

# Product category rules Part B –

## for concrete building products and concrete elements

### General product category rules for environmental product declarations according to EN ISO 14025 and EN 15804

according to the program operation for the preparation of environmental product declarations (EPD) of the ift Rosenheim

Key words: Environmental Product Declaration, Concrete, Concrete elements, Life Cycle Assessment, Product Category Rules



#### Note

The present document is only a rough translation. In case of doubt, the German version applies.

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## 1 Preliminary remark

The product category rules of the ift Rosenheim are divided into two parts and marked accordingly. Part A contains general product category rules, while this part B contains product group-specific rules. The valid versions can be obtained from ift Rosenheim.

The European Standards EN 15804 and EN 16757 provide basic Product Category Rules for building products, services of all kinds and building processes and in particular for concrete and concrete elements. They form the basis to secure that Environmental Product Declarations for building products, services of all kinds and building processes and in particular for concrete and concrete elements are derived, verified and displayed in a standardized way.

This PCR provides additional Product Category Rules for Type III Environmental Product Declarations (EPD) in particular for concrete and concrete elements. This PCR is therefore supplementing the requirements according to EN 15804 and EN 16757 and do not replace them.

### Note

In EN 16757, precise specifications are made for the life cycle assessment and EPD preparation of concrete and concrete elements within the various phases of the life cycle; these must be observed.

## 2 Product category rules

### 2.1 Content

This PCR defines for specific product groups:

- Rules for the preparation of environmental product declarations (EPD) for building products made of concrete and concrete elements, e.g. concrete according to EN 206, concrete elements according to EN 12839, precast concrete products according to EN 13369, masonry units according to EN 771-3, concrete paving blocks according to EN 1338, concrete paving flags according to EN 1339, prefabricated reinforced components of lightweight aggregate concrete according to EN 1520 or fiber-cement flat sheets according to EN 12467.

### 2.2 Verification, validation and release of the PCR

The committee of experts “ift-EPD and PCR” performs the validation and thus vouches for its correctness.

Interested Parties involved in the PCR assessment:

- Ift Rosenheim
- TU Darmstadt

This PCR document with the document number PCR-PB-1.1 was validated and released by the committee of experts (CE) of the ift Rosenheim GmbH. The PCR document is valid according to ISO 14025, EN 15804 and the ift guideline NA-01, five years.

Tracking of the editing / revisions:

Serial No.	Date	Editing comment	CE	Declaration code
1	12/2020	Initial verification and release	Provisionally released	PCR-PB-1.0 : 2020
2	10/2021	Content changes	Released	PCR-PB-1.1 : 2020

### 3 General product information

#### 3.1 Product description / Product definition

The declared products must be described.

In doing so, the trade name of the products / product groups (including any product codes) to which the EPD applies must be stated in addition to a general product description. If it is not reasonably possible to name the products / product groups, e.g. in the context of association EPDs, the product description must clearly delimit the products / product groups to which the EPD applies.

Exemplary information:

- component (Structure has to be specified)
- Format und dimensions
- Type, material (Aggregate, cement, water, additives, fibers)
- Surfaces (Treatment, coating, structure)
- Fillings (Material and structure have to be specified)
- Reinforcements (Material and structure have to be specified)
- Accessories (Material and structure have to be specified)
- Purpose

### 3.2 Scope

These product category rules (PCR-PB-1.1) can be applied to building products and elements of different formats and dimensions made of concrete.

Examples for such products:

- Normal concrete, lightweight concrete, heavy concrete
- Sprayed concrete
- Concretes produced on site, on construction site, on transport and in precast plants
- Compacting or self-compacting concretes
- Reinforced, unreinforced, pretensioned, non-pretensioned or concrete components reinforced with GRP rods made of normal, lightweight or heavy weight with or without insulation as well as with or without hollow modules
- Building components made of fibre concrete with glass, carbon, steel or plastic fibres
- Prefabricated parts made of wood chip concrete
- Unreinforced and reinforced bricks
- Ceilings and coatings made of concrete paving stones or slabs, laid or staggered
- Concrete masonry, roofing, kerbstones and (hollow, ceiling) slabs
- Concrete pipes, manholes and fittings
- Drainage channels, slatted floors, concrete poles
- Street furniture, garden design elements, stairs, concrete bridges

Concrete is produced by mixing cement, coarse and fine aggregate and water, with or without adding additives or fibers and gets its properties by hydration of the cement. The following system components are included: aggregates and further supplements (sand, pumice, basalt, chippings, etc.), cement and other binders (fly ash, limestone powder, etc.) water, additives, (flow agents, pigments, coatings, etc.) reinforced steel or fibers.

The concrete products can be produced in a place other than the final place of use (see transport concrete or prefabricated parts).

### 3.3 Application

Brief description of the scope of the declared products.

Examples:

- Building products made of concrete for the usage in residential and non-residential buildings as well as in industrial buildings
- Products made of concrete as hard cover on pitched roofs and for the cladding of exterior walls
- For the protection of exterior insulation products and load-bearing substance of a building against weathering
- Concrete units for pavements, streets, squares, courtyards, terraces or paths,

- Bricks for masonry, monolithic, load-bearing and non-load-bearing walls,
- Concrete light wells for the permanent creation of a delimited air space,
- Concrete products for use as floor coverings outdoors or indoors
- Cladding material for curtain-type rear-ventilated façades, as cladding in interior and exterior areas or as floor covering

### 3.4 Quality assurance and management systems (optional)

In order to guarantee the quality assurance of the product, certification systems can be used. Within the framework of the EPD, information can optionally be provided on quality assurance or QMS and EMS.

Exemplary information:

ift product certification

- QM 359 VOC emissions from construction products

Management systems

- Quality management DIN EN ISO 9001
- Environmental management DIN EN ISO 14001
- Energy management DIN EN ISO 50001
- Occupational health and safety management BS OHSAS 18001
- Integrated Management system (IMS)

#### Note

Existing data, e.g. from EMSs (environmental balances), can facilitate data collection in life cycle assessments.

### 3.5 Technical data / performance of the product

- Building products of different formats and dimensions made of concrete or concrete elements

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Product group: concrete products and concrete elements  
 Declaration code: PCR-PB-1.1 : 2020  
 Date of release: 14.09.2020  
 Next revision: 14.09.2025



**Table 1** Characteristics and performance in the product category

	Eigenschaften und Leistungen*	Einheiten
Obligation	Gross density	kg/m <sup>3</sup>
Obligation **2,3	Grammage	kg/m <sup>2</sup>
Obligation **3	Material thickness	m
Obligation	Weight per unit	kg/Stk
Obligation	Cement strength class	-
Obligation	Load capacity	kg/m <sup>2</sup>
Optional	Cement content	%
Optional	Water-cement-value	-
Optional	Water absorption	%
Optional	Dimensions (width, Height, Length)	Lenght (mm, m etc).
Optional	Compressive strength class	-
Optional	Tensile strength	N/mm <sup>2</sup>
Optional	Bending tensile strength	N/mm <sup>2</sup>
Optional	Compressive strength	N/mm <sup>2</sup>
Optional	Modulus of elasticity	N/mm <sup>2</sup>
Optional	Equilibrium moisture content	%
Optional	Thermal conductivity	W/(mK)
Optional	Rated value thermal conductivity	W/(mK)
Optional	Water vapour diffusion resistance	-
Optional	Sound absorption coefficient	-
Optional	Fire resistance class, fire protection	-
Optional	durability	-
Optional	Sliding resistance and slip resistance	-
Optional	Splitting tensile strength	MPa
Optional	Abrasion resistance	-
	If applicable, further	

\* The reference product is described in the EPD with the mandatory information. The product characteristics can be given in a range to describe the reference product.

\*\* The mandatory information refers to the corresponding declared unit (<sup>1</sup> m<sup>3</sup>, <sup>2</sup> t or kg, <sup>3</sup> m<sup>2</sup>).

## 4 Raw materials

### 4.1 Information on SVHC according to PCR Part A

If products to which this PCR applies contain substances of very high concern (SVHC), these must be indicated in the EPD.

### 4.2 Additional information

The essential technical information on the product(s) or a reference to it shall be provided for the architect.

When considering the entire life cycle (cradle to grave), the product characteristics must be stated on the basis of the physical properties of the building or a reference to them.

Within the framework of the EPD, further information on building certification systems can be provided.

Example:

The physical properties of the concrete element can be found in the CE label or in the accompanying documentation.

## 5 Life cycle assessment

For the preparation of an EPD, a life cycle assessment according to ISO 14040 and ISO 14044 is prepared as a basis. The data on which the life cycle assessment is based should be precise, complete and consistent. This life cycle assessment must be representative of the products presented in the declaration. The scope and limits of the life cycle assessment must be specified.

### 5.1 Functional unit

The functional unit indicates the quantified benefit of a product system used as a comparison unit (see EN 16757 and EN 15804).

### 5.2 Declared unit

Declared products must be described and optionally represented graphically (e.g. CAD drawing). A functional or declared unit to which the EPD data refer must be specified.



The following declared unit must be specified:

- One ton (t) or one kilogram (kg) of concrete material
- One cubic meter (m<sup>3</sup>) of concrete material
- One square meter (m<sup>2</sup>) of concrete material

If applicable, EN 16757 applies.

Example:

The functional unit for products made of concrete is given as a weight in t or kg, with a gross density in kg/m<sup>3</sup> and a grammage and weight per unit in kg.

### 5.3 Geographical and time-related system boundaries

General information according to PCR Part A.

Example:

Reference period Year 2009-2010

Reference area Europe

### 5.4 Scope / System boundaries

Example products made of concrete:

#### **Cradle to Gate according to EN 15804+A1:**

The system boundaries include the extraction of raw materials, the manufacture of the products made of concrete and the assembly of the individual components to the finished packaged products made of concrete at the factory gate.

#### **Cradle to Gate according to EN 15804+A2:**

The system boundaries include the extraction of raw materials, the manufacture of the products made of concrete and the assembly of the individual components to the finished packaged products made of concrete at the factory gate as well the ablation, deposition and material and thermal recycling of the products.

#### **Note:**

In the case of construction products and materials that are permitted as exceptions according to EN 15804+A2, the information on disposal may be omitted.

#### **Cradle to Grave according to EN 15804+A1:**

The system boundaries also include the use, deconstruction, disposal and material and energy recovery of the products made of concrete and its individual parts.

### **Cradle to Grave according to EN 15804+A2:**

The system boundaries also include the stage-of-life-phases application and use.

#### **5.5 Reference service life (RSL)**

If applicable, EN 16757 applies.

It applies EN 15804.

#### **5.6 Information on the product life cycle**

Regulations to be observed during the life cycle:

Exemplary information:

Product manufacture:

- If applicable, EN 16757 applies.
- Product standard
- Applicable certification programs

Construction stage:

- If applicable, EN 16757 applies.
- Assembly guideline / instruction

Use stage:

- If applicable, EN 16757 applies.
- Information on the useful life
- Information on VOC emissions (certification programmes)
- Information on use

End-of-Life stage:

- If applicable, EN 16757 applies.
- Recycling initiatives or normal recovery and disposal systems
- Recycling rates in line with the industry standard
- Legal requirements for recovery

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## PCR concrete building products and concrete elements

Product group: concrete products and concrete elements  
Declaration code: PCR-PB-1.1 : 2020  
Date of release: 14.09.2020  
Next revision: 14.09.2025

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Declaration code: PCR-PB-1.1 : 2020  
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Next revision: 14.09.2025

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### **Publisher**

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### **Publication**

**PCR** concrete products and concrete elements PCR-PB-1.1  
Product Category Rules according to EN ISO 14025 und EN 15804

Bibliographic information of the German Library. The German Library lists this publication in the German national bibliography; detailed bibliographic data can be found on the Internet:  
<http://dnb.ddb.de>

### **Layout**

ift Rosenheim GmbH

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