

## ENVIRONMENTAL PRODUCT DECLARATION

# DLW LINOLEUM COMPACT

GERFLOR DLW LINOLEUM COMPACT SHEET FLOORING



Linoleum Compact – Linoleum flooring in rolls



Because we think actions speak louder than words, Gerflor has always been willing to act and to develop flooring solutions that meet the most challenging requirements in terms of design, durability, easy installation, acoustic comfort, ...

When it comes to sustainability, we also set ourselves to the highest standards. We believe in developing great products that not only perform, but also contribute to achieving high indoor air quality and top contribution to all green building certification schemes.

All our products are:

- 100% Floorscore, Blue Angel and M1 certified, meaning that our products have been independently third party certified to comply with strict volatile organic compounds (VOC) emissions criteria.
- 100% REACH compliant (voluntarily independently Third Party Verified)

All Gerflor new products are developed with a view to optimize the environmental impact at every stage of the product's life and have been Cradle to Cradle certified. This includes assessment of the manufacture, installation, ongoing maintenance, eventual uplift and recycling of the products. As part of this commitment, Gerflor has decided to take a leadership position by publishing a third party independently verified EPD for each of its product ranges.



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According to ISO 14025,  
EN 15804, and ISO21930:2017

|                                                                   |                                                                                                                                                                                                                            |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE | UL Environment<br>333 Pfingsten Road, Northbrook, IL 60611<br><a href="https://www.ul.com/">https://www.ul.com/</a><br><a href="https://spot.ul.com">https://spot.ul.com</a>                                               |
| GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER                   | General Program Instructions v.2.4 July 2018                                                                                                                                                                               |
| MANUFACTURER NAME AND ADDRESS                                     | GERFLOR<br>50 Cours de la République, 69100 Villeurbanne, France                                                                                                                                                           |
| DECLARATION NUMBER                                                | 4788756650.102.1                                                                                                                                                                                                           |
| DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT               | DLW LINOLEUM COMPACT<br>The functional unit used for this study is 1m <sup>2</sup> of linoleum flooring, for a 25 years service life.                                                                                      |
| REFERENCE PCR AND VERSION NUMBER                                  | PCR -Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 3.2, UL Environment.<br>PCR - Part B: Flooring EPD Requirements, Second Edition, Dated September 28, 2018, UL Environment.           |
| DESCRIPTION OF PRODUCT APPLICATION/USE                            | The product is classified in accordance with EN ISO 10874 and in reference to the FCSS (Floor Covering Standard Symbols) to be installed in various areas of application including commercial and industrial applications. |
| PRODUCT RSL DESCRIPTION (IF APPL.)                                | The stated RSL is 25 years. The manufacturer has provided this service life on the basis of his experience of flooring manufacture and supply.                                                                             |
| MARKETS OF APPLICABILITY                                          | Commercial market                                                                                                                                                                                                          |
| DATE OF ISSUE                                                     | October 1, 2020                                                                                                                                                                                                            |
| PERIOD OF VALIDITY                                                | 5 years                                                                                                                                                                                                                    |
| EPD TYPE                                                          | product-specific                                                                                                                                                                                                           |
| RANGE OF DATASET VARIABILITY                                      | not concerned                                                                                                                                                                                                              |
| EPD SCOPE                                                         | Cradle to Grave                                                                                                                                                                                                            |
| YEAR(S) OF REPORTED PRIMARY DATA                                  | 2019                                                                                                                                                                                                                       |
| LCA SOFTWARE & VERSION NUMBER                                     | Simapro 9                                                                                                                                                                                                                  |
| LCI DATABASE(S) & VERSION NUMBER                                  | Ecoinvent 3.5 – allocation cut-off by classification                                                                                                                                                                       |
| LCIA METHODOLOGY & VERSION NUMBER                                 | Methode EN 15804_FR_Ev-DEC 1.17 (EVEA)                                                                                                                                                                                     |

The PCR review was conducted by:

UL Environment

PCR Review Panel

[epd@ulenvironment.com](mailto:epd@ulenvironment.com)

This declaration was independently verified in accordance with ISO 14025: 2006.

☐ INTERNAL

☒ EXTERNAL

María José Monteagudo Arrebola

This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:

Thomas P. Gloria, Industrial Ecology Consultants

## LIMITATIONS

**Exclusions:** EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

**Accuracy of Results:** EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

**Comparability:** EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

## 1. Product Definition and Information

### 1.1. Description of Company/Organization

The product is commercialized by Gerflor and made in Delmenhorst Manufacturing Plant (Germany). All Gerflor manufacturing sites complies with:

- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System
- ISO 50001 Energy Management

### 1.2. Product Description

#### Product Identification

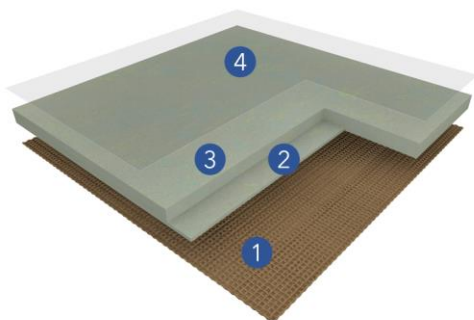
Product Designation: "DLW Linoleum Compact"

This environmental product declaration covers Gerflor DLW Linoleum Compact sheet flooring. DLW Linoleum compact sheet flooring is a 6'6" (2m) wide calendered homogeneous sheet flooring in 2.0mm to 3.2mm thickness made mostly of natural raw materials, including linseed and soybean oils, natural tree resins, wood flour, limestone, and colored pigments. The flooring is protected by Neocare, an exclusive surface treatment obtained by UV laser cross-linking, that provides easy maintenance, stain resistance and reduces the need to refinish the flooring.

The linoleum flooring are classified according to the United Nations Standard Products and Service Code (UNSPSC) as "Flooring" : UNSPSC Code 30161700.

And according to Construction Specification Institute (CSI) as "Resilient flooring" : CSI Code 09 65 00.

The following figure show the Compact Linoleum Product:



- 1 – Hessian jute
- 2 – 1st layer of linoleum
- 3 – 2nd layer of linoleum
- 4 – Neocare



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## Product Specification

The products considered in this EPD meet or exceed one of the following Technical Specifications:

Meets or exceeds all technical requirements in ASTM F2034 Standard Specification for Linoleum Sheet Flooring

Meets or exceeds all technical requirements in EN ISO 24011 – Resilient floor coverings – Specification for plain and decorative linoleum

DLW Linoleum Sheet flooring meets requirements of the standard EN 14041 – Resilient, textile and stratified floor coverings: Essential characteristics.

The product also possesses the following characteristics:

- EN 13501-1 Fire Behavior C<sub>fl</sub> – s1
- EN 13893 Slip Resistance DS > 0.30
- Fire Testing :
  - Class 1 when tested in accordance with ASTM E 648
  - Meets requirements of ASTM E662/NFPA 258 ; ASTM E84/NFPA 255 and CA/ULC S102.2

The biogenic carbon contained in the product is modelled with carbon uptake during the production stage and carbon emission during the end of life phase.





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Flow Diagram

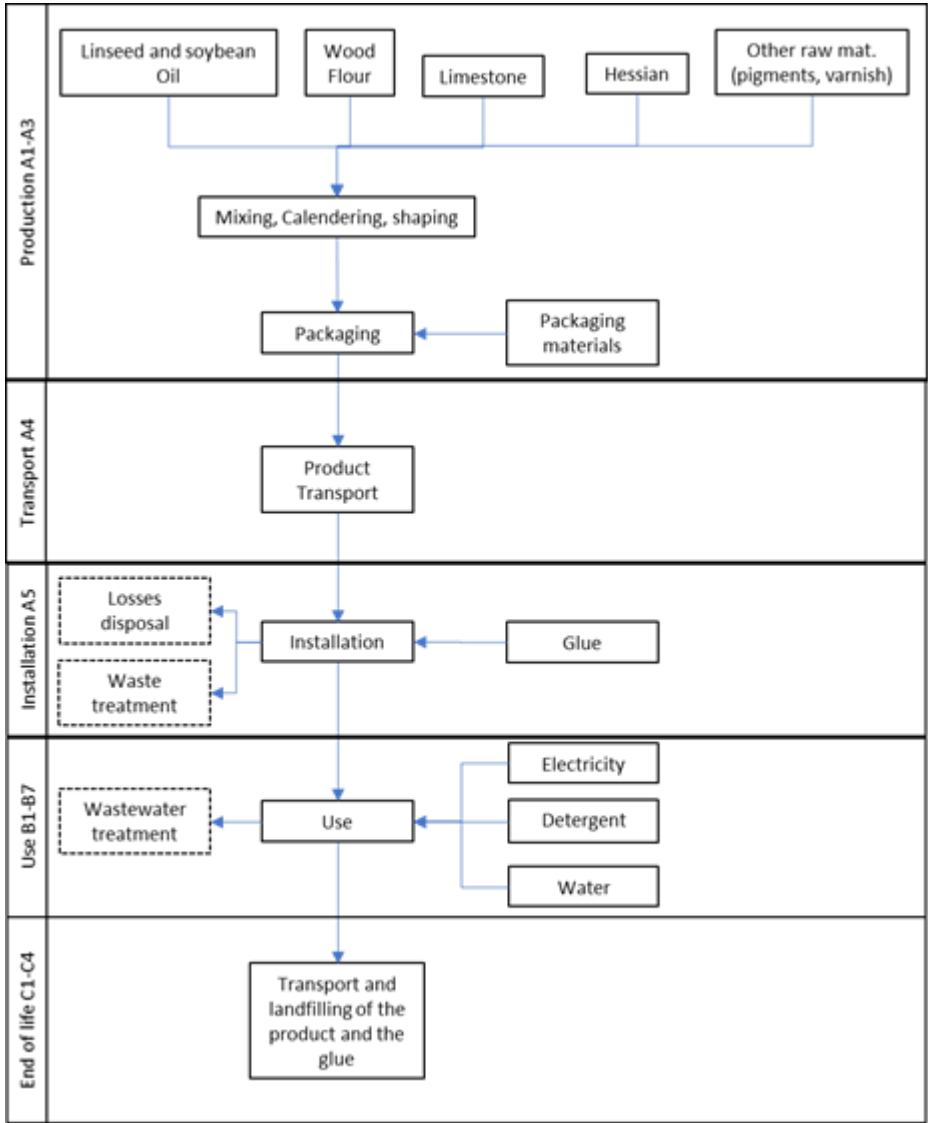


Figure 1 : Flow product diagram

Product Average

Three products are grouped and reported in this EPD as a weighted average product, based on production volume. These three products have similar composition but have different thickness (2.0, 2.5 and 3.2 mm). Environmental impacts of each products have been compared and products have been considered as homogeneous, with a weighted coefficient of variation less or equal to 20% for any impact category.

The overall values for the factory's material and energy consumptions during a period of one year have been divided by the annual production of the three products Linoleum Compact to supply a mean value per square meter of flooring produced. All factory data is measured in square meters, and it is assumed that the process consumptions are



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governed by area of flooring processed rather than mass.

## 1.3. Application

DLW Linoleum is classified in accordance with EN ISO 10874 and in reference to the FCSS (Floor Covering Standard Symbols) to be installed in various areas of application including commercial and industrial applications.

## 1.4. Declaration of Methodological Framework

This EPD covers the entire life cycle of the product from cradle to grave (modules A1 to C4) excluding modules for which there are no inputs/outputs. No known flows are deliberately excluded from this EPD.

For this product, the stated RSL is 25 years. It should be noted, however, that the service life of a linoleum flooring may vary depending on the amount and nature of floor traffic and the type and frequency of maintenance. The manufacturer has provided this service life on the basis of his experience of flooring manufacture and supply. This RSL is applicable as long as the product use complies with that defined by ISO 14041 and ISO 10874 in accordance with the product's classification.

## 1.5. Technical Requirements

| Name              |              | Value    | Unit              |
|-------------------|--------------|----------|-------------------|
| Product Thickness |              | 2.53     | mm                |
| Product Weight    |              | 2.94     | kg/m <sup>2</sup> |
| Product Form      | Rolls width  | 2.00     | mm                |
|                   | Rolls length | 20 to 31 | m                 |

Table 1: technical data

## 1.6. Properties of Declared Product as Delivered

The product declared in this document complies with the following codes or regulations:

- ISO 9001 Quality Management System and ISO 14001 Environmental Management System
- Floorscore SCS-FS-05289
- Blauer Engel – Certificate n°70 710 6120-8
- M1 – Certificate n°3333

## 1.7. Material Composition

| Component           | Mass % |
|---------------------|--------|
| Oils (linseed, ...) | 42%    |
| Wood Flour          | 21%    |
| Limestone           | 20%    |
| Hessian             | 9%     |
| Gum Rosin           | 6%     |
| Pigments            | <1%    |
| Varnish             | <1%    |

Table 2: Material content

## 1.8. Manufacturing

DLW Linoleum Compact is made in the Gerflor manufacturing plant in Delmenhorst, Germany.

The production of the Linoleum flooring is divided into the following stages:

- Mixing: Linseed and soybean oils, Wood flour, Resin and Pigments are mixed together to obtain linoleum paste
- Calendering: The rolls are then calendered with hessian to get the desired shape.
- Shaping: rolls are cut at the desired dimensions.
- Packaging: The final product is rolled in paper on cardboard tubing.

Wastes from manufacturing are recycled back into production when possible, residual wastes are sent to landfill. Other wastes products are recycled externally whenever a process exists.

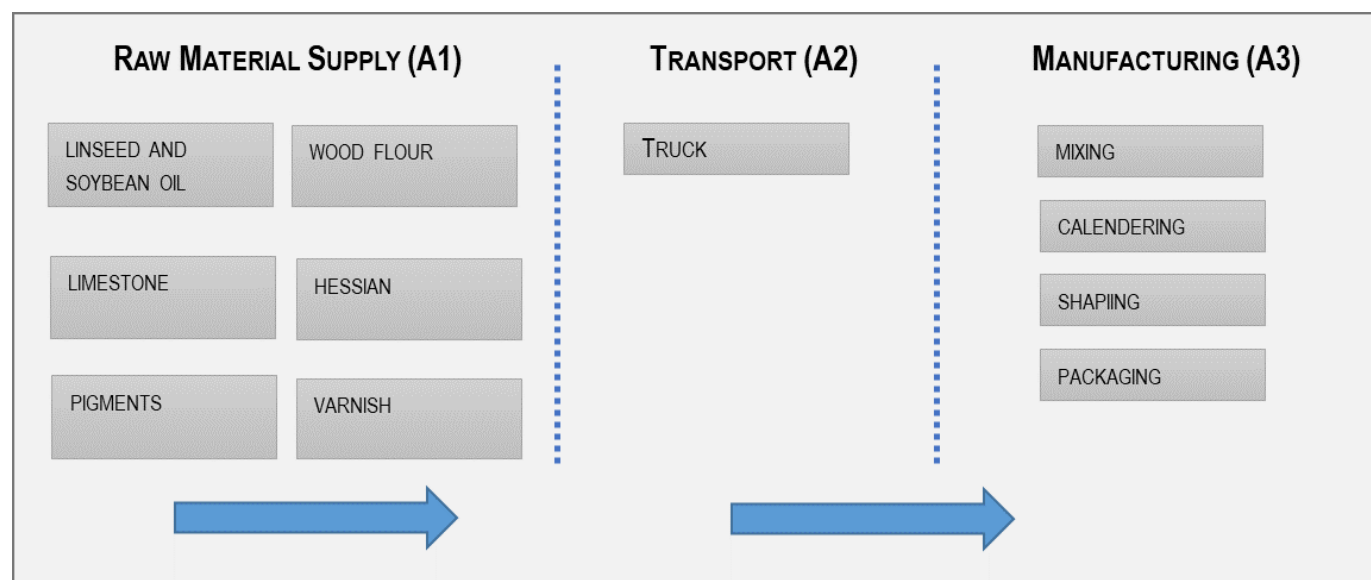


Figure 2 : Manufacturing Flow diagram

## 1.9. Packaging

The products are packed into paper, then rolls are placed into cardboard tubes. Sodium silicate is added between paper sheets.

The packaging waste scenario for paper and cardboard is 75% recycling, 20% landfilling and 5% incineration as describe in ULE Part A Requirements. Other materials are sent to landfill (50%) or incinerated (50%).

## 1.10. Transportation

DLW Linoleum Compact is made in Germany and is then sent to the US market. Distances taken in account are described below.

- Transport distance 16-32T truck (factory to french port): 80km
- Transport distance transoceanic freight: 6635km
- Transport distance 16-32T truck (US port to client): 3090km

## 1.11. Product Installation

The product is installed by hand using acrylic glue. Approximately 250 g/m<sup>2</sup> of this water-based low emission adhesive is used to fix the flooring in place.

During the installation approximately 10% of the material is lost as off-cuts – this waste is sent to landfill. Waste classification is according to RCRA for North American region (Resource Conservation and Recovery Act (RCRA), Subtitle 3).

## 1.12. Use

Current cleaning of the installed floor has been included in this study as following:

- Dry vacuum cleaning : two times a week
- Wet cleaning by hand with water and detergent: every week

## 1.13. Reference Service Life and Estimated Building Service Life

For this product, the stated RSL is 25 years. It should be noted however that the service life of a linoleum flooring may vary depending on the amount and nature of floor traffic and the type and frequency of maintenance. The manufacturer has provided this service life on the basis of his experience of flooring manufacture and supply. This RSL is applicable as long as the product use complies with ISO 14041 and ISO10 874 in accordance with the product's classification.

## 1.14. Reuse, Recycling, and Energy Recovery

There's no take back program or re-use/recycling/energy recovery possibility for this product.

## 1.15. Disposal

For the purpose of this LCA, it has been assumed that 100% of the product is sent to landfill at the end of its useful life, according to the disposal pathway assumption in PCR Part A for non-metal materials in United States. Product is considered as non-hazardous waste according to north america regulation.

The transport between construction site and landfill facility is by truck, with a distance of 161 km.



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2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

The functional unit is one square meter of installed product. The reference service life considered is 25 years.

|                 | Value | Unit |
|-----------------|-------|------|
| Functional Unit | 1     | m²   |
| Mass            | 2.94  | kg   |

Table 3: Functional Unit

2.2. System Boundary

EPD is declared from cradle to grave, including the following stages:

A1 – A3: includes the provision of all raw materials and their packaging, transport to the production site and energy consumption during the manufacturing of the product, as well as processing of waste generated by the factory.

A4 – A5: includes the transport from the factory to the final customer, packaging of the final product and the installation of the product, as well as all consumables and energy required and processing of waste generated during the installation.

B1 – B7: includes provision and transport of all materials, products and services related to the use phase of the product, as well as their related energy and water consumption, and the processing of any resulting waste.

C1 – C4: includes provision and transport of all materials, products and services related to the end of life phase of the product, including energy and water consumption, as well as the end of life processing of the product.

2.3. Estimates and Assumptions

Estimates and assumptions are made for transport, installation and deconstruction procedure. Details are provided in section “LCA: scenarios and additional technical information”.

Transport distances have been calculated from the production site to the geographical center of the destination country (US), which provides an average distance for all possible distribution centers within the country. Additional transport between the distribution center and the construction site is considered with a distance of 800 km, according to PCR, part B.

Transport distance from building site to the landfill treatment center is considered with a distance of 161 km, according to PCR part B.

2.4. Cut-off Criteria

The cut -off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass of that unit process. The total neglected input flows per module shall be a maximum of 5% of energy usage and mass.

For this study, all input and output flows have been considered except packaging of raw material, Raw materials are included as per the product composition provided by the manufacturer and the packaging of the final product. Energy and water consumptions have also been considered at 100% according to the data provided.

2.5. Data Sources





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As a general rule, specific data derived from specific production processes or average data derived from specific production processes have been used as the first choice as a basis for calculating an EPD.

To model the life cycle of the product in question, the software SimaPro 9, developed by PRé, has been used in conjunction with the LCA database ecoinvent v3.5.

2.6. Data Quality

The requirements for data quality and LCA data are in accordance with the specifications of the PCR.

**Temporal Coverage** – producer specific data is averaged over 1 year of production and from within the last 5 years (2019). Generic data is taken from the ecoinvent 3.5 database, the entirety of which was updated in 2018. Inputs to and outputs from the system are accounted for over a period of 100 years from the year for which the data set is deemed relevant.

**Technological Coverage** – the technological coverage of the data reflects the physical reality of the declared product.

**Geographical Coverage** – whenever possible, country specific data reflecting the reality of the Gerflor supply chain has been used. If country specific data is unavailable, European regional data is used in preference to global data sources.

2.7. Period under Review

Data have been reviewed for the production year 2019.

2.8. Allocation

The overall values for the factory's material and energy consumptions during a period of one year have been divided by the annual production of each product to supply a value per square meter of flooring produced. All factory data is measured in square meters, and it is assumed that the process consumptions are governed by area of flooring processed rather than mass.

2.9. Comparability (Optional)

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.

3. Life Cycle Assessment Scenarios

Table 4. Transport to the building site (A4)

| NAME      | VALUE              | UNIT |
|-----------|--------------------|------|
| Truck     |                    |      |
| Fuel type | Diesel, low sulfur |      |



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|                                                                                                          |                            |                   |
|----------------------------------------------------------------------------------------------------------|----------------------------|-------------------|
| Liters of fuel                                                                                           | 26                         | l/100km           |
| Vehicle type                                                                                             | 16-32 metric ton<br>EURO 5 |                   |
| Transport distance                                                                                       | 3 690                      | km                |
| Capacity utilization (including empty runs, mass based)                                                  | 36                         | %                 |
| Gross density of products transported                                                                    | 937                        | kg/m <sup>3</sup> |
| Weight of products transported (if gross density not reported)                                           | -                          | kg                |
| Volume of products transported (if gross density not reported)                                           | -                          | m <sup>3</sup>    |
| Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products) | < 1                        | -                 |
| <b>Boat</b>                                                                                              |                            |                   |
| Fuel type                                                                                                | Heavy Fuel Oil             |                   |
| Liters of fuel                                                                                           | 0.047                      | l/100km           |
| Vehicle type                                                                                             | Transoceanic<br>Ship       |                   |
| Transport distance                                                                                       | 5 919                      | km                |
| Capacity utilization (including empty runs, mass based)                                                  | 100                        | %                 |
| Gross density of products transported                                                                    | 937                        | kg/m <sup>3</sup> |
| Weight of products transported (if gross density not reported)                                           | -                          | kg                |
| Volume of products transported (if gross density not reported)                                           | -                          | m <sup>3</sup>    |
| Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products) | < 1                        | -                 |

**Table 5. Installation into the building (A5)**

| NAME                                                                                                                               | VALUE    | UNIT               |
|------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------|
| Ancillary materials                                                                                                                | 3.50E-01 | kg                 |
| Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)                        | -        | m <sup>3</sup>     |
| Other resources                                                                                                                    | -        | kg                 |
| Electricity consumption                                                                                                            | -        | kWh                |
| Other energy carriers                                                                                                              | -        | MJ                 |
| Product loss per functional unit                                                                                                   | 2.94E-01 | kg                 |
| Waste materials at the construction site before waste processing, generated by product installation                                | 2.94E-01 | kg                 |
| Output materials resulting from on-site waste processing (specified by route; e.g. for recycling, energy recovery and/or disposal) | 1,75E-01 | kg                 |
| Biogenic carbon contained in packaging                                                                                             | 2,10E-01 | kg CO <sub>2</sub> |
| Direct emissions to ambient air, soil and water                                                                                    | -        | kg                 |
| VOC emissions                                                                                                                      | -        | µg/m <sup>3</sup>  |



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**Table 6. Reference Service Life**

| NAME                                                                                                                                                       | VALUE                                                                                                      | UNIT                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------|
| RSL                                                                                                                                                        | 25                                                                                                         | years                |
| Declared product properties (at the gate) and finishes, etc.                                                                                               | Declared product properties are described in Declaration of Performance (DOP), in accordance with EN 14041 | Units as appropriate |
| Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes)                | Products in accordance with EN 14041 and technical prescription of the manufacturer                        | Units as appropriate |
| An assumed quality of work, when installed in accordance with the manufacturer's instructions                                                              | Not relevant for outdoor applications                                                                      | Units as appropriate |
| Outdoor environment, (if relevant for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature | See accreditations : Floorscore and Blauer Engel                                                           | Units as appropriate |
| Indoor environment, (if relevant for indoor applications), e.g. temperature, moisture, chemical exposure)                                                  | Use conditions in accordance with manufacturer prescriptions: see technical datasheet                      | Units as appropriate |
| Use conditions, e.g. frequency of use, mechanical exposure.                                                                                                | Maintenance scenario is defined in the table above                                                         | Units as appropriate |
| Maintenance, e.g. required frequency, type and quality of replacement components                                                                           | Declared product properties are described in Declaration of Performance (DOP), in accordance with EN 14041 | Units as appropriate |

**Table 7. Maintenance (B2)**

| NAME                                                    | VALUE                                                     | UNIT        |
|---------------------------------------------------------|-----------------------------------------------------------|-------------|
| Maintenance process information (cite source in report) | Dry vacuum cleaning:<br>2/week<br>Wet cleaning:<br>1/week | -           |
| Maintenance cycle                                       | 3,90E+03                                                  | Number/ RSL |
| Maintenance cycle                                       | 3.90E+03                                                  | Number/ ESL |



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|                                                                                                             |          |                |
|-------------------------------------------------------------------------------------------------------------|----------|----------------|
| Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer) | 3.22E-03 | m <sup>3</sup> |
| Ancillary materials specified by type (e.g. cleaning agent)                                                 | 4.91E-02 | kg             |
| Other resources                                                                                             | -        | kg             |
| Energy input, specified by activity, type and amount                                                        | 2.60E-01 | kWh            |
| Other energy carriers specified by type                                                                     | -        | kWh            |
| Power output of equipment                                                                                   | -        | kW             |
| Waste materials from maintenance (specify materials)                                                        | -        | kg             |
| Direct emissions to ambient air, soil and water                                                             | -        | kg             |
| Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants);  | -        |                |

**Table 8. Repair (B3)**

No data for given table

**Table 9. Replacement (B4)**

No data for given table

**Table 10. Refurbishment (B5)**

No data for given table

**Table 11. Operational energy use (B6) and Operational water use (B7)**

No data for given table

**Table 12. End of life (C1-C4)**

| NAME                                                                                                                           |                                         | VALUE                                                                                                                                                                                  | UNIT |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Assumptions for scenario development (description of deconstruction, collection, recovery, disposal method and transportation) |                                         | Product are carried out by hand and sent to landfill. Waste transport is made by truck (16-32 metric ton Euro5). A 161km distance to the landfill treatment center has been considered |      |
| Collection process (specified by type)                                                                                         | Collected separately                    | -                                                                                                                                                                                      | kg   |
|                                                                                                                                | Collected with mixed construction waste | 3.29E+00                                                                                                                                                                               | kg   |



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|                                                   |                                          |          |                    |
|---------------------------------------------------|------------------------------------------|----------|--------------------|
| Recovery<br>(specified by type)                   | Reuse                                    | -        | kg                 |
|                                                   | Recycling                                | -        | kg                 |
|                                                   | Landfill                                 | 3.29E+00 | kg                 |
|                                                   | Incineration                             | -        | kg                 |
|                                                   | Incineration with energy recovery        | -        | kg                 |
|                                                   | Energy conversion efficiency rate        | -        |                    |
| Disposal<br>(specified by type)                   | Product or material for final deposition | -        | kg                 |
| Removals of biogenic carbon (excluding packaging) |                                          | 6.38E+00 | kg CO <sub>2</sub> |

**Table 13. Reuse, recovery and/or recycling potentials (D), relevant scenario information**

No data for given table

## 4. Life Cycle Assessment Results

**Table 14. Description of the system boundary modules**

|          | PRODUCT STAGE       |           |               | CONSTRUCTION PROCESS STAGE  |                  | USE STAGE |             |        |             |               |                                                    |                                                   | END OF LIFE STAGE |           |                  |          | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY |
|----------|---------------------|-----------|---------------|-----------------------------|------------------|-----------|-------------|--------|-------------|---------------|----------------------------------------------------|---------------------------------------------------|-------------------|-----------|------------------|----------|-----------------------------------------------|
|          | A1                  | A2        | A3            | A4                          | A5               | B1        | B2          | B3     | B4          | B5            | B6                                                 | B7                                                | C1                | C2        | C3               | C4       | D                                             |
|          | Raw material supply | Transport | Manufacturing | Transport from gate to site | Assembly/Install | Use       | Maintenance | Repair | Replacement | Refurbishment | Building Operational Energy Use During Product Use | Building Operational Water Use During Product Use | Deconstruction    | Transport | Waste processing | Disposal | Reuse, Recovery, Recycling Potential          |
| EPD Type | X                   | X         | X             | X                           | X                | X*        | X           | X*     | X*          | X*            | X*                                                 | X*                                                | X*                | X         | X*               | X        | NA                                            |

\*module has been considered but has no associated inputs/outputs, therefore does not appear in the results.

NA: Not Applicability

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## 4.1. Life Cycle Impact Assessment Results

**Table 15. North American Impact Assessment Results**

| TRACI v2.1                      | A1        | A2       | A3       | A4       | A5       | B1       | B2       | C2       | C4       |
|---------------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| GWP 100 [kg CO <sub>2</sub> eq] | -3,53E+00 | 1,21E-01 | 3,51E+00 | 1,72E+00 | 1,53E+00 | -        | 6,94E+00 | 8,76E-02 | 8,12E+00 |
| ODP [kg CFC-11 eq]              | 3,67E-07  | 2,99E-08 | 4,28E-07 | 4,14E-07 | 2,34E-07 | -        | 6,14E-07 | 2,14E-08 | 1,27E-08 |
| AP [kg SO <sub>2</sub> eq]      | 7,69E-02  | 4,36E-04 | 2,13E-02 | 9,87E-03 | 1,74E-02 | -        | 2,41E-02 | 3,16E-04 | 3,10E-04 |
| EP [kg N eq]                    | 8,83E-02  | 6,75E-05 | 1,15E-02 | 1,05E-03 | 1,11E-02 | -        | 8,38E-03 | 4,88E-05 | 4,59E-04 |
| SFP [kg O <sub>3</sub> eq]      | 3,62E-01  | 9,23E-03 | 2,51E-01 | 1,81E-01 | 1,50E-01 | -        | 2,51E-01 | 6,66E-03 | 6,57E-03 |
| ADP <sub>fossil</sub> [MJ, LHV] | 3,12E+01  | 3,46E+00 | 2,68E-01 | 7,16E+00 | 3,72E+00 | 3,09E+00 | -        | 1,32E+01 | 1,93E-01 |

**Table 16. EU Impact Assessment Results**

| CML v4.2                                 | A1        | A2       | A3       | A4       | A5       | B1       | B2       | C2       | C4       |
|------------------------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| GWP 100 [kg CO <sub>2</sub> eq]          | -3,58E+00 | 1,21E-01 | 3,49E+00 | 1,72E+00 | 1,48E+00 | 0,00E+00 | 6,93E+00 | 8,76E-02 | 8,12E+00 |
| ODP [kg CFC-11 eq]                       | 2,99E-07  | 2,25E-08 | 3,51E-07 | 3,12E-07 | 1,87E-07 | -        | 4,90E-07 | 1,61E-08 | 9,52E-09 |
| AP [kg SO <sub>2</sub> eq]               | 6,64E-02  | 3,92E-04 | 1,85E-02 | 9,27E-03 | 1,60E-02 | -        | 2,41E-02 | 2,84E-04 | 2,55E-04 |
| EP [kg PO <sub>4</sub> <sup>-3</sup> eq] | 4,86E-02  | 6,50E-05 | 7,64E-03 | 1,19E-03 | 6,47E-03 | -        | 4,83E-03 | 4,68E-05 | 2,20E-04 |
| POCP [kg ethene eq]                      | 2,51E-03  | 6,31E-05 | 2,17E-03 | 1,07E-03 | 1,45E-03 | -        | 4,42E-03 | 4,55E-05 | 8,50E-05 |
| ADP <sub>element</sub> [kg Sb-eq]        | 1,71E-05  | 3,73E-07 | 3,93E-06 | 4,67E-06 | 9,56E-06 | -        | 9,96E-06 | 2,67E-07 | 5,05E-08 |
| ADP <sub>fossil</sub> [MJ, LHV]          | 2,86E+01  | 1,84E+00 | 5,56E+01 | 2,58E+01 | 2,63E+01 | -        | 1,19E+02 | 1,33E+00 | 8,87E-01 |

## 4.2. Life Cycle Inventory Results

**Table 17. Resource Use**

| PARAMETER                   | A1       | A2       | A3       | A4       | A5       | B1       | B2 | C2       | C4       |
|-----------------------------|----------|----------|----------|----------|----------|----------|----|----------|----------|
| RPR <sub>E</sub> [MJ, LHV]  | 4,27E+01 | 2,74E+01 | 1,97E-02 | 5,37E+00 | 3,01E-01 | 4,21E+00 | -  | 5,35E+00 | 1,33E-02 |
| RPR <sub>M</sub> [MJ, LHV]  | 7,40E+01 | 5,87E+01 | -        | 8,52E+00 | -        | 6,72E+00 | -  | -        | -        |
| RPR <sub>T</sub> [MJ, LHV]  | 1,17E+02 | 8,62E+01 | 1,97E-02 | 1,39E+01 | 3,01E-01 | 1,09E+01 | -  | 5,35E+00 | 1,33E-02 |
| NRPR <sub>E</sub> [MJ, LHV] | 1,17E+02 | 8,62E+01 | 1,97E-02 | 1,39E+01 | 3,01E-01 | 1,09E+01 | -  | 5,35E+00 | 1,33E-02 |
| NRPR <sub>M</sub> [MJ, LHV] | 2,56E+02 | 4,06E+01 | 1,87E+00 | 6,36E+01 | 2,63E+01 | 1,62E+01 | -  | 1,06E+02 | 1,35E+00 |
| NRPR <sub>T</sub> [MJ, LHV] | 3,73E+02 | 1,27E+02 | 1,89E+00 | 7,75E+01 | 2,66E+01 | 2,71E+01 | -  | 1,11E+02 | 1,36E+00 |
| SM [kg]                     | 7,48E-01 | 6,18E-01 | -        | 6,18E-02 | -        | 6,80E-02 | -  | -        | -        |
| RSF [MJ, LHV]               | -        | -        | -        | -        | -        | -        | -  | -        | -        |



# ENVIRONMENTAL PRODUCT DECLARATION



**DLW LINOLEUM COMPACT**  
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According to ISO 14025,  
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|                |          |          |          |          |          |          |   |          |          |
|----------------|----------|----------|----------|----------|----------|----------|---|----------|----------|
| NRSF [MJ, LHV] | -        | -        | -        | -        | -        | -        | - | -        | -        |
| RE [MJ, LHV]   | -        | -        | -        | -        | -        | -        | - | -        | -        |
| FW [m³]        | 3,93E-01 | 2,56E-01 | 3,03E-04 | 4,20E-02 | 4,26E-03 | 4,30E-02 | - | 4,61E-02 | 2,13E-04 |

**Table 18. Output Flows and Waste Categories**

| PARAMETER          | A1       | A2       | A3       | A4       | A5       | B1       | B2 | C2       | C4       |
|--------------------|----------|----------|----------|----------|----------|----------|----|----------|----------|
| HWD [kg]           | 5,25E-01 | 1,54E-01 | 1,16E-03 | 4,07E-02 | 1,73E-02 | 2,03E-01 | -  | 1,07E-01 | 8,62E-04 |
| NHWD [kg]          | 1,06E+01 | 9,63E-01 | 9,73E-02 | 8,66E-01 | 1,24E+00 | 1,36E+00 | -  | 2,74E+00 | 7,02E-02 |
| HLRW [kg] or [m³]  | 8,87E-04 | 1,85E-04 | 1,26E-05 | 1,15E-04 | 1,74E-04 | 8,49E-05 | -  | 3,00E-04 | 8,98E-06 |
| ILLRW [kg] or [m³] | 1,35E-04 | 2,92E-05 | 1,07E-07 | 2,42E-05 | 1,72E-06 | 9,59E-06 | -  | 6,97E-05 | 6,78E-08 |
| CRU [kg]           | -        | -        | -        | -        | -        | -        | -  | -        | -        |
| R [kg]             | 2,09E-01 | -        | -        | 7,04E-02 | -        | 1,38E-01 | -  | -        | -        |
| MER [kg]           | -        | -        | -        | -        | -        | -        | -  | -        | -        |
| EE [MJ, LHV]       | -        | -        | -        | -        | -        | -        | -  | -        | -        |

**Table 19. Carbon Emissions and Removals**

| PARAMETER     | A1       | A2 | A3       | A4 | A5       | B1 | C2 | C4       |
|---------------|----------|----|----------|----|----------|----|----|----------|
| BCRP [kg CO2] | 6.38E+00 | -  | -        | -  | -        | -  | -  | -        |
| BCEP [kg CO2] | -        | -  | -        | -  | -        | -  | -  | 6.38E+00 |
| BCRK [kg CO2] | -        | -  | 2.10E-01 | -  | -        | -  | -  | -        |
| BCEK [kg CO2] | -        | -  | -        | -  | 2,10E-01 | -  | -  | -        |
| BCEW [kg CO2] | -        | -  | -        | -  | -        | -  | -  | -        |
| CCE [kg CO2]  | -        | -  | -        | -  | -        | -  | -  | -        |
| CCR [kg CO2]  | -        | -  | -        | -  | -        | -  | -  | -        |
| CWNR [kg CO2] | -        | -  | -        | -  | -        | -  | -  | -        |





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5. LCA Interpretation

Figure 3: Graph depicting the impact indicators as calculated by the TRACI method

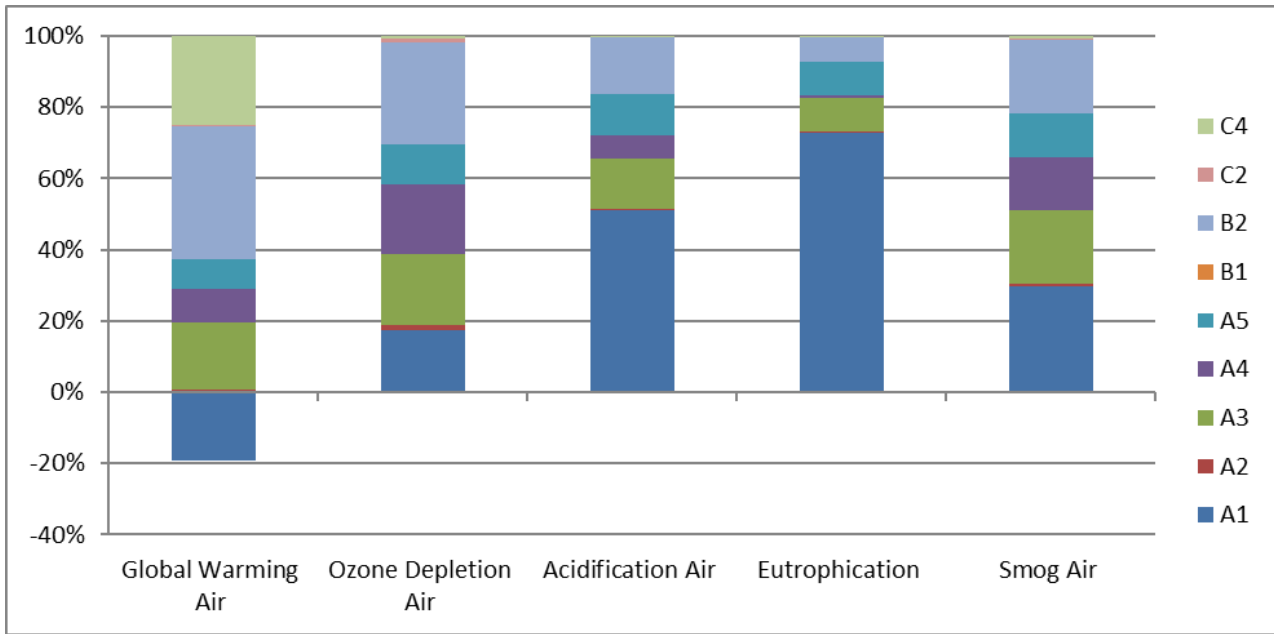
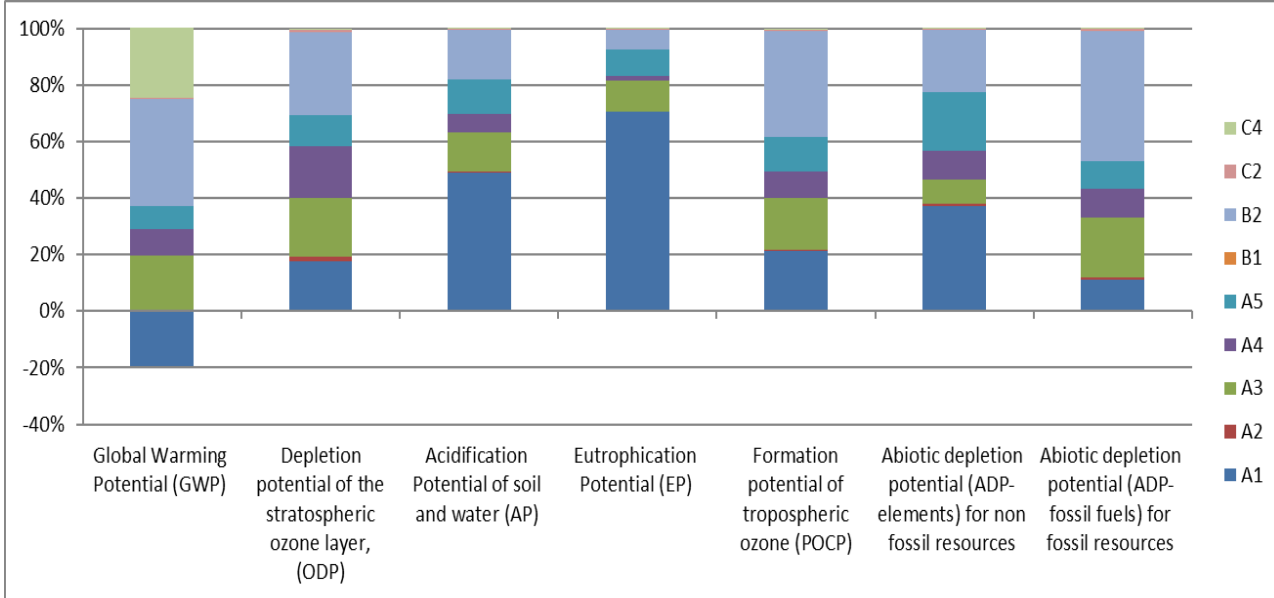


Figure 4: Graph depicting selection of impact indicator results calculated according to EN 15804



The primary contributor to the environmental impacts of the product is A1 – Extraction and transformation of the raw materials. Then comes B2 – Maintenance stage because of the scenario of both long reference service life (RSL) of 25 years and the assumption of a weekly cleaning by using a machine and detergent. Stage A3 – Manufacturing has the third greatest impact on average across the indicators, primarily due to the natural gas use during the production process.

The GWP indicator for production (cradle to gate, steps A1-3) is carbon neutral (emissions of 0,031 kg CO<sub>2</sub> equiv).

## 6. Additional Environmental Information

### 6.1. Environment and Health During Manufacturing

Gerflor's factory conforms to the ISO 14001 Environmental Management System.

### 6.2. Environment and Health During Installation

The manufacturer's guidelines should be adhered to during the installation of this product.

### 6.3. Extraordinary Effects

#### Fire

Fire behaviour have been tested according to EN 13501-1. Product is classified Cfl-S1.  
There's no test available for possible environmental impacts during fire.

#### Water

There's no test available for possible impacts following unforeseeable influence of water.

#### Mechanical Destruction

Mechanical damage does not chemically alter the product.

### 6.4. Delayed Emissions

No delayed emissions are taken into account.



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According to ISO 14025,  
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### 6.5. Environmental Activities and Certifications



**FloorScore®**  
Indoor Air Quality Certified to SCS-EC10.3-2014 v4.0

Registration # SCS-FS-05289



**M1 Standard**  
Certificate n°3333



Certificate n°70 710 6120-8



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## 6.6. Further Information

Additional information can be found in <https://www.gerflor.com/>

## 7. Supporting Documentation

All documentation necessary to confirm the data provided in this EPD has been submitted to the critical reviewer.

## 8. References

### ISO 14025

ISO 14025:2006 : Environmental labels and declarations — Type III environmental declarations — Principles and procedures

### ISO 21930

ISO 21930 :2017 : Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services

### EN 15804

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

### UL Environment

UL Environment General Program Instructions July 2018, version 2.4

### UL Standard 10010, PCR Part A

PCR -Part A: Life Cycle Assessment Calculation Rules and Report Requirements. Version 3.2, UL Environment. <https://industries.ul.com/environment>

### UL 10010-7, PCR Part B

PCR - Part B: Flooring EPD Requirements, Second Edition, Dated September 28, 2018. UL Environment. <https://www.ul.com/>

### Ecoinvent V3.5

ecoinvent Life Cycle Inventory database Version 3.5 <http://www.ecoinvent.org>



# ENVIRONMENTAL PRODUCT DECLARATION



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According to ISO 14025,  
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