ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration Schlüter-Systems KG

Publisher Institut Bauen und Umwelt e.V. (IBU)
Programme holder Institut Bauen und Umwelt e.V. (IBU)

Declaration number EPD-SLK-20250137-IBC1-EN

Issue date 29/04/2025 Valid to 28/04/2030

KERDI-200 Waterproofing Membrane Schlüter-Systems KG





Institut Bauen und Umwelt e.V.



1. General Information

| Schlüter-Systems KG | KERDI-200 Waterproofing Membrane | | | | | | | |
|---|---|--|--|--|--|--|--|--|
| Programme holder | Owner of the declaration | | | | | | | |
| IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany | Schlüter-Systems KG Schmölestraße 7 58640 Iserlohn Germany | | | | | | | |
| Declaration number | Declared product / declared unit | | | | | | | |
| EPD-SLK-20250137-IBC1-EN | The declared product is 1 m ² of the production quantity weighted average for KERDI Waterproofing Membrane, including packaging materials. | | | | | | | |
| This declaration is based on the product category rules: | Scope: | | | | | | | |
| Plastic and elastomer roofing and sealing sheet systems, 01/08/2021 (PCR checked and approved by the SVR) | This EPD applies for the following products of Schlüter-Systems KG, Iserlohn, Germany: KERDI-200 Waterproofing Membrane KERDI 200 5M, KERDI 200 10M, KERDI 200 200 15M, KERDI 200 150 20M and KERDI 200 30M. The owner of the declaration shall be liable for the underlying information | | | | | | | |
| Issue date | and evidence; the IBU shall not be liable with respect to manufacturer | | | | | | | |
| 29/04/2025 | information, life cycle assessment data and evidences. | | | | | | | |
| | The EPD was created according to the specifications of EN 15804+A2. In | | | | | | | |
| Valid to | — the following, the standard will be simplified as <i>EN 15804</i> . | | | | | | | |
| 28/04/2030 | Verification | | | | | | | |
| | The standard EN 15804 serves as the core PCR | | | | | | | |
| | Independent verification of the declaration and data according to ISO 14025:2011 | | | | | | | |
| | internally 🗵 externally | | | | | | | |
| DiplIng. Hans Peters (Chairman of Institut Bauen und Umwelt e.V.) | | | | | | | | |
| A Paul | orcinfe | | | | | | | |
| Florian Pronold (Managing Director Institut Bauen und Umwelt e.V.) | Matthias Klingler, (Independent verifier) | | | | | | | |



2. Product

2.1 Product description/Product definition

KERDI is a crack-bridging waterproofing membrane made of soft polyethylene with a special fleece fabric on both sides for effective anchoring in the tile adhesive. The waterproofing system KERDI has European approval (*ETA* = European Technical Assessment) in accordance with *EAD 030436-00-0503* and is marked with a CE symbol as well as approval for the German market (abP).

2.2 Application

KERDI is a waterproofing membrane for use in conjunction with tile and slab coverings. It is also crack-bridging and loadbearing.

2.3 Technical Data

The waterproofing membrane consists of an ethylene vinyl acetate layer with a polypropylene fleece laminated to both sides.

Declared performances in connection with EAD 030436-00-0503

| Name | Value | | | | |
|-------------------------------------|-----------------------|--|--|--|--|
| Reaction to fire (EN 13501-1) | Euroclass E | | | | |
| Vapour permeability | Sd = 5,15 m | | | | |
| Water tightness | Watertight | | | | |
| Crack bridging ability | Assessment category 3 | | | | |
| Bond strength | Assessment category 1 | | | | |
| Water tightness around penetrations | Watertight | | | | |
| Resistance to temperature | Assessment category 1 | | | | |
| Resistance to water | Assessment category 1 | | | | |
| Resistance to alkalinity | Assessment category 1 | | | | |

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *ETA* no. *ETA-09/0146*, *14.01.2019*, waterproofing system Schlüter[®]-KERDI.

2.4 Delivery status

Dimensions: Rolls in lengths of 5 m - 30 m with a width of 1 m to 2 m and a thickness of 0.2 mm.

Further information at www.schlueter-systems.com

2.5 Base materials/Ancillary materials

Basic materials

The KERDI membrane has a surface weight of 284 g/m² and consists of the following components:

| Name | Value | Unit |
|--------------------------|-------|----------|
| Ethylene vinyl acetate . | 67.9 | [% / m²] |
| Polypropylene. | 30.7 | [% / m²] |
| Colorant (non-hazardous) | 1.4 | [% / m²] |

REACH

In accordance with Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals ('REACH'), the above product is defined as an article and as such is not subject to registration under REACH. The raw materials used are either not subject to registration (polymers) or have been registered by our suppliers and/or the manufacturers or are registered in the European Chemicals

Inventory. No chemical substances are released from the above-mentioned product when used as intended. Schlüter-KERDI does not contain any substance of very high concern on *the candidate list* above a concentration of 0.1 % (w/w). The legal requirements specified in Annexes XIV (substances subject to authorization) and XVII (restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles) are taken into account and fulfilled for our products.

MICROPLASTICS

The above product is exempt from the prohibitions of Regulation (EU) No 2023/2055 amending Annex XVII to Regulation (EC) No 1907/2006 (REACH) with regard to synthetic polymer microparticles (construction products). Raw materials that may contain microplastics are used for production, but no primary microplastics are released either during industrial application in our company or during the end use of the product.

PFAS- PER- AND POLYFLUORINATED ALKYL COMPOUNDS

No PFAS in the form of PFOS: perfluorooctane sulfonic acid PFOA: perfluorooctanoic acid have been actively added to the above-mentioned product.

CHLORINATED KEROSENES - SHORT-CHAINED (SCCP-SHORT-CHAINED CHLORINATED KEROSENES)

The above-mentioned product does not contain SCCP in a concentration > 0.15 % (w/w).

MEDIUM-CHAINED CHLORINATED KEROSENES (MCCP-MEDIUM-CHAINED CHLORINATED KEROSENES)

The above product does not contain MCCP in a concentration > 0.1 % (w/w).

PHTALATES

The above product does not contain phthalates above a concentration of 0.1 % (w/w).

VOLATILE ORGANIC COMPOUNDS

VOC: 'Volatile organic compound': Not detected VVOC: 'Highly volatile organic compound': Not detected SVOC: 'Highly volatile organic compounds': Not detected

Mercury

The product does not contain any mercury; the requirements of the regulation are also taken into account when selecting raw materials and manufacturing processes and when using machinery.

The above-mentioned product does not contain lead or lead compounds in concentrations > 0.1 % (w/w).

The above product does not contain chromium or chromium compounds.

The above product does not contain cadmium metal above a concentration of 0.01 % (w/w).

The above product does not contain organotin compounds above a concentration of 0.1 % (w/w).

OZON

The above product does not contain any of the substances listed in Annex I or Annex II of Regulation (EU) No 2017/605 amending Regulation (EC) No 1005/2009.

BIOCIDE

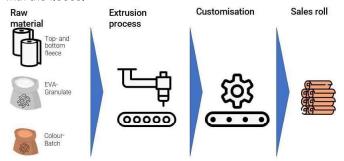
The above product has not been treated with biocides and no biocides have been added.



2.6 Manufacture

The waterproofing membrane consists of an ethylene vinyl acetate layer with a PP fleece laminated to the underside. The fleece is made from polypropylene (PP) granules in a continuous extrusion process.

A flat plastic sheet of consistent thickness is produced from ethylene vinyl acetate (EVA) granulate in a continuous extrusion process. The plastic sheet is then thermally fused with the fleece.



2.7 Environment and health during manufacturing

In the manufacture of KERDI waterproofing membranes, no measures beyond the national occupational health and safety regulations are required in all production steps to protect the health of employees.

2.8 Product processing/Installation

Product and application-dependent installation recommendations are described in brochures, installation instructions and product data sheets from Schlüter-Systems KG. These can be obtained directly from Schlüter-Systems KG or via the Internet. No special personal protection is required when installing KERDI. Waterproofing membrane waste generated on construction sites must be collected separately and disposed of properly.

2.9 Packaging

The packaging consists of polyethylene (PE) foil and cardboard. This should be collected separately and disposed of appropriately. Wooden EU pallets are used for distribution.

2.10 Condition of use

All materials used are non-aging and moistureresistant when fitted so that the mechanical properties remain unchanged during the entire service life.

2.11 Environment and health during use

The product is a waterproofing membrane that is installed underneath a top layer and therefore has no direct contact with the ambient air.

The use of the waterproofing membrane is not expected to pose any health risks. Proof is provided by a VOC emission test based on European regulations. The tested product fulfills the requirements of the *French VOC Regulation*, the *French Regulation on carcinogenic, mutagenic, reprotoxic (CMR)*

components, Italian CAM Edilizia, German AgBB, Belgian Regulation on Indoor Air Quality, EMICODE EC1 PLUS, Indoor Air Comfort GOLD, Blue Angel, BREEAM International and LEED v4.1 BETA. Corresponding certificates can be requested from Schlüter-Systems KG.

2.12 Reference service life

The service life of KERDI corresponds to the service life of the component in which it is used. This is based on its mechanical rigidity and resistance to the effects of water.

Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

In connection with European and German approval procedures for the waterproofing membrane, KERDI was tested for fire resistance on the basis of *DIN EN 13501-1* and rated as building material class E.

Fire protection

| Name | Value |
|----------------|----------|
| DIN EN 13501-1 | Classe E |

Water

KERDI consists of polypropylene and ethylene vinyl acetate and is waterproof. When used properly and in contact with water, no water-soluble substances are released from the waterproofing membrane that could lead to environmental contamination (groundwater, rivers, etc.).

Mechanical destruction

Due to its material type, KERDI is resistant to mechanical loads, so that effects on the environment are not to be expected in the event of unforeseeable mechanical destruction.

2.14 Re-use phase

After installation, the product forms a composite material with screed, tile adhesive and surface covering (tiles, natural stone, etc.). During removal and in the further disposal process, this composite material is separated to such an extent that the product can then be disposed of by thermal utilisation.

2.15 Disposal

Offcut: The waste key according to the *European Waste Catalogue (AVV/EWC)* is 17 02 03 for contaminated plastic disposal on construction sites.

Demolition: The waste key according to the *European Waste Catalogue (AVV/EWC)* is 17 09 04 for Mixed construction and demolition wastes other than those mentioned in 17 09 01 and 17 09 02.

2.16 Further information

Further information can be found at www.schluetersystems.com

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m² of the production quantity weighted average for a KERDI waterproofing membrane, including packaging materials. This EPD covers the following products:

- KERDI-200 Waterproofing Membrane KERDI 200 5M
- KERDI-200 Waterproofing Membrane KERDI 200 10M
- KERDI-200 Waterproofing Membrane KERDI 200 200 15M
- KERDI-200 Waterproofing Membrane KERDI 200 150 20M
- KERDI-200 Waterproofing Membrane KERDI 200 30M

Declared unit and mass reference



| Name | Value | Unit |
|---------------------------|--------|-------------------|
| Declared unit | 1 | m ² |
| Grammage | 0.321 | kg/m ² |
| conversion factor to 1 kg | 3.52 | - |
| Layer thickness | 0.0002 | m |

3.2 System boundary

Type of EPD: Cradle to gate with options (modules A1-A3, C1-C4 and D). The following modules are considered in accordance with *EN 15804 +A2*:

Module A1-A3

For module A1-A3, the system boundaries include all raw materials as well as transports, for both material and energy flows, used in the manufacturing of the products from cradle to factory gate.

Modules C1-C4

Module C1 describes the expenses after the product's end of life for dismantling or demolition of the product from the building with a demolition hammer. In module C2, the transports to the disposal processes are considered.

Module C3 contains the necessary processes for waste treatment at the end of the product life cycle, which is a construction waste treatment plant and a waste-to-energy plant (WtE). The loads for waste treatment are mapped here until the end of the waste property is reached. Emissions are assigned to module C3. Resulting credits are assigned to module D.

Module D

The output flows resulting from the waste treatment in A3 and C3, which can potentially serve as energetic input (waste-to-energy route) for a downstream product system, are reported in Module D. Emissions from waste incineration processes are assigned to the respective module (A3/C3) and not to module D.

3.3 Estimates and assumptions

Ethylene-vinyl-acetate (EVA) has a similar heating value as PE. That's why the data set Polyethylene (PE) in waste incineration plant (0 % H₂O content) was used to model the incineration of EVA at Module A3 as production waste.

The colorant is largely made up of a PE-based substrate. The exact formula of the non-hazardous pigments is intellectual property of the supplier. Therefore, the data set Polyethylene (PE) in waste incineration plant (0 % H $_2$ O content) was used as well, when modelling the incineration of the colorant at Module A3 as production waste.

3.4 Cut-off criteria

All material and energy flows entering the product system were taken into account.

3.5 Background data

For the LCA model, the software system for life cycle assessment (*LCA for Experts*) version 10.9 was used. As far as possible, background data sets from the current version of the *LCA for Experts* databases (Service pack 2024.1) were used. In some cases, the *ecoinvent* database 3.9 was used.

3.6 Data quality

Foreground data

The data collection for the investigated product was carried out on the basis of evaluations of internal production and environmental data, the collection of LCA-relevant data within the supplier chain as well as by measuring relevant data for the energy supply. The data collected was checked for plausibility and consistency. A good level of representativeness can be assumed.

Background data

The background data sets used for the balancing are generally not older than 10 years. All datasets received an overall rating of very good or good data quality for temporal, technical, and geographical representativeness.

The variants considered in this EPD have the same composition and differ only in their dimensions and thus the amount of packaging material. When evaluating modules A1 to A3, it was assessed that the deviation of all products range between -1 % and 1 % for GWP-fossil.

3.7 Period under review

The collected material and energy data originate from the period January 01, 2022 to December 31, 2022.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

3.9 Allocation

Within the defined system boundaries, in the production process, data for the product was determined with respect to the total produced area (m²). The primary data for the material and energy inputs was gathered for the specific product declared. There are no co-products.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. As far as possible, background data sets from the current version 10.9 of the *LCA for Experts* databases (Service pack 2024.1) were used. In some cases, the *ecoinvent* database 3.9 was used.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The biogenic carbon content was calculated based on the product components. Biogenic carbon is only found in the packaging (cardboard and wood).

Information on describing the biogenic carbon content at factory gate

| Name | Value | Unit |
|---|-------|---------|
| Biogenic carbon content in product | - | kg C |
| Biogenic carbon content in accompanying packaging | 0.016 | kg C |

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Installation into the building (A5 - technical scenario)



Output of waste packaging after installation

| Name | Value | Unit |
|-----------------|--------|------|
| Cardboard | 0.0176 | kg |
| PE film (PE-HD) | 0.0020 | kg |
| Wood | 0.0190 | kg |

The service life of the product corresponds to the service life of the component in which it is used.

End of life (C1-C4)

Module C1 describes the expenses after the product's end of life for dismantling or demolition of the product from the building with a demolition hammer. Assuming a 2000W demolition hammer working an area of around 3 $\rm m^2$ per hour, 2.52 MJ per $\rm m^2$ are used as a conservative approximation for the energy demand in C1.

In module C2, the transports to the disposal processes are considered (100 km with 61 % utilization rate).

Module C3 contains the necessary processes for waste treatment at the end of the product life cycle, which is a construction waste treatment plant. This process includes a 3% material loss. Next, the membrane is treated in a waste to energy plant (WtE).

| Name | Value | Unit |
|--|-------|------|
| Electricity for demolition (C1) | 2.52 | MJ |
| Transport to waste treatment (C2) | 100 | km |
| Collected as mixed construction waste (C3) | 0.284 | kg |
| Energy recovery (C3) | 0.276 | kg |

Reuse, recovery and recycling potential (D)

In Module D, the output flows resulting from the production waste treatment in A3 and C3, which can potentially serve as energetic (waste-to-energy route) input for a downstream product system, are reported.



5. LCA: Results

The present results in the impact categories refer to the potential environmental impacts in an analysis period of 100 years. Long-term emissions (> 100 years) are not considered in the impact assessment. Note: Impact assessment results are relative statements only and do not provide information on impact category endpoints, threshold exceedances, margins of safety, or on risks. For all indicators mentioned, the characterisation factors of *EC-JRC* (EF 3.1) were applied.

mentioned, the characterisation factors of *EC-JRC* (EF 3.1) were applied.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

| Product stage Construction process stage | | | | | | | | | | End of life stage | | | Benefits and loads beyond the system boundaries | | | | |
|--|------------------------|-----------|---------------|-------------------------------------|----------|-----|-------------|--------|-------------|-------------------|---------------------------|--------------------------|---|-----------|------------------|----------|--|
| | Raw material supply | Transport | Manufacturing | Transport from the gate to the site | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse- Recovery- Recycling- potential |
| ĺ | A1 | A2 | А3 | A4 | A5 | B1 | B2 | В3 | B4 | B5 | В6 | B7 | C1 | C2 | C3 | C4 | D |
| | Х | Х | Х | MND | MND | MND | MND | MNR | MNR | MNR | MND | MND | Х | Х | Х | Х | Х |

| RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 KERDI-200 membrane | | | | | | | | | | | |
|---|--|----------|----------------|------------------|----------|----|-----------|--|--|--|--|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D | | | | |
| Global Warming Potential total (GWP-total) | kg CO ₂ eq | 1,21E+00 | 3.51E-01 | 1.57E-03 | 8.63E-01 | 0 | -4.07E-01 | | | | |
| Global Warming Potential fossil fuels (GWP-fossil) | kg CO ₂ eq | 1,21E+00 | 3.51E-01 | 1.54E-03 | 8.63E-01 | 0 | -4.07E-01 | | | | |
| Global Warming Potential biogenic (GWP-biogenic) | kg CO ₂ eq | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Global Warming Potential Iuluc (GWP-Iuluc) | kg CO ₂ eq | 6.81E-04 | 5.25E-05 | 2.52E-05 | 1.2E-05 | 0 | -3.8E-05 | | | | |
| Depletion potential of the stratospheric ozone layer (ODP) | kg CFC11 eq | 3.97E-09 | 3.86E-12 | 2.21E-16 | 4.72E-14 | 0 | -3.79E-12 | | | | |
| Acidification potential of land and water (AP) | mol H ⁺ eq | 2.57E-03 | 8.2E-04 | 6.46E-06 | 8.98E-05 | 0 | -4.3E-04 | | | | |
| Eutrophication potential aquatic freshwater (EP-freshwater) | kg P eq | 7.22E-05 | 1.84E-07 | 6.4E-09 | 1.28E-08 | 0 | -7.11E-07 | | | | |
| Eutrophication potential aquatic marine (EP-marine) | kg N eq | 6.38E-04 | 1.37E-04 | 3.06E-06 | 2.02E-05 | 0 | -1.32E-04 | | | | |
| Eutrophication potential terrestrial (EP-terrestrial) | mol N eq | 6.64E-03 | 1.47E-03 | 3.42E-05 | 4.28E-04 | 0 | -1.41E-03 | | | | |
| Formation potential of tropospheric ozone photochemical oxidants (POCP) | kg NMVOC eq | 2.48E-03 | 4.1E-04 | 6.1E - 06 | 5.99E-05 | 0 | -3.71E-04 | | | | |
| Abiotic depletion potential for non fossil resources (ADPE) | kg Sb eq | 2.48E-06 | 1.66E-08 | 1.31E-10 | 1.27E-09 | 0 | -3.6E-08 | | | | |
| Abiotic depletion potential for fossil resources (ADPF) | MJ | 2.76E+01 | 6.51E+00 | 1.98E-02 | 1.14E-01 | 0 | -7.2E+00 | | | | |
| Water use (WDP) | m ³ wor l d eq deprived | 3.63E-01 | 2E - 02 | 2.32E-05 | 7.98E-02 | 0 | -4.28E-02 | | | | |

| RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m2 KERDI-200 membrane | | | | | | | | | | |
|--|----------------|----------|-------------------|------------------|-----------|----|-----------|--|--|--|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D | | | |
| Renewable primary energy as energy carrier (PERE) | MJ | 5.42E-01 | 9.27E - 01 | 1.7E-03 | 3.04E-02 | 0 | -2.47E+00 | | | |
| Renewable primary energy resources as material utilization (PERM) | MJ | 5.68E-01 | 0 | 0 | 0 | 0 | 0 | | | |
| Total use of renewable primary energy resources (PERT) | MJ | 1.11E+00 | 9.27E - 01 | 1.7E - 03 | 3.04E-02 | 0 | -2.47E+00 | | | |
| Non renewable primary energy as energy carrier (PENRE) | MJ | 1.59E+01 | 6.51E+00 | 1.98E-02 | 1.17E+01 | 0 | -7.2E+00 | | | |
| Non renewable primary energy as material utilization (PENRM) | MJ | 1.17E+01 | 0 | 0 | -1.16E+01 | 0 | 0 | | | |
| Total use of non renewable primary energy resources (PENRT) | MJ | 2.76E+01 | 6.51E+00 | 1.98E-02 | 1.14E-01 | 0 | -7.2E+00 | | | |
| Use of secondary material (SM) | kg | 1.62E-02 | 0 | 0 | 0 | 0 | 0 | | | |
| Use of renewable secondary fuels (RSF) | MJ | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Use of non renewable secondary fuels (NRSF) | MJ | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Use of net fresh water (FW) | m ³ | 9.84E-03 | 1.31E-03 | 1.9E - 06 | 1.87E-03 | 0 | -1.83E-03 | | | |

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|-------------------------------------|------|----------|-------------------|------------------|----------|----|-----------|
| Hazardous waste disposed (HWD) | kg | 3.82E-09 | 9.21E - 10 | 7.56E-13 | 6.21E-11 | 0 | -5.02E-09 |
| Non hazardous waste disposed (NHWD) | kg | 4.22E-03 | 1.61E - 03 | 3.23E-06 | 3.43E-03 | 0 | -3.8E-03 |
| Radioactive waste disposed (RWD) | kg | 3.26E-04 | 8.41E - 04 | 3.6E - 08 | 5.9E-06 | 0 | -5.28E-04 |
| Components for re-use (CRU) | kg | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials for recycling (MFR) | kg | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials for energy recovery (MER) | kg | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported electrical energy (EEE) | MJ | 8.91E-02 | 0 | 0 | 1.84E+00 | 0 | 0 |
| Exported thermal energy (EET) | MJ | 2.05E-01 | 0 | 0 | 3.27E+00 | 0 | 0 |

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m2 KERDI-200 membrane

| The relational control of the relationship in | | | | | | | |
|---|-------------------|-------|----|----|----|----|----|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| Incidence of disease due to PM emissions (PM) | Disease incidence | ND | ND | ND | ND | ND | ND |



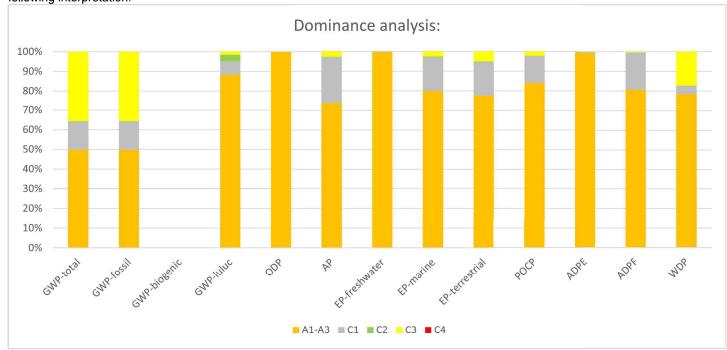
| Human exposure efficiency relative to U235 (IR) | kBq U235 eq | ND | ND | ND | ND | ND | ND |
|--|-------------|----|----|----|----|----|----|
| Comparative toxic unit for ecosystems (ETP-fw) | CTUe | ND | ND | ND | ND | ND | ND |
| Comparative toxic unit for humans (carcinogenic) (HTP-c) | CTUh | ND | ND | ND | ND | ND | ND |
| Comparative toxic unit for humans (noncarcinogenic) (HTP-nc) | CTUh | ND | ND | ND | ND | ND | ND |
| Soil quality index (SQP) | SQP | ND | ND | ND | ND | ND | ND |

Disclaimer 1 — for the indicator "Potential Human exposure efficiency relative to U235". This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators "abiotic depletion potential for non-fossil resources", "abiotic depletion potential for fossil resources", "water (user) deprivation potential, deprivation-weighted water consumption", "potential comparative toxic unit for ecosystems", "potential comparative toxic unit for humans – cancerogenic", "Potential comparative toxic unit for humans – not cancerogenic", "potential soil quality index". The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

The evaluation of the environmental impacts allows the following interpretation:



As can be seen above, for GWP-total and GWP-fossil, modules A1-A3 account for 50 % of the total environmental impact, followed by module C3 with 35 %, due to the product's incineration. For the indicator WDP, around 78 % of the impact comes from modules A1-A3, followed by around 17 % from module C3. For the rest of the indicators, above 75 % of the impact occurs in modules A1-A3, with module C1 being the second largest contributor, due to energy demand for demolishing the product. The latter can be seen as a conservative assessment, as the impact of this energy demand should be shared with the demolishing of other products, such as tiles.

Module C2, transport to the waste-treatment facility, only shows a noticeable impact of less than 5 % for the indicator GWP-luluc.

GWP-biogenic shows no impact. The negative impact through biogenic carbon being bound to packaging material in modules A1-A3, is balanced out in the same module, as A5 is not declared in this EPD.

In order to identify the responsible sources along the life cycle, the environmental impacts are analyzed using the example of global warming potential (GWP-total): Largest single contributor to the total global warming potential is the waste incineration of ethylene vinyl acetate (25 %), followed by the electric energy demand (21 %) and the provision of ethylene vinyl acetate (18 %) for production.

When evaluating modules A1 to A3, it was assessed that the deviation of all products range between -1 % and 1 % for GWP-fossil.

7. Requisite evidence

VOC emissions

KERDI was tested in fall of 2024 by the testing institute Eurofins Danmark for emissions of volatile organic compounds (VOC) according to the Indoor Air Comfort GOLD test protocol and is suitable for indoor use.



| Name | Value | Unit | |
|-------------------------|-----------------|---------------|--|
| TVOC | <5 | μg/m³ | |
| SVOC components | None determined | μg/m³ | |
| VOC without NIK | None determined | μg/m³ | |
| R-value | 0 | dimensionless | |
| Carcinogenic Substances | <1 | μg/m³ | |

8. References

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