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Product category rules

EN 15804 +A2

NPCR 009

Part B for Technical - Chemical products for building and construction industry

Issue date: 06.10.2021
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REVISION LOG

This is an overview of the changes made to this PCR. Typology of changes:

- Editorial (ed): Text or layout edited, with no change in content.
- Technical (te): Existing content has been changed.
- Addendum (ad): New content has been added.

Naming convention: Version x.y, where x is a major revision and y is a minor revision.

Date (2018-06-06)	Type	Description of change
Version 1.0		
Original version, issued 2018-06-06.		
Version 2.0		
Editorial update with reference to new NPCR part A and EN 15084:2013 + A2:2019		
2023.10.17 te Validity has been extended until 2024.07.01		

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Introduction

These product category rules (PCR) are intended for companies preparing an environmental product declaration (EPD) for technical-chemical products in the building and construction industry (see chapter 6.1 for a definition of the product group). The PCR for technical-chemical products in the building and construction industry consists of two parts. This document contains PCR part B for technical-chemical products in the building and construction industry, which is the part of the PCR that is specific for technical chemical products in the building and construction industry. Part A contains the requirements that are common for all construction products. When preparing an EPD for technical-chemical products in the building and construction industry, all requirements outlined in part A and part B must be followed. In PCR part B, the requirements for PCR part A are referred to in each section where they occur. The purpose of this document is to define clear guidelines for performing the underlying life cycle assessment (LCA) to ensure comparability between EPDs.

This PCR was developed from August 2017 to January 2018, by a Norwegian PCR working group (WG), with representatives from the technical-chemical product industry, and with aid from Ostfold Research (Østfoldforskning), SINTEF Building and Infrastructure and the EPD program operator The Norwegian EPD Foundation. The PCR has been developed in accordance with the requirements of the general programme instructions for the Norwegian EPD programme (EPD-Norway 2014). An editorial update with reference to new NPCR part A and EN 15084:2013 + A2:2019 was made by the EPD-Norway secretariat in September 2021.

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1 Scope

This document complements the core rules for the product category of construction products as defined in EN 15804:2012+A2:2019 and NPCR part A, and is intended to be used in conjunction with those standards.

In addition, the intended application of this product category rule (PCR) is to give guidelines for the development of environmental product declarations (EPD) for *technical-chemical products in the building and construction industry,* and to further specify the underlying requirements of the life cycle assessment (LCA). The core rules valid for all construction products are given in standard EN 15804 and NPCR Part A, and are expected to be known by those preparing the EPD.

2 Normative references

As in PCR part A.

3 Terms and Definitions

As in PCR part A.

In addition, the following product-specific terms and definitions are given:

3.1 Building fabric

Construction products that are fixed to the building in a permanent manner, so that the dismantling of the product changes the performance of the building, and the dismantling or replacement of the product constitutes reconstruction. The product can be used for both exterior and interior applications.

3.2 Adhesive

An adhesive is a mixture in a liquid or semi-liquid state that adheres or bonds items together.
Adhesives may come from either natural or synthetic sources. To follow are some examples of different types of adhesives:

Cementitious adhesive (based on EN 12004).
A mixture of hydraulic binding agents, aggregates, and organic additives, mixed with water or liquid admix just before use.

Dispersion adhesive (based on EN 12004).
A ready to use mixture of organic binding agent(s) in the form of an aqueous polymer dispersion, organic additives, and mineral fillers.

Reaction resin adhesive (based on EN 12004).
One or more components, which when mixed contain synthetic resin, mineral fillers and organic additives. Hardening occurs by chemical reaction.

3.3 Liquid applied membrane (based on ETAG 022)

One or more liquid applied layers of materials that act as a barrier between the water and the building structure, preventing the passage of water.

3.4 Mortar

A mortar is a workable paste, used to bind construction blocks together, used to fill the gaps between them, used to repair holes and gaps, and/or to create a levelled surface from a very uneven masonry or concrete wall. Modern mortars are typically mixtures of sand, a binder such as cement, gypsum or lime, additives and water. To follow are some examples of different types of mortar:

Masonry mortar (based on EN 998-2).

A workable paste used to bind building blocks such as stones, bricks and concrete masonry units together, fill and seal the irregular gaps between them, and/or add decorative colours or patterns to masonry walls.

Rendering or plastering mortar (based on EN 998-2).
A workable paste or slurry used to add a smooth, constructive or decorative layer on a wall of clay, cement, stone, mud brick or insulation. It is often textured, coloured, or painted after application. It is generally used on exterior walls but can also be used on interior walls.

Repair mortar – a workable paste used for structural repair.

Casting mortar – a workable or thick cement based paste for casting and supporting smaller constructions.

3.5 Sealant (based on ISO 6707)

A substance used to prevent the passage of fluids, gas, noise, smoke etc through surfaces, joints or openings in materials. Sealant is a type of mechanical seal.

Sealant can also have a decorative and/or mechanical function to absorb movements in materials.

3.6 Screed and fine smoothing/levelling compound

Smoothing paste or screed is used to fill in holes and other surface irregularities in different wall- and floor surfaces in order to provide a smooth surface when set and filling pores. Screeds and floor levelling compounds are used to make smooth and even floor surfaces on different substrates. The surface can be a substrate for a floor covering or a ready-to-use-surface.

3.7 Surface treatment

Liquid applied treatment to protect and/or provide a decorative surface of a building or construction. Paints are **not** included in this PCR.

4 Abbreviations

As in PCR part A with the following addition:

VOC Volatile organic compound

5 General aspects

5.1 Objective of PCR Part A and B

As in PCR part A.

5.2 Types of EPD in respect to life cycle stages covered

As in PCR part A.

5.3 Comparability of EPD of construction products

As in PCR part A.

5.4 Additional information
As in PCR part A.

5.5 Ownership, responsibility and liability for the EPD
As in PCR part A.

5.6 Communication format
As in PCR part A

6 Product Category Rules for LCA
As in PCR part A.

6.1 Product Category
As in PCR part A and the following further clarification.

The product groups covered in this PCR includes glues, adhesives, screeds, plasters, renders, fine smoothing compounds, sealants, primers, mortars,liquid applied membranes and surface treatment products. The following sub-chapters describe the various groups of products covered by this PCR. There is, however, a certain degree of overlap between the product groups. There is, for example, no clear distinction between sealants and glues, or between smoothing compounds and surface treatment products. Ultimately, it is the responsibility and right of the EPD owner to define the product group in which the product belongs.

6.1.1 Adhesives
Adhesives are described in the following standards.

- EN 12675: Classification of thermosetting wood adhesives for non-structural applications.
- EN 204: Classification of thermoplastic wood adhesives for non-structural applications.
- EN 22637: Adhesives - Test of adhesive for floor covering - Determination of the electrical resistance of adhesive films and composites
- EN 15275: Structural adhesives - Characterization of anaerobic adhesives for co-axial metallic assembly in building and civil engineering structures.
- EN 14496: Gypsum based adhesives for thermal/acoustic insulation composite panels and plasterboards - Definitions, requirements and test methods.
- EN 12436: Adhesives for load-bearing timber structures - Casein adhesives - Classification and performance requirements.
- EN 12004-1: Adhesives for ceramic tiles - Part 1: Requirements, assessment and verification of constancy of performance, classification and marking
- EN 311: Particleboards. Surface soundness of particleboards, test method. (reference to Hot-melt adhesive).

6.1.2 Sealants

Sealants are described in the following standards:

- ISO 6927: Buildings and civil engineering works -- Sealants – Vocabulary. (reference to Plastic sealant and Elastic sealants).
- EN ISO 11600: Building construction - Jointing products - Classification and requirements for sealants (ISO 11600).
- EN 13880-1: Hot applied joint sealants - Part 2: Test method for the determination of cone penetration at 25 °C.
- EN 13888: Grout for tiles - Requirements, evaluation of conformity, classification and designation.
- EN 14188-1: Joint fillers and sealants. Part 1: Specifications for hot applied sealants.
- EN 14188-1: Joint fillers and sealants. Part 2: Specifications for cold applied sealants.
- EN 15651: Sealants for non-structural use in joints in buildings and pedestrian walkways. Part 1: Sealants for facade elements.
- EN 15651: Sealants for non-structural use in joints in buildings and pedestrian walkways. Part 2. Sealants for glazing.
- EN 15651: Sealants for non-structural use in joints in buildings and pedestrian walkways. Part 3: Sealants for sanitary joints.
- EN 15651: Sealants for non-structural use in joints in buildings and pedestrian walkways. Part 4: Sealants for pedestrian walkways.

6.1.3 Screeds and fine smoothing compounds

Screeds and fine smoothing compounds are described in the following standards:

- EN 13813: Screed material and floor screeds - Screed material - Properties and requirements.
- BS-EN 1937: Test method for hydraulic setting floor smoothing and/or levelling compounds. Standard mixing procedures.
- EN 13454-1: Binders, composite binders and factory-made mixtures for floor screeds based on calcium sulphate - Part 1: Definitions and requirements.
- EN 13279-1: Gypsum binders and gypsum plasters - Part 1: Definitions and requirements.
- EN 15824: Specifications for external renders and internal plasters based on organic binders.

6.1.4 Liquid applied membranes

Membranes are described in the following standards:

- EN 14891: Liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives. Requirements, test methods, assessment and verification of constancy of performance, classification and marking.
- ETAG 022: guideline for European technical approval of Watertight covering kits for wet room floors and or walls. Part 1: Liquid Applied Coverings with or without wearing surface.
- EN 15814: Polymer modified bituminous thick coatings for waterproofing - Definitions and requirements.

6.1.5 Mortar

Mortars are described in the following standards:

- EN 998-1: Specification for mortar for masonry - Part 1: Rendering and plastering mortar
- EN 998-2: Specifications for mortar for masonry use - Masonry mortar.
- EN 1504-series: Products and systems for protection and repair of concrete structures.
- EN 413-1: Masonry cement. Part 1: Composition, specifications and conformity criteria.
- EN 934-1: Admixtures for concrete, mortar and grout. Common requirements.
- EN 934-3: + A1: Admixtures for concrete, mortar and grout. Part 3: Admixtures for masonry mortar - Definitions, requirements, conformity and marking and labelling.

6.1.6 Surface treatment

Surface treatments are described in the following standard:

EN 1504-2 Products and systems for protection and repair of concrete structures. Definitions, requirements, quality control and evaluation of conformity - Part 2: Surface protection systems for concrete.

6.1.7 Primers

Primers are products used to make a surface ready for the application of another product, e.g. a smoothing compound or a sealant. In this document, primers belong to the same subgroup as the product they are used in conjunction with. E.g. primers for sealants belong to the same subgroup as sealants.

6.2 Life cycle stages and their information modules to be declared

6.2.1 General

As in PCR part A.

6.2.2 A1-A3 Product stage, information modules

As in PCR part A

6.2.3 A4-A5 Construction process stage, information modules

As in PCR part A and the following further clarification.

Module A4 includes the transportation of packed product from the production site to the place where it is to be used.

Transport in life cycle module A4 shall include the following:

- Direct emissions during transport (exhaust, tyres, etc.)
- Upstream emissions from fuel extraction, processing and distribution
- Life cycle emissions of vehicles (raw materials, manufacturing, maintenance and disposal)

- Life cycle emissions of infrastructure (raw materials, manufacturing, maintenance and disposal)

Module A5 is the installation phase. It includes all materials and activities connected to the installation of technical-chemical products in the building or construction. All relevant processes, use of application tools, cleaning of tools, product wastage and any energy or other input used in the application shall be included. Handling of waste generated from the construction phase is also included. One typical example of environmental impact from the construction phase of technical-chemical products in the building and construction industry is volatile organic compound (VOC) emissions. The construction stage lasts until the building is taken into use.

6.2.4 B1-B5 Use stage, information modules related to the building fabric

As in PCR part A and the following further clarification.

In life cycle module B1, the use phase involves emissions to air and water during the life time of the product. Reduction of emissions in air is also included in B1. This can arise from the carbonation of products containing cement. This life cycle stage starts when the construction is taken into use, e.g. when tenants move into an office building and start to use it.

Module B2, maintenance includes processes necessary to maintain the function of the product without a modification of the construction, e.g. washing a surface.

Module B3, repair, is defined as the application of more product to fulfil the original function of the product.

Module B4, replacement refers to exchanging a product installed in a building or construction, in order to fulfil the wanted function.

Module B5, refurbishment

Maintenance, repair and replacement of a whole section of the building as part of a concerted programme for the building would be considered as refurbishment.

Life cycle modules B2-B5 shall not be included in EPDs for technical-chemical products in the building and construction industry because maintenance, repair, replacement and refurbishment are more dependent on other factors, beyond the scope of the technical-chemical product itself. Such factors include the properties of the building part in which the technical-chemical products form a part of, and how the technical-chemical product is applied to the building. Other important factors are aesthetical and economic factors relating to the whole building, e.g. the wish to refurbish a building for a new tenant.

6.2.5 B6-B7 Use stage, information modules related to the operation of the building

Life cycle modules B6 and B7, operational energy and water use, are not relevant for the products covered by this PCR.

6.2.6 C1-C4 End-of-life stage, life cycle information modules

As in PCR part A

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

As in PCR part A.

6.3 Calculation rules for the LCA

6.3.1 Functional unit

This PCR only covers declared unit.

6.3.2 Declared unit

The declared unit is used for EPDs when the EPD does not cover the full life cycle of the product or when the exact function of the product in the building or construction is not stated or not clear. When the full life cycle is not covered, the system boundary is defined as either 'Cradle to Gate' or 'Cradle to Gate with options'. The declared unit is thus defined as:

Cradle to Gate:1 kg of manufactured product (A1-A3).

Cradle to Gate with options: 1 kg of applied product (A1-A3 including one or more of the life cycle stages A4, A5, B1, C1, C2, C3, C4 and D).

6.3.3 Reference service life (RSL)

As in PCR part A, and the following clarification.

The reference service life of these products is usually not dependent on the properties of the products themselves, but rather by the service life of the building or building part to which they are attached. The reference service life may also be dependent upon aesthetical or economic factors not relating to the product. The product's reference service life may for example end when or if the building is demolished to erect a new building. The product's reference service life may also end due to refurbishment for aesthetical rather than technical reasons.

For these reasons, the RSL of the products included in this PCR are not defined, and EPD owners are not allowed to state their products RSL in the EPD.

6.3.4 System boundaries

As in PCR part A, and the following clarification.

The system boundary must contain as a minimum the production stage, A1-A3. A system that only covers A1-A3 is called Cradle to Gate. There are two other possible system boundaries: Cradle to Grave (A1-A5, B1, C1 to C4, with D as a voluntary stage) or Cradle to Gate with options. Cradle to Gate with options includes A1-A3 and one or more of the life cycle stages from A4-C4, with D as a voluntary stage.

6.3.5 Criteria for the inclusion of inputs and outputs (cut-off)

As in PCR part A, and the following clarification.

A list of hazardous and toxic materials and substances shall be included in the inventory. The general cut-off rules do not apply to such substances. However, substances included in amounts below the limits for chemical products health and environmental hazard classification do not have to be declared.

Exceptions apply for substances on the REACH candidate list (Candidate List of substances of very high concern for

Authorisation) and the Norwegian priority list. A cut-off of 0.1 % w/w applies. This cut-off only applies to intentionally added compounds, not impurities or compounds formed because of chemical reactions in the product. All REACH candidate list substances occurring in amounts exceeding 0.1 % of the product, in the state that it is in when it is sold, must be declared. The same limit applies to all substances on the Norwegian priority list.

6.3.6 Selection of data

As in PCR part A.

6.3.7 Data quality requirements

As in PCR part A.

6.3.8 Scenarios at the product level

As in PCR part A, and the following additions:

EN 15978:2011 provides additional guidance on developing scenarios.

A4 – A5 Transport and installation

A4: Transport from the production gate to the construction site shall be calculated based on information from the manufacturer and relevant for the intended market. The following default values can be used for developing scenarios at the product level.

For domestic production, the default travel distance is 300 km.

For import, the distance is measured from the manufacturing site to a specific storage location, plus a transport distance from the storage location to the building site (300 km if not specified). If no specific storage location is given, then the capital city can be used as an approximate location.

A5: Technical-chemical product wastage at the building or construction site is estimated based on information from the manufacturer and relevant for the intended market. If no estimate is available, then the default value is set to 5 per cent by weight. Any deviations from the scenario described above shall be justified and explained.

B1 Use stage
Information to specify on the emissions to water and air during the use stage shall be provided as given in standard EN 15804:2011, clause 7.3.3.1, table 9 and shall be reported in the LCA report.

C1-C4 End of life: The end-of-life life cycle modules C1, C2, C3 and C4 shall be calculated based on information provided by the manufacturer and relevant for the intended market. If data on waste handling of the product is not available, the following default waste treatment scenario shall be assumed:

Material recycling: 10 % (life cycle module C3)

Energy recovery: 0 % (life cycle module C3).

Landfill: 90 % (life cycle module C4).

These percentages represent an estimate of the average handling of these products. More specific data can be used instead of these default values, but documentation must be given to support the data.

For transport of waste to a waste handling facility, a standard transport distance of 50 km may be assumed.

Any deviations from the scenario described above shall be justified and explained.

6.4 Inventory analysis

As in PCR part A.

6.4.1 Allocation of input flows and output emissions

As in PCR part A and the following clarification.

Technical-chemical products may be produced in the same facility and/or transported in the same vehicle as other products. When allocation cannot be avoided, e.g. through subdivision of processes, output emissions and resource use shall be allocated according to the mass of the product.

6.5 Impact assessment

As in PCR part A.

7 Content of the EPD

7.1 Declaration of general information

As in PCR part A.

7.2 Declaration of environmental parameters derived from LCA

7.2.1 General

As in PCR part A.

7.2.2 Rules for declaring LCA information per module

As in PCR part A.

7.2.3 Indicators describing environmental impacts based on Life Cycle Impact Assessment (LCIA)

As in PCR part A.

7.2.4 Indicators describing resource use and environmental information based on Life Cycle Inventory (LCI)

As in PCR part A.

7.2.5 Information on biogenic carbon content

As in PCR part A.

[2] See CEN/TR 15941:2009 "Sustainability of construction works — Environmental product declarations — Methodology for selection and use of generic data".

7.2.6 Carbonation

As in PCR part A and the following additions:

If no specifications are given in PCR part A, carbonation shall be declared according to ISO 21930, EN 16757:2017 or NPCR 020 Concrete Products.

7.3 Scenarios and additional technical information

7.3.1 General

As in PCR part A.

7.3.2 Construction process stage

7.3.2.1 A4, Transport from the production site to the construction site

As in PCR part A and the following additions:
Transport from the production gate to the construction site is typically carried out using trucks. The distance, type of vehicle, fuel consumption and degree to which the transport capacity is utilised may have a large impact on transport emissions, thus these factors must be stated. Capacity utilisation is calculated as a percentage (%) of the total load capacity of the vehicle. The percentage given shall be the average of the capacity utilisation including the return trip. Table 1 shows which information shall be provided in the EPD when module A4 is included.

Table 1. Information on the transport to the construction site (A4) required in the EPD.

Type	Capacity utilisation (incl return) %	Type of vehicle, incl emissions class	Distance km	Fuel/energy consumption pr tkm	Fuel/energy consumption pr km
Truck					
Railway					
Other transport mode					

7.3.2.2 A5, Installation

As in PCR part A

7.3.3 B1-B7, Use stage

As in PCR part A and the following clarification.

This stage includes all processes occurring during the life time of the products, from the time the product is installed until it is decommissioned.

B1, use, includes all impacts that occur due to the normal, intended use of the product. In addition to the impacts, the total emissions of volatile organic compounds, expressed in terms of 'amount of VOC' shall be included.

7.3.4 C1-C4, End of life

As in PCR part A and the following clarification.
This stage includes all processes in the end-of-life period of the products life. If the default values (see chapter 6.3.8) are not used, then the data specified in table 3 must be used to calculate impacts.

Table 3. Information on the end of life cycle modules C1-C4 as required in the EPD.

Process		Value
Collection process specified by type	kg collected separately	
	kg collected with mixed construction waste	
Recovery system specified by type	kg for re-use	
	kg for recycling	
	kg for energy recovery	
Disposal specified by type	kg product or material for final deposition	
Assumptions for scenario development, (e.g. transportation)	Units as appropriate	

7.4 Additional information

As in PCR part A.

7.4.1 Additional information on release of dangerous substances to indoor air, soil and water: Indoor air

As in PCR part A, and the following additions:

Some technical-chemical products in the building and construction industry are expected to release volatile organic compounds during installation and use. Some of the compounds released might affect the indoor air quality of the building where it is used. The release of volatile organic compounds (VOCs) in the installation and use phase must be quantified in life cycle modules A5 and B1 respectively. The effect of such emissions on indoor air must, if significant, be quantified and stated in the EPD.

7.4.2 Additional information on release of dangerous substances to indoor air, soil and water: Soil, ambient air and water

As in PCR part A, and the following additions:

If the product releases substances which give significant detrimental effects on soil, ambient air and/or water, then these effects must be quantified and given in the EPD.

7.4.3 Additional Norwegian requirements

This clause describes Norwegian recommendations given by the programme operator The Norwegian EPD Foundation (EPD Norway).

7.4.3.1 Greenhouse gas emissions from electricity use in A3 Manufacturing

As in PCR part A.

7.4.3.2 Hazardous substances and content declaration

As in PCR part A

7.4.3.3 Carbon footprint

As in PCR part A.

7.4.3.4 Additional LCIA indicators

As in PCR part A.

7.5 Aggregation of information modules

As in PCR part A.

8 LCA project report

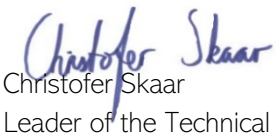
As in PCR part A.

9 Verification and validity of an EPD

As in PCR part A.

Approved 06.10.2021, valid until 06.06.2023.

Norwegian EPD Foundation, Technical committee



Christofer Skaar
Leader of the Technical committee

10 Bibliography

As in PCR part A, including the following additions

ELCD (European Reference Life Cycle Data System) http://lct.jrc.ec.europa.eu/assessment/data

EN 15804:2011 Sustainability of construction works – Environmental Product Declarations – core rules for the

product category of construction products.

EN 15978:2011. Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method

EPD-Norway (2014). General programme instructions for the Norwegian EPD programme

ISO 14205:2006 Environmental labels and declarations –Type III environmental declarations – Principles and procedures

ISO 14044:2006 Environmental management - life cycle assessment - requirements and guidelines

ISO 21930:2017 Sustainability in building construction -- Environmental declaration of building products.

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