

Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804

EnkaSolutions and XeroFlor vegetation carriers

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|----------------------|---|
| Registration number: | EPD-Kiwa-EE-172731-en |
| Issue date: | 18-11-2024 |
| Valid until: | 18-11-2029 |
| Declaration owner: | Freudenberg Performance Materials B.V. |
| Publisher: | Kiwa-Ecobility Experts |
| Programme operator: | Kiwa-Ecobility Experts |
| Status: | verified |



1 General information

1.1 PRODUCT

EnkaSolutions and XeroFlor vegetation carriers

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-172731-en

1.3 VALIDITY

Issue date: 18-11-2024

Valid until: 18-11-2029

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
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13355 Berlin
DE



Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Manufacturer: Freudenberg Performance Materials B.V.

Address: Westervoortsedijk 73, 6827 AV Arnhem, Netherlands

E-mail: info@freudenberg-pm.com

Website: <https://www.freudenberg-pm.com/en>

Production location: Glanzstoffstrasse 1

Address production location: Glanzstoffstrasse 1, 63906 Obernburg, Germany

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

Internal External



Lucas Pedro Berman, Senda

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules (2022-02-14)

Kiwa-Ecobility Experts (Kiwa-EE) – Specific Product Category Rules: Geosynthetic products (2023-07-21)

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of

1 General information

the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.1

Characterization method: EN 15804 +A2 Method v1.0

LCA database profiles: EcolInvent version 3.6

Version database: v3.17 (2024-05-22)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'EnkaSolutions and XeroFlor vegetation carriers' with the calculation identifier ReTHiNK-72731.

2 Product

2.1 PRODUCT DESCRIPTION

Enka vegetation carriers are synthetic and durable mats which consist out of two components: a lightweight, flexible and very open three-dimensional matting made of entangled polyamide filaments on the top surface. And a nonwoven filter fabric underneath. Both components are filmly connected. The Enka vegetation carrier is delivered in easy-to-handle 3.2 feet or 1 m wide rolls.

The composition of the product

| Materials | Weight % |
|-----------------|-----------|
| Polyamide | 65 – 78 % |
| Polyester | 5 - 20 % |
| Masterbatches | < 1 % |
| Ancillary items | < 1 % |

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

The vegetation carrier is used to create pre-vegetated mats or erosion prevention by reinforcing root structures. Application areas where this can be applied green roofs, tram ways, landscaping, dykes or slopes. The thickness of the mat guarantees a minimal substrate thickness and minimal waste while harvesting and installing pre-vegetated mats. The geotextile will be penetrated by the roots which allows the fully grown and rooted mat to behave like a blanket. The geotextile makes sure the soil stays separated from the subfloor.

2.3 REFERENCE SERVICE LIFE

RSL PRODUCT

As the service life of product is not taken into account, there is no need to specify a reference service life.

USED RSL (YR) IN THIS LCA CALCULATION:

100

2.4 TECHNICAL DATA

Listed below the technical data for the vegetation carrier product range. The unit weight varies per product type depending on the thickness.

| Characteristics | Standard | Value | Unit |
|----------------------|--------------|-----------|------------------|
| Unit weight | EN ISO 9864 | 240 - 390 | g/m ² |
| Thickness (2 kPa) | EN 9863-1 | 8 - 17 | mm |
| Tensile strength MD | EN ISO 10319 | 1.3 – 6.7 | kN |
| Tensile strength CMD | EN ISO 10319 | 1.2 – 6.0 | kN |

2.5 SUBSTANCES OF VERY HIGH CONCERN

The articles Freudenberg Performance Materials supplies do not contain Substances Of very High Concern, according to the Candidate list EChA Article 59 (1) of Regulation (EC) Nr. 1907/2006, with a concentration > 0,1 % w/w (last update on January 23rd, 2023).

2.6 DESCRIPTION PRODUCTION PROCESS

The vegetation carrier product range consist of a polyamide pyramid structure with on one side a thermally bonded nonwoven. The polyamide structure is produced at the Obernburg am Main site through a monofilament extrusion process. The polyamide chips are delivered by truck from Luxembourg. The thermally bonded nonwoven is delivered from the Netherlands. After coupling the structure and the thermally bonded nonwoven at the Obernburg am Main site the rolls winded on a tube, strapped and covered in black PE foil. The final roll length can vary between 50 and 100m. Depending on the customers request or optimal loading of a truck.

