU EPD M-DOCUMENT 23-members TAC
BAU EPD M-DOCUMENT 24-rules of procedure TAC
BAU EPD M-DOCUMENT 25-cooperation agreement TAC
BAU EPD M-DOCUMENT 26 conformity assessment programme for EPD – process flow
BAU EPD M-DOCUMENT 27-application for EPD verification
BAU EPD M-DOCUMENT 28-matrix of powers and competences
BAU-EPD-M-DOCUMENT-29-file index data saving
BAU EPD M-DOCUMENT-30-management of action and measures
BAU EPD-M-DOCUMENT-31-NDA-non-disclosure agreement.
BAU EPD M-DOCUMENT 32-control of documents and records
BAU EPD-M-DOCUMENT-33-overview valid QM-Documents-documentation of track changes
BAU EPD M-DOCUMENT 34-external contractors competence assessment
BAU EPD M-DOCUMENT 35-management of appeals and complaints

11 ABBREVIATIONS AND DEFINITIONS

declared unit	quantity of a construction product for use as a reference unit in an EPD for an environmental declaration based on one or more information modules
ELCD	European database for LCA
EPD	Type III Environmental Product Declaration
functional unit	quantified performance of a product system for use as a reference unit
generic data	surrogate data used if no system specific data are available, data can be site specific or average.
interested party	person or organization that can affect, be affected by, or perceive itself to be affected by the use or publication of a type III environmental product declaration
life cycle	consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal
LCA	compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle
LCI	phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout its life cycle
LP	leader of programme operation
PGF	Product group forum
programme operator	body or bodies that conduct a Type III environmental declaration programme
product category	group of products with the same functions
PCR	Product Category Rules: set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories
PCR review	process whereby a third-party panel verifies the product category rules
RSL	Reference Service Life: service life of a construction product which is known to be expected under a set of reference in-use conditions and which can form the basis for estimating the service life under other in-use conditions
TAC	Technical Advisory Committee
Type-III-EPD	environmental declaration providing quantified environmental data using predetermined indicators and, where relevant, additional environmental information
Type-III-EPD-Programme	voluntary programme for the development and use of Type III environmental declarations, based on a set of operating rules

verification confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

12 REFERENCES

- Pladerer / Mötzl 2009 Pladerer C., Mötzl H. (Projektleiterin) et al: Anhang 1 „Entsorgungsprozesse – Grundlagenrecherche“ zur Studie „ABC-Disposal – Maßzahlen für die Entsorgungseigenschaften von Gebäuden und Konstruktionen für die Lebenszyklusbewertung“. IBO - Österreichisches Institut für Baubiologie und -ökologie und Österreichisches Ökologie-Institut. Gefördert von BMVIT/Haus der Zukunft. FFG-Projektnr. 813974. Wien, Dezember 2009