

PRODUCT CATEGORY RULES

EN 15804

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PCR – Part B for windows and doors





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.

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Introduction

These product category rules (PCR) are intended for companies preparing an environmental product declaration (EPD) for windows and doors. The PCR for windows and doors consists of two parts. This document contains PCR part B specific for windows and doors, which is the part of the PCR that is specific for window and door products. Part A contains the requirements that are common for all construction products. When preparing an EPD for windows and doors, 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. In addition, CEN/TR 16970 and prEN 17213 PCR for windows and doors were taken into consideration when developing this EPD.

This PCR was developed from July 2018 to December 2018, by a Norwegian PCR work group (WG) with representatives from the window and door industries and with aid from Ostfold Research (Østfoldforskning) and the EPD program operator The Norwegian EPD Foundation.

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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+A1:2013 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 windows and doors on the Norwegian market. 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

NPCR Part A: Construction products and services. Ver. 1.0. April 2017. Oslo: EPD-Norge.

NPCR015 Wood and wood-based products for use in constructions

NPCR013 Steel and aluminium products for use in constructions

When prEN 17213 is published, the standard shall be reviewed during development of an EPD and should be followed according to this PCR. Reasons for not following EN 17213 when developing an EPD for window and/or door products should be justified in the LCA report.

3 Terms and Definitions

As in PCR part A.

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

3.1 windows

building component for closing an opening in a wall or pitched roof that may admit light and/or provide ventilation

[ISO/DIS 13316]

3.1 doors

building component for closing an opening in a wall that allows access and/or admit light when closed

[ISO/DIS 13316]

3.2 door set

a complete door unit including one or more pre-assembled door leaves in a frame, with necessary hardware, supplied from one source

[ISO/DIS 13316]

4 Abbreviations

EPD	Environmental product declaration
DU	Declared unit
FU	Functional unit
PCR	Product category rules
LCA	Life cycle assessment
LCI	Life cycle inventory
LCIA	Life cycle impact assessment
RSL	Reference service life
ESL	Estimated service life

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, including the following additions:

Cradle-to-gate only EPDs are not valid according to this PCR. As a minimum, cradle-to-gate with options that include life cycle modules C1-C4 and D are required.

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, including the following additions:

The product group includes all kinds of window and door products. The most common

products and standards are listed here:

6.1.1 Windows and doors

Windows and doors are described in the following standards:

- EN 14351-1 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets
- EN 16034 Pedestrian doorsets, industrial, commercial, garage doors and openable windows - Product standard, performance characteristics - Fire resisting and/or smoke control characteristics
- EN 16361 Power operated pedestrian doors - Product standard, performance characteristics - Pedestrian doorsets, other than swing type, initially designed for installation with power operation

6.2 Life cycle stages and their information modules to be declared

6.2.1 General

As in PCR part A.

Transport in all life cycle module 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)

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, including the following further clarification:

The installation phase in A5 shall include the following:

- Waste treatment of packaging
- Energy use during installation
- Wastage of material during installation
- Paint or other surface treatments for products which are intended to be surface treated at the building site

Fasteners (e.g. screws) and other additional materials are not included, these are expected to be included at the building level assessment.

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

As in PCR part A, including the following additions:

In life cycle module B1, if the product has been tested for leaching and emissions, then this shall be included in the LCA.

Life cycle module B2, maintenance shall include the following activities:

- The use of energy, water and detergent for regular cleaning of the window and/or door glass throughout the service life
- Indoor and outdoor application of paint and/or varnish throughout the service life
- Replacement of parts of the window and/or door with a reference service life shorter than the declared product. The insulated glass unit is assumed to have a reference service life of 30 years.

Life cycle module B4 replacement, shall include replacement of the window and/or door for which the service life is shorter than the 60 year reference service life of buildings.

6.2.5 B6-B7, Use stage, information modules related to the operation of the building
As in PCR part A.

6.2.6 C1-C4 End-of-life stage, information modules
As in PCR part A.

See also CEN/TC 16970 chapter 6.2.6, Table 2 for additional guidance.

6.2.7 Benefits and loads beyond the system boundary, information module
As in PCR part A.

6.3 Calculation rules for the LCA

For declaring windows and doors, a functional or declared unit can be used. The functional unit should be applied when a specific function and scenario that is typically used is known for the product. If these typical functions and scenarios are many or not known, the declared unit should be used. For project specific EPD, the functional unit shall be used.

The scope and variations of products must be declared according to EPD-Norway guidelines. As of 2014, similar products in the same EPD can only be included if the variations of the results for each LCIA category does not exceed +/- 10 %. The variation shall be stated in the EPD.

6.3.1 Functional unit

As in PCR part A, with the following additions:

For windows and doors used outdoors, the functional unit shall be used.

The functional unit (cradle to grave) is:

1 window measuring 1.23 m x 1.48 m (reference window based on EN 14351-1) with an essential parameter (e.g. u-value, fire classification, noise reduction) and a defined reference service life.

or

1 door set measuring 1.23 m x 2.18 m (reference door based on EN 14351-1) with an essential parameter (e.g. u-value, fire classification, noise reduction) and a defined reference service life.

or

1 door height sliding/folding elements set measuring 3.00 m x 2.18 m (reference door based on prEN 17213) with an essential parameter (e.g. u-value, fire classification, noise reduction) and a defined reference service life.

The reference size is based on the actual outer measures of the window or door.

The functional unit shall also specify the defined conditions and time period for these performance characteristics.

Life cycle modules A1-A5, B1-B7, C1-C4 and D shall be included.

6.3.2 Declared unit

As in PCR part A, with the following additions:

For windows and doors used indoors, the declared unit can be used.

The declared unit (cradle to gate with options) is:

1 produced window measuring 1.23 m x 1.48 m (reference window based on EN 14351-1) with an essential parameter (u-value, fire classification, noise reduction) and waste treatment at end-of-life.

or

1 produced door measuring 1.23 m x 2.18 m (reference door based on EN 14351-1) with an essential parameter (u-value, fire classification, noise reduction) and waste treatment at end-of-life.

or

1 produced door height sliding/folding elements measuring 3.00 m x 2.18 m (reference based on prEN 17213) with an essential parameter (u-value, fire classification, noise reduction) and waste treatment at end-of-life.

The reference size is based on the actual outer measures of the window or door. Other sizes can also be applied for project specific EPDs.

Life cycle modules A1-A4, C1-C4 and D shall be included as a minimum.

If the reference service life of the product is shorter than the reference study period of the

building, independent of the application, then life cycle module B4 for replacement shall be included.

6.3.3 Reference service life (RSL)

As in PCR part A, and:

The reference service life of windows and doors depends on the material itself and the building site location. When declaring the functional unit, the number of replacements of windows and doors shall be declared according to a reference study period of 60 years for the building.

6.3.4 System boundaries

As in PCR part A, and:

Electrical components of a window and door are not part of this PCR. If such parts are part of the product, these should have a separate EPD.

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

As in PCR part A, including the following further clarification:

The cut-off criteria in EPD-Norway general program of instructions (GPI) shall also be followed. As of 2018, the key requirements are:

- that processes and activities that do not contribute more than 1 % of the total environmental impact in some of the environmental impacts categories can be left out
- production of capital, buildings and equipment that are not included shall also be justified according to the GPI. This justification shall be based on quantitative assessments to the cut-off criteria. Conservative assumption can be used when data is missing and is always better than leaving out activities in the inventory

6.3.6 Selection of data

As in PCR part A.

6.3.7 Data quality requirements

As in PCR part A.

If data for wood as raw materials are not available from an EPD according to EN 15804 and verified according to ECO Platform, the compliance of the data to EN 15804 and specifications in this PCR must be shown in the LCA report and the LCI must be checked during verification. This includes the whole value chain from forestry and industrial processes.

NOTE: When using databases special attention is needed as many databases do not comply with EN 15804 for all parameters. Typical challenges are completeness, coproduct allocation, and inherent properties such as energy and carbon.

6.3.8 Scenarios at the product level

As in PCR part A, including the following additions:

6.3.8.1 A4 Transport to the building site

Transport from the manufacturing site to the construction site is estimated based on information from the manufacturer. The following default values can be used for developing scenarios at the product level:

- For domestic production, the default travel distance from the manufacturing site to the building site (A4) 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 of 300 km (if not specified). If no specific storage location is given, then the capital city of the country that the product is being imported to may be used as an approximate location.

6.3.8.2 A5 Installation

As in PCR part A.

6.3.8.3 B1-B7 Use phase

As in PCR part A, in addition to:

The reference scenario for washing of windows and doors with glass is three times per year with water and detergent. Washing procedures shall be carried out according to manufacturer information.

6.3.8.4 C1-C4 End-of-life

As in PCR part A. In addition:

Default scenarios for life cycle module C2 transport to waste processing should be based on national statistics.

More than one scenario for waste treatment and disposal should be included if there are several relevant common practices, but the most conservative scenario shall always be included. Default conservative scenarios for C3 waste processing and C4 waste disposal are listed in Table 1.

Table 1: Default conservative scenarios for life cycle modules C3 and C4.

Product types	C3	C4
Frame mainly of metal	Central sorting of mixed construction waste. Recycling of metals.	Landfilling of residual product parts in sanitary landfill
Frame mainly of wood or plastic	Municipal incineration with energy recovery. Separation of metals from ashes and sent to recycling.	Landfilling of ashes from incineration

6.3.9 Units

As in PCR part A.

6.4 Inventory analysis

As in PCR part A.

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, including the following aspects:

The material composition of the product shall be listed with specific weight of the main components as it is installed. This information shall be included in the LCA report. The share of recycled materials shall be listed for each main component. The insulated glass unit shall be listed by its main components (e.g. glass, gasket, sealant, etc.).

Usage areas and conditions must be specified in the EPD. The harmonised standard for which the product is produced according to, must be specified in the EPD.

The scope of products declared in an EPD must be specified so that the product range can easily be identified by the customer. The ability of scaling LCA results to other dimensions must be specified. When the EPD is declared based on reference dimensions, a formula shall be included in the EPD that can be used to calculate GWP results for all life cycle modules according to height and width variables.

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 Parameters describing environmental impacts

As in PCR part A.

7.2.4 Parameters describing resource use

As in PCR part A.

7.2.4.1 Water use

As in PCR part A.

7.2.4.2 Electricity used in A3 Manufacturing

As in PCR part A.

7.2.5 Other environmental information describing waste categories and output flows

As in PCR part A.

7.2.6 Accounting of biogenic carbon during the life cycle

As in PCR part A, including the following additions:

If no specifications are given in PCR part A, biogenic carbon shall be declared according to ISO 21930 or EN 16485.

7.2.7 Greenhouse gas emissions from land use change

As in PCR part A, including the following additions:

If no specifications are given in PCR part A, greenhouse gas emissions from land use change shall be declared according to ISO 21930 or EN 16485.

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, including 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 mass carried of the total load capacity of the vehicle. The percentage given shall be the average of the capacity utilisation including the return trip. Table 3 shows which information shall be provided in the EPD when module A4 is included.

Table 3. 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, including the following additions:

The EPD shall specify the following information about the installation scenario:

- The consumption of fasteners, adhesives and necessary accessories
- The amount of energy per energy carrier
- Guidance for installation, international standards/regulations or national standards/regulations in which the scenario is based on
- If the EPD deviates from the predefined scenarios, this shall be clearly stated and justified.
- Usage areas and conditions must be specified in the EPD.

7.3.3 Use stage

As in PCR part A, including the following additions:

Maintenance, repair and replacement scenarios for the windows and doors, that are required to reach the reference study period of the building, shall be described according to manufacturers' guidelines.

7.3.4 End of life

As in PCR part A, including the following additions:

Capacity utilization shall be calculated as % of the mass carried of the total load capacity of the vehicle. The number given shall be the average of the capacity utilisation on the trip to the waste treatment site and the capacity utilisation on the return trip.

7.4 Additional information

As in PCR part A, including the following additions:

This clause includes all significant environmental and health impacts not included in the impact categories of this PCR. See section 7.2.3.

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

7.4.1.1 Indoor air

As in PCR part A, including the following additions:

Release of substances to indoor air is relevant when the product is used on the inside of the vapour barrier. The following standard should be applied for measuring emissions to indoor air:

- EN 16516 Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air

7.4.1.2 Soil, ambient air and water

As in PCR part A, with the following additions:

Release of substances to ground water or soil are relevant for the products covered in this PCR when they are used in direct contact with the ground or rainwater. Until horizontal standards for the measurement of leaching characteristics are available, the following reports should be used:

- CEN/TS 16637-3 Construction products. Assessment of release of dangerous substances. Horizontal up-flow percolation test.
- CEN/TR 17105 Construction products. Assessment of release of dangerous substances. Guidance on the use of ecotoxicity tests applied to construction products.

7.4.2 Additional Norwegian requirements

As in PCR part A.

7.4.2.1 Greenhouse gas emissions from electricity use in A3 Manufacturing

As in PCR part A.

7.4.2.2 Dangerous substances and content declaration

As in PCR part A, including the following additions:

Specification of materials and substances that can adversely affect human health and environment shall be reported.

A detailed list of the product's substances (chemicals included in the final product), including CAS number and health class (risk phrases or CLP regulations Regulation (EC) No. 1272/2008) when these are in force, shall be included in the product content declaration. The content of substances shall be declared in terms of weight percentages. Only substances that are mentioned in the raw material safety declaration sheets (SDS) shall be included. The EPD

owner has no obligation to investigate the content of ingredients used in raw material production, with the exception of products on the REACH candidate list and the Norwegian Priority List.

In cases where information about contents could affect patent or company secrets, a qualitative list of chemicals and their expected functions is sufficient, including the risk phrases. This does not apply to substances registered under the REACH Directive.

7.4.2.3 Emission classification of building materials

As in PCR part A.

7.4.2.4 Carbon footprint of products

As in PCR part A, including the following additions for products containing biogenic carbon:

Global warming potential (GWP) should be declared in two sub-categories for all life cycle modules declared in the EPD, in order to make carbon footprint of buildings easier to understand, and to facilitate for comparison to national greenhouse gas accounting. The two sub-categories are listed in Table 3.

Table 3: Sub-categories for GWP

Abbreviation	Name	Explanation
GWP-IOBC	Global warming potential – instantaneous oxidation of biogenic carbon	The accounting assumes that all carbon in bio-based materials will eventually oxidize and can therefore be accounted as an emission at harvest. This implies that the emissions of biogenic methane need to be adjusted so that the carbon that oxidizes from methane is not double counted. In national greenhouse gas accounting methods from IPCC, this approach is known as instantaneous oxidation.
GWP-BCIP	Global warming potential – Biogenic carbon in products and packaging	The flows of carbon to and from the bio-based material is here accounted as CO ₂ at the module in the life cycle where it occurs. This follows the harvested wood products (HWP) methodology in IPCC but is also accounting other bio-based materials than wood.
GWP	Global warming potential	As in the LCIA results. This is the sum of GWP-IOBC and GWP-BCIP.

The differentiation in LCI results between product and packaging should be presented according to ISO 21930:2017, Annex E, Table E.4.

7.5 Aggregation of information modules

As in PCR part A.

8 Project Report

As in PCR part A.

9 Verification and Validity of an EPD

As in PCR part A.

10 Bibliography

As in PCR part A, including the following additions:

CEN/TS 16637-3. Construction products. Assessment of release of dangerous substances. Horizontal up-flow percolation test.

CEN/TR 16970. Sustainability of construction works. Guidance for the implementation of EN 15804.

EA NEN 7375. Leaching characteristics of moulded or monolithic building and waste materials. Determination of leaching of inorganic components with the diffusion test. "The tank test".

EN 16516. Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air.

ISO 21930 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.

EN 14351-1 Windows and doors - Product standard, performance characteristics - Part 1: Windows and external pedestrian doorsets

EN 16034 Pedestrian doorsets, industrial, commercial, garage doors and openable windows - Product standard, performance characteristics - Fire resisting and/or smoke control characteristics

EN 16361 Power operated pedestrian doors - Product standard, performance characteristics - Pedestrian doorsets, other than swing type, initially designed for installation with power operation

EN 16485:2014 Round and sawn wood. Product category rules (PCR) for wood and wood-based products for use in construction.

prEN 17213. Windows and doors – Environmental Product Declarations – Product category rules for windows and pedestrian doorsets.