



**ITB-EPD  
GENERAL PCR v1.4  
PN-EN 15804+A1:2014-04 based**

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## 1 Introduction

This document (General ITB PCR version 1.4/2014) has been updated by ITB EPD Technical Committee basing on PN EN 15804 [9] and is a part of ITB EPD system procedure [1].

ITB PCR provides the product category rules for all construction products for ITB EPD system and specifies the calculation rules for Life Cycle Assessment (LCA) of ITB EPDs as well as the requirements on the EPD report. It provides a structure to ensure that all ITB EPDs are elaborated in accordance to PN EN 15804 [9], verified and presented in a accepted and predefined format.

ITB EPD communicates verifiable, accurate, non-misleading environmental information for construction products and their applications, thereby supporting fair choices and stimulating the potential for market-driven continuous environmental improvement in industry.

The internal and external verification process is done in accordance with ISO 14025 [4].

EPD information shall be expressed in the information modules based on PN EN 15804 , which allow organisation and expression of data packages throughout the life cycle of the product. The approach requires that the underlying data should be consistent, reproducible and comparable so this is why this ITB PCR is provided.

ITB PCR declares a limited number of quantifiable predetermined parameters (environmental impacts and aspects, see 3.2.13) [3].

Future revisions of ITB PCR may incorporate additional predetermined parameters. ITB PCR is annually updated by ITB TC.

Note: This document is a basis and integral part for the specific product ITB PCRs development (called PCR B). In other ITB documents this document may be named ITB PCR A

## 2 Scope

ITB PCR provides product category rules for Type III environmental declarations for any construction product (CPR based). ITB PCR:

- defines the parameters to be declared and the way in which they are collated and reported,
- describes which stages of a product's life cycle are considered in ITB EPD and which processes are to be included in life cycle stages,
- defines rules for use and end of life scenarios,
- includes the rules for LCI collection and Life Cycle Impact Assessment underlying the EPD, including the specification of the data quality to be applied,
- includes the rules for reporting additional information, that is not covered by LCA

## **3 Content**

### **3.1 Basic information**

ITB EPD according to ITB PCR rules provides quantified environmental information for a construction product on a harmonized, scientific and formal basis. The structure of the ITB EPD report shall follow the structure of ITB PCR document based on EN 15804 (last version) and specific PCR document for product group. ITB EPD report must be accessible by the external and registered verifier under the conditions of confidentiality (see ISO 14025).

The EPD report shall contain the following general information (see details in 3.2.14):

- Declaration title/name of product
- ITB logo and contact
- Issuance and validity date
- Manufacturing sites location
- EPD owner (Client) address
- indications that the Life Cycle Assessment was performed in agreement with the requirements of ITB PCR with reference to EN 15804[9].
- Statement: This declaration is the type III Environmental Product Declaration (EPD) based on EN 15804 and verified according to ISO 14025. It contains information about the impact of declared construction materials on environment and their aspects verified by the independent Advisory Board according to ISO 14025.
- Comparability statement: Basically, a comparison, or evaluation of EPD data is possible only if all the compared data were created according to EN 15804
- Declared unit/functional unit

Note 1: A manufacturer are the sole owners and have liability and responsibility for EPD.

### **3.2 LCA information**

#### **3.2.1 Product description**

Product description shall be based on the technical product Declaration of Performance (DoP) or other technical specification (e.g. Technical Approval). The declared product must be described based on the technical and functional specifications. Product declared or functional shall have possibility to be recalculated to the commercial product unit that can be used for construction e.g. 1 brick, kg/m<sup>2</sup> etc. Product application must be declared. The manufacturing process shall be provided. The area of application of the construction product may be described.

#### **3.2.2 Declared/functional unit**

LCA of the construction product must be calculated for a declared or functional unit as specified in PN EN 15804. This information shall be provided as the essential information for ITB EPD.

A declared/functional unit may be declared as a part of the prescribed product unit; 1 kg, 1 m<sup>2</sup> or other. Usually, the declared unit refers to the product "cradle to factory gate".

If the entire life cycle of the construction product is to be declared, a functional unit can be referred to in compliance with PN EN 15804. If the entire life cycle is declared, it is imperative that a reference service life (RSL) is indicated.

Declaration of durability or RSL product may be optional for declared unit. For this information manufacturer is fully responsible.

### **3.2.3 Data collection period**

Data collection period for specific LCI data (representative year for production) and for generic data shall be specified (see data requirements 3.2.7).

LCI data for a representative year shall be verified and documented (see ITB procedure) during manufacturing plant audit that is a part of ITB EPD process.

Selecting data/background data must be done in a scientific proved way (reference needed).

The specific data derived from specific production processes or average data derived from specific production processes shall be a basis for calculating an ITB EPD. In addition, the following rules apply:

- EPD describing an average product shall be calculated using representative average data on the products declared by the EPD
- EPD describing a specific product shall be calculated using specific data for at least the processes on which the producer of the specific product has an influence
- Generic data may be used for the processes which the producer can not influence, e.g. processes dealing with the production of input commodities such as raw material extraction or electricity generation
- using generic data for some downstream processes
- The additional technical information for the development of scenarios of the building's life cycle stages shall be specific or specific average information, when an average product is declared;
- Documentation of related representatives for generic data shall be provided

### **3.2.4 Life cycle stages declared**

ITB EPD shall contain information on life cycle modules covered.

LCA based information in ITB EPD may cover:

- The product stage only. Such EPD covers raw material supply, transport, manufacturing and associated processes; this EPD is said to be "cradle to gate" and becomes EPD based on information modules A1 to A3; For this declaration module D cannot be declared.
- The product stage and selected further life cycle stages. Such EPD is said to be "cradle to gate with options" and becomes an EPD based on information modules A1 to A3 plus other selected optional modules, e.g. end-of-life information modules C1 to C4. Information module D may be included in this EPD;
- The life cycle of a product according to the system boundary. In this case the EPD covers the product stage, installation into the building, use and maintenance, replacements, demolition, waste processing for re-use, recovery, recycling and disposal, and disposal and is said to be 'cradle to grave' and becomes an EPD of

construction products based on a LCA, i.e. covering all information modules A1 to C4. In this EPD the information module D may be included.

### **3.2.5 System boundaries/limits**

LCA is conducted by defining product system as models describing the key elements of physical systems. The system boundary defines the unit processes to be included in the system model.

The manufacturing scheme/diagram shall be included in ITB EPD.

The information of EPD geographical representativeness shall be included in ITB EPD.

EPD describing an average product shall be calculated using representative average data of the products declared by the EPD and justified.

The system limits of ITB EPD follow the modular structure of PN EN 15804.

The environmental information of EPD shall be subdivided into the information module groups A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D.

The information of modules for EPD shall be included. Information modules within any of the life cycle stages are communicated depending on the type of EPD. They include in EPD results impacts and aspects related to losses in the module in which the losses occur (i.e. production, transport, and waste processing and disposal of the lost waste products and materials).

Modules used for EPD are:

A1-A3, Product stage, information modules. The product stage includes:

- A1, raw material extraction and processing, processing of secondary material input
- A2, transport to the manufacturer,
- A3, manufacturing,

Module A1, A2 and A3 may be declared as one aggregated module A1-3 only if all separated modules are declared.

A4-A5, Construction process stage, information modules. The construction process stage includes:

- A4, transport to the building site;
- A5, installation into the building;

B1-B5, Use stage, information modules related to the building fabric. For declaration with B and C modules detailed product use scenario shall be included.

The use stage, related to the building fabric includes:

- B1, use or application of the installed product;
- B2, maintenance;
- B3, repair;
- B4, replacement;
- B5, refurbishment;

B6-B7, use stage, information modules related to the operation of the building. The use stage related to the operation of the building includes:

- B6, operational energy use (e.g. operation of heating system and other building related installed services);
- B7, operational water use;

C1-C4 End-of-life stage, information modules. The end-of-life stage includes:

- C1, de-construction, demolition;
- C2, transport to waste processing;
- C3, waste processing for reuse, recovery and/or recycling;
- C4, disposal;

D, Benefits and loads beyond the system boundary, information module.

Module D includes: reuse, recovery and/or recycling potentials, expressed as net impacts and benefits. Module D can be declared only for cradle to grave declaration. Criteria for the exclusion of inputs and outputs

Inputs and outputs to the product system shall be declared (diagram or scheme) in ITB EPD. All cut-offs (especially in A3 module) shall be declared and optionally justified. Criteria for the exclusion of inputs and outputs (cut-off rules) in LCA and information modules and any additional information shall be declared. Any application of the criteria for the exclusion of inputs and outputs shall be documented. The following procedure shall be followed for the exclusion of inputs and outputs:

- All inputs and outputs to a system process shall be included in the calculation. Data gaps may be filled by conservative assumptions with average or generic data. Any assumptions for such choices shall be documented; Estimation from generic data shall be presented (for example where there is no emission, emission should be calculated from combustion factors)
- 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 shall be a maximum of 5 % of energy usage and mass.
- 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. (for example Water emissions from manufacturer without measurement shall be added by estimation)

### 3.2.6 Data quality

The source of data shall be declared shortly in EPD and fully in LCA report..

LCI data should be collected and verified in accordance to ITB rules (EPD ITB Procedure, see ITB EPD download section <http://www.zb.itb.pl/epd>) using ITB LCI collection format (see download section).

All specific data derived from specific production processes or average data derived from specific production processes shall be the first choice as a basis for calculating ITB EPD. In addition the following rules apply:

- EPD describing an average product shall be calculated using representative average data of the products declared by EPD;
- Manufacturing data shall be specific and verified and originate from manufacturing plant
- Generic data may be used for the processes the producer cannot influence e.g. A1 processes dealing with the production of inputs raw material extraction or electricity generation. Guidance for the selection and use of generic data is provided in CEN/TR 15941.
- Generic data shall be checked for plausibility.

- The additional technical information for the development of scenarios of the building's life cycle stages shall be specific or specific average information, when an average product is declared;
- Data collection shall follow the guidance provided in ISO 14044

The quality of the data used to calculate ITB EPD shall be addressed in the project report. In addition the following specific requirements apply for construction products:

- Data shall be as current as possible. Data sets used for calculations shall have been updated within the last 8 years for generic data and within the last 2 years for producer specific data;
- Data sets shall be based on 1 year averaged data; no deviations shall be justified;
- The time period over which inputs to and outputs from the system shall be accounted for and is 100 years from the year for which the data set is deemed representative.
- The technological coverage shall reflect the physical reality for the declared product or product group;
- Generic data source shall be presented.
- Data sets shall be complete according to the system boundary within the limits set by the criteria for the exclusion of inputs and outputs

The quantities and quality of the data used to calculate ITB EPD is a part of internal and external verification. All generic data used shall have scientific reference (name, literary source), including year for which the data set is representative. All generic data shall be scientifically accepted and selected data sources (including papers, industry reports, MSC and PhD thesis as well recognised data bases like Ecoinvent).

The commercial data with no proved reference is not accepted.

### **3.2.7 Power Mix**

The following rules applies as regards selecting the power mix:

- in Poland, the actual formal/national "Polish Power Mix" shall be used for electricity.
- outside Poland, the actual "EU specific country Power Mix" shall be used for electricity.
- If "green" power is used, certificates must be available (if not LCA benefit cannot be included)
- Carbon footprint for Power Mix shall be generic or specific and declared in EPD

### **3.2.8 Product scenarios**

Scenario of ITB EPD product shall be based on technical specification declared by manufacturer. Scenarios are communicated for ITB EPD that declare optional information modules, the additional technical information related to the scenarios underlying these modules are a required part of the information of the declared information modules. Scenarios shall support the calculation of information modules covering processes that deal with any one or all of the life cycle stages of the construction product except for the required modules A1 to A3; scenarios shall support the assessment of the environmental performance of a building in its life cycle stages "construction, use stage, end-of-life" . Scenarios shall be provided only for the environmental assessment. A scenario shall be based on the relevant technical information defined in EN 15804. A scenario shall be realistic and representative of one of the most probable alternatives. Scenarios shall not include processes or procedures that are not in current use or which have not been demonstrated to be practical. If an optional module declares



the life cycle, the relevant technical information, e.g. recycling or reuse rates, must be documented in the project report with reference to the respective literary source.

### **3.2.9 Allocation rules for inputs and emissions**

Statement of allocation of the inputs and output emissions shall be included. It can be done as separated point in ITB EPD or in point Assumptions and estimations.

Co-product justification for allocation shall be used.

Btw, allocation shall be avoided as far as possible by dividing the unit process to be allocated into different sub-processes that can be allocated to the co-products and by collecting the input and output data related to these sub-processes. 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; Contributions to the overall revenue of the order of 1% or less is regarded as very low. A difference in revenue of more than 20 % is regarded as high.

The rules for allocation are based on the guidance given in EN ISO 14044. The sum of the allocated inputs and outputs of a unit process shall be equal to the inputs and outputs of the unit process before allocation. This means no double counting or omission of inputs or outputs through allocation is permitted.

### **3.2.10 End of life allocation**

The end of life scenario shall be declared and justified if such a stage of declaration is under assessment.

The end-of-life system boundary of the construction product system is set where outputs of the system under study, e.g. materials, products or construction elements, have reached the end-of-waste state (no value status).

Where relevant informative module D declares potential loads and benefits of secondary material, secondary fuel or recovered energy leaving the product system. Where a secondary material or fuel crosses the system boundary e.g. at the end-of-waste state and if it substitutes another material or fuel in the following product system, the potential benefits or avoided loads can be calculated based on a specified scenario which is consistent with any other scenario for waste processing and is based on current average technology or practice. If today's average is not available for the quantification of potential benefits or avoided loads, a conservative approach shall be used.

### **3.2.11 Calculation procedures**

The calculation procedures described in EN ISO 14044 shall apply. The same calculation procedures shall be applied consistently throughout the ITB EPD study.

Specific data for production process is collected by filing the ITB LIC data questionnaire.

When transforming the inputs and outputs of combustible material into inputs and outputs of energy the net calorific value of fuels shall be applied according to scientifically based and accepted values specific to the combustible material.

Use of commercial LCA software is accepted only if all processes taken into consideration are presented in LCA report. If a content of the software used by LCA external consultant is not recognized and accepted by ITB TC decision LCA result may be not accepted.

Note 1: ITB EPD uses SI European units only (e.g. Tonne instead of Mg is not allowed)

### **3.2.12 Impact assessment**

The impact and aspects for ITB EPD are declared based on EN 15804. All indicators are presented. If indicator is not assessed then INA is used.

The impact assessment is carried out for the following impact categories, using characterisation factors applied in last version of EN 15804+A1 (CML 4.1 version 2014).

The results of the Life Cycle Assessment must be provided in modular form for all Modules A1 to D (using a ITB communication format). If individual modules or entire life cycle stages are not declared, the corresponding fields in the table must be marked as “MND” (module not declared).

### **3.2.13 Communication formats**

The communication format of ITB EPD shall be in accordance with registered ITB (see ITB format in download section) format partly based on EN 15942, *Sustainability of construction works — Environmental product declarations — Communication formats: business to business*.

The following items of general information are required and shall be declared in an EPD.

- the name and address of the manufacturer
- the description of the construction product's use and the functional or declared unit of the construction product to which the data relates
- construction product identification by name (including any product code) and a simple visual representation of the construction product to which the data relates
- a description of the main product components (resources) and or materials
- name of the programme used and the programme operator's name and address and, if relevant logo and website
- the date the declaration was issued and the 5 year period of validity
- a statement that EPD of construction products may not be comparable
- justification in the case where an EPD is declared as an average performance
- the sites of manufacturer or group of manufacturers or those representing them for whom the EPD is representative
- information on where explanatory material may be obtained
- information on LCA auditor, LCI auditor, Internal verification name with contact
- demonstration of verification, independent verification of the declaration:

CEN standard EN 15804 serves as the core PCR
Independent verification corresponding to ISO 14025 & 8.3.1.  <input checked="" type="checkbox"/> external <input type="checkbox"/> internal
Verification of EPD: title, name LCI audit and input data verification: title name LCA auditor: tile name, contact Verification of procedures and declaration: title name

In order to support the application of the modular information of an EPD in an environmental building assessment, it is necessary to provide information in a modular way.

The ITB EPD shall specify which EPD-type is declared

- A “Cradle to Gate” EPD: For a “Cradle to Gate” EPD a declaration of the RSL is not possible. The RSL shall be declared as: “not specified”. In this type of EPD module D is not declared;
- A “Cradle to Gate with Options” EPD: For a “Cradle to Gate with Options” EPD the declaration of the RSL is possible only if all scenarios for the modules A1-A3 and B1-B5 are given
- A “Cradle to Grave” EPD: For a “Cradle to Grave” EPD (life cycle declaration covering all modules in the stages A to C) a declaration of the RSL is required.

In some cases, certain modules may not be relevant to the environmental performance of a product. In such cases the irrelevant module shall be declared as “not relevant”. Such a declaration shall not be regarded as an indicator result of zero.

The format of ITB EPD declaration shall include LCI basic data for A3 module: resources, energy consumption, emissions and waste.

The following information on environmental impacts is expressed with the impact category parameters of LCIA using characterisation factors. These parameters are required and shall be included in ITB EPD as follows:

Impact Category	Parameter	Unit (expressed per functional unit or per declared unit)
Global Warming	Global warming potential, GWP;	kg CO <sub>2</sub> equiv
Ozone Depletion	Depletion potential of the stratospheric ozone layer, ODP;	kg CFC 11 equiv
Acidification for soil and water	Acidification potential of soil and water, AP;	kg SO <sub>2</sub> equiv
Eutrophication	Eutrophication potential, EP;	kg (PO <sub>4</sub> ) <sup>3-</sup> equiv
Photochemical ozone creation	Formation potential of tropospheric ozone,, POCP;	kg Ethene equiv
Depletion of abiotic resources-elements	Abiotic depletion potential (ADP-elements) for non fossil resources	kg Sb equiv
Depletion of abiotic resources-fossil fuels	Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ, net calorific value

The following environmental parameters apply data based on the LCI. They describe the use of renewable and non renewable material resources, renewable and non renewable primary energy and water. They are required and shall be included in the ITB EPD as follows:

Parameter	Unit(expressed per functional unit or per declared unit)
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ, net calorific value
Use of renewable primary energy resources used as raw materials	MJ, net calorific value
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value
Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials	MJ, net calorific value
Use of non renewable primary energy resources used as raw materials	MJ, net calorific value
Total use of non renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value
Use of secondary material	kg
Use of renewable secondary fuels	MJ, net calorific value
Use of non renewable secondary fuels	MJ, net calorific value
Net use of fresh water	m <sup>3</sup>

The parameters describing waste categories and other material flows are output flows derived from LCI. They are required and shall be included in the EPD as follows:

Parameter	Unit(expressed per functional unit or per declared unit)
Hazardous waste disposed	kg
Non hazardous waste disposed	kg
Radioactive waste disposed	kg

Parameter	Unit (expressed per functional unit or per declared unit)
Components for re-use	kg
Materials for recycling	kg
Materials for energy recovery	kg
Exported energy	MJ per energy carrier

Additional information on release of dangerous substances to indoor air, soil and water during the use stage can be declared. Emissions to indoor air, according to the horizontal standards on measurement of release of regulated dangerous substances from construction products using

harmonised testing methods according to the provisions of the respective Technical Committees for European product standards, when available.

### **3.3 Verification and validity of ITB EPD**

Verification shall be done by the external expert chosen in accordance to the ITB-EPD Program Procedure [1] and using ITB Verification Format based on the ECO verification guideline [2].

ITB EBD shall contain statement: The process of verification of ITB EPD is in accordance with EN ISO14025, clause 8 and ISO21930, clause 9. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

ITB EPD is valid for a 5 year period from the date of issue, after which it shall be reviewed and verified. ITB 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. ITB EPD does not have to be recalculated after 5 years, if the underlying data has not changed significantly. The process for verification and establishing the validity of ITB EPD is in accordance with EN ISO 14025 and ISO 21930 (see ITB procedure). Reasonable change in the environmental performance of a product shall be reported and is +/- 10% on any one of the declared parameters of the EPD. Such a change may require an update of the EPD.

EPD ITB includes ITB national certificate of the conformity with EN 15804 [9] and EN ISO14025 [4]. ITB as the accredited and notified body (CPR) acts as the third-party verification organization.

## **4 References**

1. ITB-EPD Program Procedure
2. ITB EPD Verification Format
3. ITB-EPD Indicators Form
4. ISO 14025:2006, Environmental management – Type III environmental declarations – Principles and procedure.
5. ISO 21930:2007, Sustainability in building and construction – Environmental declaration of building products.
6. ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines.
7. ISO 15686-1:2000, Buildings and constructed assets — Service life planning — Part 1: General principles
8. ISO 15686-8:2008, Buildings and constructed assets – Service life planning – Part 8: Reference service life
9. EN 15804+ A1, Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
10. EN15942:2011, Sustainability of construction