Kiwa-Ecobility Experts (Kiwa-EE) – Product Category Rules for Geosynthetic Products

EPD programme

Version 2, 2023-07-21

Content

Introduction

This document provides product category rules (PCR) for Type III environmental product declarations (EPD) according to EN 15804:2012+A2:2019 (short: EN 15804) for geosynthetic products.

This PCR document complements EN 15804 by providing further details for specific aspects that concern for geosynthetic products. In cases where no specific rules are given in this document, EN 15804 should be followed. Therefore, this document should be read in parallel with EN 15804. EN 15804 is normatively referred to in this document and is essential for its application.

This document is structured like EN 15804; all headings and section numbering have been retained. Where a section of EN 15804 applies without change, this is indicated. If a section of EN EN 15804 is not relevant for EPD according to this PCR, this is also indicated.

In the Kiwa-EE program, the PCR is divided into two parts: General Product Category Rules (PCR A) and Specific Product Category Rules (PCR B). The first one contains the uniform life cycle assessment calculation rules for all construction products, as well as the requirements for the project report.

According to the general program instructions, Kiwa-EE has a focus on construction products. This includes raw materials for building materials, components / elements, prefabricated parts, building supplies, technical building equipment and packaging materials.

The specific PCR regulates the specific requirements of each product subgroup for the contents of an EPD.

1 Scope

The general scope of the basic product category rules (PCR) is given in EN 15804, section 1.

Geosynthetics are technical construction products manfactured by synthetic materials that are used for a wide range of engineering applications. This PCR includes the following product catgeories: geogrids, geotextiles, geomembranes and geocomposites. Geogrids are used as reinforcement to improve the strength of soil or other materials. Geotextiles are used primarily for applications requiring separation, filtration, protection and drainage. Geomembranes are used as barriers for example in containment applications for waste disposal or tunnel sealing systems. Geocomposites consist of a composite of two or more

geosynthetic products which perform several functions simultaneously. The declared product type shall be described in accordance to the different categories. If average values are given over product range of one type, the averaging process shall be described.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

Core PCR: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products; German version EN 15804:2012+A2:2019

PCR A: General Program Category Rules for Construction Products from the EPD program Kiwa-Ecobility Experts, R.0_2021-07-16

EN 13249:2016, Geotextiles and geotextile-related products – Characteristics required for use in the construction of roads and other trafficked areas (excluding railways and asphalt inclusion)

EN 13250:2016, Geotextiles and geotextile-related products – Characteristics required for use in the construction of railways

EN 13251:2016, Geotextiles and geotextile-related products – Characteristics required for use in earthworks, foundations and retaining structures

EN 13253:2016, Geotextiles and geotextile-related products – Characteristics required for use in erosion control works (coastal protection, bank revetments)

EN 13254:2016, Geotextiles and geotextile-related products – Characteristics required for the use in the construction of reservoirs and dams

EN 13255:2016, Geotextiles and geotextile-related products – Characteristics required for use in the construction of canals

EN 13257:2016, Geotextiles and geotextile-related products – Characteristics required for use in solid waste disposals

EN 13265:2016, Geotextiles and geotextile-related products – Characteristics required for use in liquid waste containment projects

EN 15381:2008, Geotextiles and geotextile-related products – Characteristics required for use in pavements and asphalt overlays

EN ISO 10318-1:2018, Geosynthetics - Part 1: Terms and definitions

3 Terms and definitions

For the application of this document, the terms according to EN 15804 and PCR B applies. The product category specific terms are basically defined in EN ISO 10318-1. The terms are related to function, product, product characteristics and manufacturing properties and should be applied in EPDs.

4 Abbrevation

For general EPD terms see EN 15804 and PCR B. Abbrevation referring to the product category are listed in the following:

CMD	*cross-maschine direction (see ISO 10318-1)*
MD	*machine direction, direction perpendicular to the directe (see ISO 10318-1)*
PA	*Poyamide*
PE	*Polyethylen*
PET	*Polyethylene terephthalate (polyester)*
PP	*Polypropylene*
PVA	*Polyvinyl alcohol*
RC	*Recycling material*

5 General Aspects

5.1 Objective of the Core PCR

See EN 15804.

5.2 Types of EPD with respect of lify cycle stages covered

See EN 15804.

5.3 Comparability of EPD for construction products

See EN 15804.

5.4 Additional information

5.4.1 General

See EN 15804.

5.4.2 Additional impact indicators

See EN 15804.

5.4.3 Additonial information on carbon offset, carbon storage and delayed emissions

See EN 15804.

5.4.4 Additional Information not derived from LCA

See EN 15804.

5.5 Ownership, responsibility and liability for the EPD

See EN 15804.

5.6 Communications formats

See EN 15804.

6 Product Category Rules for LCA

6.1 Product category

The product category covered by this document includes all geosynthetic products for applications mentioned in the normative references and the associated services for all phases of the life cycle.

6.2 Lify cycle stages and their information modules to be included

6.2.1 General

See EN 15804.

6.2.2 A1-A3, Product stage, information modules

In Addition to EN 15804:

All main raw materials (e.g. types of plastics) and, if applicable, coatings as well as their percentage by mass must be listed. Raw material properties relevant for LCA, such as biodegradability and secondary material content, should be specified. The production description should specify which processing operations are carried out in the factory (e.g. extrusion, raschel, coating, packaging).

6.2.3 A4-A5, Construction process stage, information modules

See EN 15804.

The use of machines or vehicles for the installation of geosynthetic products must be taken into account.

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

See EN 15804.

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

According to EN15804 and beyond: scenarios for B6 and B7 in EPDs for engineering plastics are always calculated with an impact with a value of 0.

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

See EN 15804.

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

See EN 15804.

6.3 Calculation rules for the LCA

6.3.1 Functional/declared unit

See 6.3.2 and 6.3.3.

6.3.2 Functional unit

No functional unit has been defined for geosynthetic products. A declared unit as defined in 6.3.3 is used.

6.3.3 Declared unit

The LCIA should preferably refer to the area (one square metre). Alternative reference values must be justified.

6.3.4 Reference service life (RSL)

RSL is determined in ISO 10318-1 as “design life”: period of time from the start of installation to the point where the material no longer fulfils its required design properties in order to perform its function within defined limits. For geosynthetic products, the RSL depends on the function and application, which can be very different. Therefore, the application-related technical standard (see normative reference) should be taken into account when determining the RSL. If a durability test is specified there, the result of this test should serve as the RSL. See also EN 15804.

6.3.5 System boundaries

See EN 15804.

6.3.5.1 Product stage

The following processes should be considered at least:

- Production of the raw materials
- Transport of the raw materials to the production plant
- All processing steps of the raw materials to the end product incl. use of ancillary materials and energy input

6.3.5.2 Construction stage

The following processes should be considered at least:

- Transport of the geosynthetic products to the construction site;
- Installation of the geosynthetic products at the site

6.3.5.3 Use stage

See EN 15804.

Module B1: Use of the installed product with regard to all emissions to the environment (not covered by B2-B7).

6.3.5.4 End-of-life stage

See EN 15804.

6.3.5.5 Benefits and loads beyond the product system boundary in module D

See EN 15804.

6.3.6 Criteria for the exclusion of inputs and outputs

See EN 15804.

6.3.7 Selection of data

See EN 15804.

6.3.8 Data quality

An estimate should be made as regards data quality (addressing both foreground and background data), whereby the age of background data used shall be indicated. For average EPDs, an estimate of the robustness of the LCA values shall be made, e.g. concerning variability of the production process, geographical representatively and the influence of background data and preliminary products compared to the environmental impacts caused by the actual production. The age of the background data shall be stated.An estimate

should be made with regard to data quality (addressing both foreground and background data), whereby the age of background data used shall be indicated.

See also EN 15804.

6.3.9 Developing product level scenarios

See EN 15804.

When creating scenarios, the aspects of the application (e.g. road construction --> limited RSL due to the installation site) as well as special product properties (biodegradability of the product -> product remains in the soil) and recyclability must be taken into account.

6.3.10 Units

See EN 15804.

6.4 Inventory analysis

See EN 15804.

6.5 Impact assessment

See EN 15804.

7 Content of the EPD

7.1 Declaration of general information

See EN 15804, PCR A and GRI. All information given in the EPD

The product must be assigned to one of the product types or product sub types in EN 10318-1:

1. geotextile (GTY)
    1.1. nonwoven geotextile (GTY-NW)
    1.2. knitted geotextile (GTX-K)
    1.3. woven geotextile (GTY W)
2. geotextile-related product (GTP)
    2.1. geoeogrid (GGR)
    2.2. geonet (GNT)
    2.3. geomat (GMA)
    2.4. geocell (GCE)
    2.5. geostrip (GST)
    2.6. geospacer (GSP)

2.7. geoblanket (GBL)
2.8. geosynthetic barrier
    2.8.1. polymeric geosynthetic barrier (GBR-P)
    2.8.2. clay geosynthetic abrrier (GBR-C)
    2.8.3. bituminous geosynthetic barrier (GBR-B)
3. geocomposite (GCO)
4. geomembranes

The product description shall include the EN 10318-1 defined functional properties that apply to the product.

- Reinforcement
- Separation
- Filtration
- Drainage
- Surface erosion control
- barrier
- stress relief (as asphalt overlay)
- Stabilisation

The content declaration shall include a table in the EPD where the components of geosynthetic products are included. The different components shall be reported in weight-% and the total mass of the declared unit shall be given.

Generally, the technical data that must also be given for CE marking (Declaration of Performance) according to EU Directive 93/68/EC for the corresponding product are suitable for this purpose.

The dimensions/quantities of the declared products in the state of delivery shall be provided.

7.2 Declaration of environmental indicators derived from LCA

See EN 15804, PCR A and GRI.

The LCIA can be presented as a scaled representation in order to cover the environmental impacts of the same articles but with different thicknesses in one EPD.

In these cases, the scope (all product articles) and the guidance for the calculation must be given, as well as guidance on the calculation of the LCIA for the individual product articles based on the scaled LCIA data.

7.3 Scenarios and additional technical information

See EN 15804, PCR A and GRI.

7.4 Aggregation of information modules

See EN 15804, PCR A and GRI.

8 Content of the project report

The additional information specific to the product category in chapter 7, which must be provided in the EPD, must be listed in the project report with at least the same level of detail.

8.1 General

See EN 15804, PCR A and GRI.

Note: All content information of the EPD must also be included in the LCA report.

8.2 Elements of the project report with reference to the LCA.

See EN 15804, PCR A and GRI.

8.3 Documentation on additional information

See EN 15804, PCR A and GRI.

8.4 Data availability for verification

See EN 15804, PCR A and GRI.

9 Verification and validity of an EPD

See EN 15804, PCR A and GRI.

References

GRI	Kiwa-Ecobility Experts – General Program Instruction R.1_21.01.2022
EN 15804	EN 15804:2012+A2:2019: Sustainability of construction works — Environ-mental Product Declarations — Core rules for the product category of con-struction products
ISO 14025	ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures EN 13249
ISO 14040	ISO 14040:2006 Environmental management - Life cycle as-sessment - Principles and framework
ISO 14044	ISO 14044:2006 Environmental management - Life cycle as-sessment - Requirements and guidelines
ISO 14067	Greenhouse gases - Carbon footprint of products - Require-ments and guidelines for quantification (ISO/DIS 14067:2017); German and English version EN ISO 14067:2017
CEN/TR 15941	Sustainability of construction works - Environmental product declarations - Methods for selection and use of generic data; German version CEN/TR 15941:2010
ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes and services (ISO/IEC 17065:2012); Ger-man and English version EN ISO/IEC 17065:2012
PCR A	General Program Category Rules for Construction Products from the EPD program Kiwa-Ecobility Experts, R.0_2021-07-16

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