epd-norge

Product category rules

EN 15804 +A2

NPCR 014
PART B for Windows and doors

ver 4.0

Issue date: 10.04.2023
Valid to: 10.04.2024
validity extended to 31.12.2024

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 (2019-04-10)	Type	Description of change
Version 1.0		
Original version, issued 2019-04-10. Version 4.0 (ed.) EPD-Norway Secretariat References to EN15804+A2 included References to new PCR part A included References to EN 17213 included		

epd-norway
Global Program Operator

Table of Contents

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. An editorial revision was made in 2021 by the The Norwegian EPD Foundation to ensure correct referencing to EN 15804:2012+A2:2019, New PCR part A and EN17213.

Members of the PCR working group (WG) for windows and doors:

Håkon Hauan, The Norwegian EPD Foundation (EPD-Norge) Committee Leader
Trine D. Pettersen, The Federation of Norwegian Construction Industries (BNL)
Jannis Barbantonis, Norsk Trevare
Ragnhild Lokna Nygård, Hydro Building Systems
Rune Sætren, Nordvestvinduet
Kent Tryggestad, Norgesvinduet
Vegard Ruttenborg, Treteknisk
Andreas Langstrøm, Nordan

Consultants:
Lars Tellnes, Ostfold Research (Østfoldforskning) PCR moderator

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 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. 2.0. March 2021. Oslo: EPD-Norge.

NPCR015 Wood and wood-based products for use in constructions

NPCR013 Steel and aluminium products for use in constructions

EN 17213:2020 Windows and doors — Environmental Product Declarations — Product category rules for windows and pedestrian doorsets

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 and EN 17213.

5.2 Types of EPD in respect to life cycle stages covered

As in PCR part A and EN 17213.

5.3 Comparability of EPD of construction products

As in PCR part A and EN 17213.

5.4 Additional information

As in PCR part A and EN 17213.

5.5 Ownership, responsibility and liability for the EPD

As in PCR part A and EN 17213.

5.6 Communication format

As in PCR part A and EN 17213.

6 Product Category Rules for LCA

As in PCR part A and EN 17213.

6.1 Product Category

As in PCR part A and EN 17213, 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 and EN 17213.

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 and EN 17213.

6.2.3 A4-A5, Construction process stage, information modules

As in PCR part A and EN 17213, 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 and EN 17213.

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

As in PCR part A and EN 17213.

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

As in PCR part A and EN 17213.

See also CEN/TR 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 and EN 17213.

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 know, 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 and EN 17213, 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 and EN 17213, 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 EN 17213.

6.3.4 System boundaries
As in PCR part A, EN 17213, 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 and EN 17213, 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 and EN 17213.

6.3.7 Data quality requirements
As in PCR part A and EN 17213.

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 and EN 17213, 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 and EN 17213.

6.3.8.3 B1-B7 Use phase
As in PCR part A and EN 17213:

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 and EN 17213. 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 and EN 17213.

6.4 Inventory analysis
As in PCR part A and EN 17213.

6.5 Impact assessment
As in PCR part A and EN 17213.

7 Content of the EPD

7.1 Declaration of general information
As in PCR part A and EN 17213, 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 calculated 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 and EN 17213.

7.2.2 Rules for declaring LCA information per module

As in PCR part A and EN 17213.

7.2.3 Parameters describing environmental impacts

As in PCR part A and EN 17213.

7.2.4 Parameters describing resource use

As in PCR part A and EN 17213.

7.2.4.1 Water use

As in PCR part A and EN 17213.

7.2.4.2 Electricity used in A3 Manufacturing

As in PCR part A and EN 17213.

7.2.5 Other environmental information describing waste categories and output flows

As in PCR part A and EN 17213.

7.2.6 Accounting of biogenic carbon during the life cycle

As in PCR part A and EN 17213.

7.2.7 Greenhouse gas emissions from land use change

As in PCR part A and EN 17213.

7.3 Scenarios and additional technical information

7.3.1 General

As in PCR part A and EN 17213.

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 EN 17213, 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 and EN 17213.

7.3.3 Use stage

As in PCR part A and EN 17213, 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 and EN 17213, 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 and EN 17213, 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: Indoor air

As in PCR part A and EN 17213, 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

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

As in PCR part A and EN 17213, 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.

7.4.3 Additional Norwegian requirements

As in PCR part A.

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 of products

As in PCR part A.

7.4.3.4 Additional LCIA indicators

As in PCR part A.

7.5 Aggregation of information modules

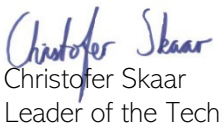
As in PCR part A and EN 17213.

8 Project Report

As in PCR part A and EN 17213.

9 Verification and Validity of an EPD

As in PCR part A and EN 17213.
Approved 10.04.2023, valid until 10.04.2024.
Norwegian EPD Foundation, Technical committee



Christofer Skaar
Leader of the Technical committee

10 Bibliography

As in PCR part A and EN 17213, 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 Round and sawn wood. Product category rules (PCR) for wood and wood-based products for use in construction.

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

EPD for the best environmental decision

Global
Program
Operator

The Norwegian EPD Foundation
www.epd-norge.no

epd-norge