

# ENVIRONMENTAL

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | modulyss®                            |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher                | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number       | EPD-MOD-20220309-CBA1-EN             |
| Issue date               | 10/01/2023                           |
| Valid to                 | 09/01/2028                           |

## Modular carpet tiles

Pile material: polyamide 6 yarn with a maximum total pile weight of 1300 g/m<sup>2</sup>

Back2Back or Comfortback

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## General Information

modulyss®

### Programme holder

IBU – Institut Bauen und Umwelt e.V.  
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10117 Berlin  
Germany

### Declaration number

EPD-MOD-20220309-CBA1-EN

### This declaration is based on the product category rules:

Floor coverings, 02/2018  
(PCR checked and approved by the SVR)

### Issue date

10/01/2023

### Valid to

09/01/2028



Dipl. Ing. Hans Peters  
(chairman of Institut Bauen und Umwelt e.V.)



Dr. Alexander Röder  
(Managing Director Institut Bauen und Umwelt e.V.)

### Modular carpet tiles

pile material: polyamide 6 yarn with a maximum total pile weight of 1300 g/m<sup>2</sup>

Back2Back or Comfortback

### Owner of the declaration

modulyss  
Zevensterestraat 21  
9240 Zele  
Belgium

### Declared product / declared unit

1 m<sup>2</sup> tufted modular carpet tiles with bitumen heavy backing and a pile material of PA 6

### Scope:

The manufacturer declaration applies to tufted carpet tiles with bitumen heavy backing, a pile material of PA 6 with a maximum total pile weight of 1300 g/m<sup>2</sup>. The products are produced in Zele, Belgium. LCA results for products with a maximum total pile weight of 480 g/m<sup>2</sup> can be taken from the corresponding tables of the annexe. Specific data for every product within the declared group of products in relation to its total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). The declaration is only valid in conjunction with a valid GUT-PRODIS license of the product.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as EN 15804.

### Verification

The standard EN 15804 serves as the core PCR

Independent verification of the declaration and data according to ISO 14025:2011

☐ internally ☒ externally



Angela Schindler  
(Independent verifier)

## Product

### Product description/Product definition

The declaration applies to tufted carpet tiles having a surface pile of polyamide 6 with a maximum total pile weight of 1300 g/m<sup>2</sup>. Colouring of the surface is achieved using either solution-dyed yarn or aqueous dyeing methods. The backing of the carpet consists of a bitumen heavy backing. In the comfortback range, the bitumen heavy backing is covered by a PET fleece. The total recycled content of the carpet is 49 %.

For the placing on the market of the specific product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 Construction Product Regulation (CPR) applies. The product needs a Declaration of Performance (DoP) taking into consideration EN 14041:2018-05, Resilient, textile and laminate floor coverings - Essential characteristics, and the CE-marking. The DoP of the product can be found on the manufacturer's technical information section.

For the application and use of the product the respective national provisions apply.

### Application

The use class of the specific product as defined in *EN 1307* can be found in the Product Information System (*PRODIS*) using the *PRODIS* registration number of the product.

### Technical Data

#### Constructional data according to EN 1307

| Name                | Value                                     | Unit             |
|---------------------|-------------------------------------------|------------------|
| Product Form        | Modular carpet tiles, 50 cm x 50 cm       | -                |
| Type of manufacture | Tufted carpet                             | -                |
| Yarn type           | Polyamide 6                               | -                |
| Total carpet weight | 5277                                      | g/m <sup>2</sup> |
| Secondary backing   | Bitumen heavy backing with textile bottom | -                |

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14041*: 2018-05, Resilient, textile and laminate floor coverings - Essential characteristics.

Additional product properties in accordance with *EN 1307* can be found on the Product Information System *PRODIS* using the *PRODIS* registration number of the product ([www.pro-dis.info](http://www.pro-dis.info)) or on the manufacturer's technical information section.

#### Base materials/Ancillary materials

| Name               | Value | Unit |
|--------------------|-------|------|
| Polyamide 6        | 24.6  | %    |
| Polypropylene      | 0.6   | %    |
| Polyester          | 10.2  | %    |
| Limestone          | 41.0  | %    |
| Aluminiumhydroxide | 5.3   | %    |

## LCA: Calculation rules

### Declared Unit

| Name          | Value | Unit              |
|---------------|-------|-------------------|
| Declared unit | 1     | m <sup>2</sup>    |
| Grammage      | 5.277 | kg/m <sup>2</sup> |

The declared unit refers to 1 m<sup>2</sup> produced textile floor covering. The output of module A5 'Assembly' is 1 m<sup>2</sup> installed textile floor covering.

The layer thickness of the specific product covered by the EPD can be found on the Product Information System *PRODIS* using the *PRODIS* registration number of the product ([www.pro-dis.info](http://www.pro-dis.info)) or on the manufacturer's technical information section.

### System boundary

Type of EPD: Cradle-to-gate with options  
System boundaries of modules A, B, C, D:  
Modules C3, C4 and D are indicated separately for three end-of-life scenarios:

|                                |      |   |
|--------------------------------|------|---|
| Styrene butadiene rubber (SBR) | 4.8  | % |
| SBS Copolymer                  | 1.1  | % |
| Bitumen                        | 11.3 | % |
| Glass fibre                    | 0.2  | % |
| Additives                      | 0.9  | % |

The specific product covered by the EPD contains substances listed in the *ECHA candidate list* (08.07.2021) or other carcinogenic, mutagenic or reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list exceeding 0.1 percentage by mass: no

The products are registered in the GUT-*PRODIS* Information System. The GUT-*PRODIS* system ensures compliance with limitations of various chemicals and Volatile Organic Compound s(VOC)-emissions and a ban on the use of all substances that are listed as 'Substances of Very High Concern' (SVHC) under *REACH*.

### Reference service life

The service life of textile floor coverings strongly depends on the correct installation taking into account the declared use classification and the adherence to cleaning and maintenance instructions.

A calculation of the reference service life according to *ISO 15686* is not possible.

Alternatively, a reference service life of 10 years can be assumed, during which the functional and visual quality is guaranteed (*BNB, Nutzungsdauer von Bauteilen*). The technical service life can be significantly longer.

- 1 - landfill disposal
- 2 - municipal waste incineration
- 3 - recovery in a cement plant

#### A1-A3 Production:

Energy supply and production of the basic material, processing of secondary material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material and waste processing up to the landfill disposal of residual waste (except radioactive waste). Benefits for generated electricity and steam due to the incineration of production waste are aggregated.

Biogenic carbon that is stored in renewable material (wood resin, renewable additives, packaging paper) is taken into account as well as the associated carbon dioxide uptake from the air from which this biogenic carbon comes.

#### A4 Transport:

Transport of the packed textile floor covering from factory gate to the place of installation.

#### A5 Installation:

Installation of the textile floor covering, processing of installation waste and packaging waste up to the landfill disposal of residual waste (except radioactive waste), the production of the amount of carpet that occurs as installation waste including its transport to the place of installation.

Generated electricity and steam due to the incineration of waste are listed in the result table as exported energy.

Biogenic carbon that is stored in renewable materials in installation waste and packaging paper is released as carbon dioxide emissions into the air at the end of life in module A5.

Preparation of the floor and auxiliary materials (adhesives, fixing agents, PET connectors) are beyond the system boundaries and not taken into account.

#### B1 Use:

Indoor emissions during the use stage. After the first year, no product-related Volatile Organic Compound (VOC) emissions are relevant due to known VOC decay curves of the product.

#### B2 Maintenance:

Cleaning of the textile floor covering for a period of 1 year:

Vacuum cleaning – electricity supply

Wet cleaning – electricity, water consumption, production of the cleaning agent, waste water treatment

The declared values in this module have to be multiplied by the assumed service life of the floor covering in the building in question.

#### B3 - B5:

The modules are not relevant within the assumed reference service life of 10 years.

#### B6 - B7:

No energy and water input are required for the operation of the carpet in the use stage. The modules do not cause any environmental impact.

#### C1 De-construction:

The floor covering is de-constructed manually and no additional environmental impact is caused.

#### C2 Transport:

Transport of the carpet waste to a landfill, to the municipal waste incineration plant (MWI) or to the waste collection facility for recycling.

#### C3 Waste processing:

C3-1: Landfill disposal needs no waste processing.

C3-2: Impact from waste incineration (plant with  $R1 > 0.6$ ), generated electricity and steam are listed in the result table as exported energy.

C3-3: Collection of the carpet waste for recovery in the cement industry, waste processing (granulating), transport to the cement plant, emissions from the incineration.

#### C4 Disposal

C4-1: Impact from landfill disposal,

C4-2: The carpet waste leaves the system in module C3-2,

C4-3: The pre-processed carpet waste leaves the system in module C3-3.

#### D Recycling potential:

Calculated benefits result from materials exclusive secondary materials (net materials).

D-A5: Benefits for generated energy due to incineration of packaging and installation waste (incineration plant with  $R1 > 0.6$ ),

D-1: Benefits for generated energy due to landfill disposal of carpet waste at the end-of-life,

D-2: Benefits for generated energy due to incineration of carpet waste at the end-of-life (incineration plant with  $R1 > 0.6$ ),

D-3: Benefits for saved fossil energy and saved inorganic material due to recovery of the carpet in a cement plant.

#### 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.

Background data are taken from the *GaBi database*, 2022-2. Remaining data gaps are covered by the *ecoinvent 3.7* database, 2020.

## LCA: Scenarios and additional technical information

### Characteristic product properties

#### Information on biogenic Carbon

| Name                                                              | Value | Unit |
|-------------------------------------------------------------------|-------|------|
| Biogenic carbon content in product at factory gate                | 0     | kg C |
| Biogenic carbon content in accompanying packaging at factory gate | 0.06  | kg C |

1 kg biogenic Carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

### Transport to the construction site (A4)

| Name                                        | Value | Unit    |
|---------------------------------------------|-------|---------|
| Litres of fuel (truck, EURO 0-6 mix)        | 0.012 | l/100km |
| Transport distance                          | 700   | km      |
| Capacity utilisation (including empty runs) | 55    | %       |

### Installation in the building (A5)

| Name          | Value | Unit |
|---------------|-------|------|
| Material loss | 0.158 | kg   |

Polyethylene packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant. Cardboard packaging waste is going to be recycled.

Preparation of the floor and auxiliaries (adhesives, fixing agents, PET connectors etc.) are not taken into account.

## Maintenance (B2)

The values for cleaning refer to 1 m<sup>2</sup> floor covering per year.

Depending on the application based on *ISO 10874*, the technical service life recommended by the manufacturer and the anticipated strain on the floor by customers, the case-specific useful life can be established. Based on this useful life the effects of module B2 need to be calculated in order to obtain the overall environmental impacts.

| Name                                | Value | Unit           |
|-------------------------------------|-------|----------------|
| Maintenance cycle (vacuum cleaning) | 208   | Number /year   |
| Maintenance cycle (wet cleaning)    | 1,5   | Number /year   |
| Water consumption (wet cleaning)    | 0.004 | m <sup>3</sup> |
| Cleaning agent (wet cleaning)       | 0.09  | kg             |
| Electricity consumption             | 0.314 | kWh            |

For further information on cleaning and maintenance see [www.modulyss.com](http://www.modulyss.com)

## Service life

| Name                                                                                          | Value                                                      | Unit |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------|------|
| Life Span (according to BBSR)                                                                 | 10                                                         | a    |
| Declared product properties (at the gate) and finishes                                        | Corresponds to the specifications of EN 1307               | -    |
| An assumed quality of work, when installed in accordance with the manufacturer's instructions | Conforms to the manufacturer's instructions                | -    |
| Usage conditions, e.g. frequency of use, mechanical exposure                                  | Use in areas defined by the use class according to EN 1307 | -    |
| Maintenance e.g. required frequency, type and quality and replacement of components           | According to the manufacturers instructions                | -    |

## End of Life (C1-C4)

Three different end-of-life scenarios are declared and the results are indicated separately in module C.

Each scenario is calculated as a 100% scenario.

Scenario 1: 100 % landfill disposal

Scenario 2: 100 % municipal waste incineration (MWI) with  $R1 > 0.6$

Scenario 3: 100 % recovery in the cement industry

If combinations of these scenarios have to be calculated this should be done according to the following scheme:

EOL-impact = x % impact (Scenario 1)  
 + y % impact (Scenario 2)  
 + z % impact (Scenario 3)  
 with x % + y % + z % = 100 %

| Name                                                      | Value | Unit |
|-----------------------------------------------------------|-------|------|
| Collected as mixed construction waste (scenarios 1 and 2) | 5.277 | kg   |
| Collected separately (scenario 3)                         | 5.277 | kg   |
| Landfilling (scenario 1)                                  | 5.277 | kg   |
| Energy recovery (scenario 2)                              | 5.277 | kg   |
| Energy recovery (scenario 3)                              | 2,822 | kg   |
| Recycling (scenario 3)                                    | 2.455 | kg   |

## Reuse, recovery and/or recycling potentials (D), relevant scenario information

Recovery or recycling potentials due to the three end-of-life scenarios (module C) are indicated separately.

### Recycling in the cement industry (scenario 3)

The organic material of the carpet is used as an alternative fuel in a cement kiln. It mainly substitutes for lignite (68.8%), hard coal (23.6%) and petrol coke (7.6%). The inorganic material is substantially integrated into the cement clinker and substitutes for original material input. VDZ e.V.

## LCA: Results

The LCA results refer to all declared products with a maximum total pile weight of 1300 g/m<sup>2</sup>. LCA results for products with a maximum total pile weight of 480 g/m<sup>2</sup> can be taken from the corresponding tables of the annexe. Results for specific products with any other total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). The declared result figures in module B2 have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration. Information on non-relevant modules: Modules B3 - B7 are not relevant during the service life of the carpet. Modules C1, C3/1, C4/2 and C4/3 cause no additional impact (see chapter "LCA: Calculation rules" in this document). All these modules are declared and marked as 'modules not relevant/declared'. Module C2 represents the transport for scenarios 1, 2 and 3. Column D represents module D/A5.

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

| PRODUCT STAGE       |           |               | CONSTRUCTION PROCESS STAGE          |          | USE 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              |
| A1                  | A2        | A3            | A4                                  | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                               |
| X                   | X         | X             | X                                   | X        | X         | X           | MNR    | MNR         | MNR           | ND                     | ND                    | X                          | X         | X                | X        | X                                               |

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> floor covering

| Core Indicator | Unit                               | A1-A3    | A4       | A5       | B1      | B2      | C1      | C2       | C3/2     | C3/3     | C4/1     | D         | D/1     | D/2       | D/3       |
|----------------|------------------------------------|----------|----------|----------|---------|---------|---------|----------|----------|----------|----------|-----------|---------|-----------|-----------|
| GWP-total      | [kg CO <sub>2</sub> -Eq.]          | 1.51E+1  | 3.21E-1  | 8.89E-1  | 0.00E+0 | 4.16E-1 | 0.00E+0 | 1.79E-2  | 6.58E+0  | 6.65E+0  | 3.70E-1  | -6.07E-2  | 0.00E+0 | -1.78E+0  | -4.93E-1  |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]          | 1.53E+1  | 3.16E-1  | 6.81E-1  | 0.00E+0 | 2.15E-1 | 0.00E+0 | 1.76E-2  | 6.58E+0  | 6.65E+0  | 3.74E-1  | -6.04E-2  | 0.00E+0 | -1.77E+0  | -4.92E-1  |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]          | -1.14E-1 | 4.09E-3  | 2.08E-1  | 0.00E+0 | 4.16E-3 | 0.00E+0 | 2.28E-4  | 8.58E-4  | 1.67E-3  | 0.00E+0  | -3.08E-4  | 0.00E+0 | -9.02E-3  | -7.15E-4  |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]          | 5.93E-3  | 1.79E-3  | 2.43E-4  | 0.00E+0 | 1.96E-1 | 0.00E+0 | 9.96E-5  | 2.60E-4  | 5.15E-4  | 1.82E-4  | -6.63E-6  | 0.00E+0 | -1.94E-4  | -2.24E-4  |
| ODP            | [kg CFC11-Eq.]                     | 1.48E-9  | 1.92E-14 | 4.43E-11 | 0.00E+0 | 3.42E-8 | 0.00E+0 | 1.07E-15 | 5.80E-13 | 9.79E-13 | 5.02E-13 | -4.07E-13 | 0.00E+0 | -1.19E-11 | -7.50E-13 |
| AP             | [mol H <sup>+</sup> -Eq.]          | 2.69E-2  | 1.91E-3  | 1.07E-3  | 0.00E+0 | 8.32E-4 | 0.00E+0 | 1.06E-4  | 6.49E-3  | 6.82E-3  | 1.11E-3  | -7.93E-5  | 0.00E+0 | -2.32E-3  | -1.69E-3  |
| EP-freshwater  | [kg P-Eq.]                         | 5.82E-5  | 9.57E-7  | 1.81E-6  | 0.00E+0 | 5.19E-6 | 0.00E+0 | 5.33E-8  | 9.55E-7  | 1.17E-6  | 6.98E-5  | -8.29E-8  | 0.00E+0 | -2.42E-6  | -5.10E-7  |
| EP-marine      | [kg N-Eq.]                         | 7.99E-3  | 9.37E-4  | 3.66E-4  | 0.00E+0 | 1.97E-4 | 0.00E+0 | 5.22E-5  | 3.18E-3  | 3.32E-3  | 2.45E-4  | -2.15E-5  | 0.00E+0 | -6.30E-4  | -5.31E-4  |
| EP-terrestrial | [mol N-Eq.]                        | 7.08E-2  | 1.04E-2  | 3.53E-3  | 0.00E+0 | 2.83E-3 | 0.00E+0 | 5.78E-4  | 3.54E-2  | 3.70E-2  | 2.69E-3  | -2.31E-4  | 0.00E+0 | -6.75E-3  | -5.82E-3  |
| POCP           | [kg NMVOC-Eq.]                     | 2.38E-2  | 1.77E-3  | 1.02E-3  | 4.18E-4 | 9.83E-4 | 0.00E+0 | 9.87E-5  | 8.15E-3  | 8.43E-3  | 7.89E-4  | -6.03E-5  | 0.00E+0 | -1.76E-3  | -1.61E-3  |
| ADPE           | [kg Sb-Eq.]                        | 2.28E-6  | 2.68E-8  | 7.03E-8  | 0.00E+0 | 2.30E-7 | 0.00E+0 | 1.49E-9  | 3.17E-8  | 4.28E-8  | 2.59E-8  | -9.10E-9  | 0.00E+0 | -2.66E-7  | -4.58E-8  |
| ADPF           | [MJ]                               | 3.18E+2  | 4.28E+0  | 9.80E+0  | 0.00E+0 | 5.90E+0 | 0.00E+0 | 2.39E-1  | 3.77E+0  | 4.86E+0  | 5.31E+0  | 1.03E+0   | 0.00E+0 | 3.00E+1   | 6.70E+1   |
| WDP            | [m <sup>3</sup> world-Eq deprived] | 1.79E+0  | 2.87E-3  | 8.12E-2  | 0.00E+0 | 9.99E-2 | 0.00E+0 | 1.60E-4  | 8.66E-1  | 8.73E-1  | -3.97E-3 | -6.35E-3  | 0.00E+0 | -1.86E-1  | -7.52E-2  |

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

### RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m<sup>2</sup> floor covering

| Indicator | Unit              | A1-A3   | A4      | A5       | B1      | B2      | C1      | C2      | C3/2     | C3/3     | C4/1    | D        | D/1     | D/2      | D/3      |
|-----------|-------------------|---------|---------|----------|---------|---------|---------|---------|----------|----------|---------|----------|---------|----------|----------|
| PERE      | [MJ]              | 3.14E+1 | 2.44E-1 | 1.23E+0  | 0.00E+0 | 3.69E+0 | 0.00E+0 | 1.36E-2 | 6.30E-1  | 9.36E-1  | 4.36E-1 | -2.81E-1 | 0.00E+0 | -8.23E+0 | -6.36E-1 |
| PERM      | [MJ]              | 2.54E-1 | 0.00E+0 | -2.54E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| PERT      | [MJ]              | 3.17E+1 | 2.44E-1 | 9.77E-1  | 0.00E+0 | 3.69E+0 | 0.00E+0 | 1.36E-2 | 6.30E-1  | 9.36E-1  | 4.36E-1 | -2.81E-1 | 0.00E+0 | -8.23E+0 | -6.36E-1 |
| PENRE     | [MJ]              | 2.44E+2 | 4.29E+0 | 1.00E+1  | 0.00E+0 | 5.90E+0 | 0.00E+0 | 2.39E-1 | 7.83E+1  | 7.94E+1  | 5.31E+0 | -1.03E+0 | 0.00E+0 | -3.00E+1 | -6.70E+1 |
| PENRM     | [MJ]              | 7.48E+1 | 0.00E+0 | -2.15E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -7.45E+1 | -7.45E+1 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| PENRT     | [MJ]              | 3.18E+2 | 4.29E+0 | 9.81E+0  | 0.00E+0 | 5.90E+0 | 0.00E+0 | 2.39E-1 | 3.77E+0  | 4.86E+0  | 5.31E+0 | -1.03E+0 | 0.00E+0 | -3.00E+1 | -6.70E+1 |
| SM        | [kg]              | 2.75E+0 | 0.00E+0 | 8.24E-2  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0  | 1.90E-1  |
| RSF       | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| NRSF      | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| FW        | [m <sup>3</sup> ] | 7.18E-2 | 2.75E-4 | 2.81E-3  | 0.00E+0 | 3.34E-3 | 0.00E+0 | 1.53E-5 | 2.05E-2  | 2.08E-2  | 6.22E-5 | -2.69E-4 | 0.00E+0 | -7.86E-3 | -6.04E-3 |

Caption: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m<sup>2</sup> floor covering

| Indicator | Unit | A1-A3   | A4       | A5      | B1      | B2      | C1      | C2       | C3/2     | C3/3     | C4/1     | D         | D/1     | D/2      | D/3       |
|-----------|------|---------|----------|---------|---------|---------|---------|----------|----------|----------|----------|-----------|---------|----------|-----------|
| HWD       | [kg] | 1.29E-3 | 2.06E-11 | 3.87E-5 | 0.00E+0 | 4.19E-5 | 0.00E+0 | 1.15E-12 | 5.65E-10 | 6.10E-10 | 8.19E-10 | -1.39E-10 | 0.00E+0 | -4.07E-9 | -2.86E-10 |
| NHWD      | [kg] | 3.32E-1 | 6.15E-4  | 4.88E-2 | 0.00E+0 | 7.30E-3 | 0.00E+0 | 3.43E-5  | 1.29E+0  | 1.29E+0  | 5.26E+0  | -5.18E-4  | 0.00E+0 | -1.52E-2 | -1.34E-1  |
| RWD       | [kg] | 6.00E-3 | 5.29E-6  | 1.84E-4 | 0.00E+0 | 3.76E-4 | 0.00E+0 | 2.95E-7  | 1.36E-4  | 2.15E-4  | 6.52E-5  | -8.07E-5  | 0.00E+0 | -2.36E-3 | -1.35E-4  |
| CRU       | [kg] | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0   | 0.00E+0 | 0.00E+0  | 0.00E+0   |
| MFR       | [kg] | 3.50E-2 | 0.00E+0  | 1.31E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 1.41E+0  | 0.00E+0  | 0.00E+0   | 0.00E+0 | 0.00E+0  | 0.00E+0   |
| MER       | [kg] | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0   | 0.00E+0 | 0.00E+0  | 0.00E+0   |
| EEE       | [MJ] | 0.00E+0 | 0.00E+0  | 2.92E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 8.62E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0   | 0.00E+0 | 0.00E+0  | 0.00E+0   |
| EET       | [MJ] | 0.00E+0 | 0.00E+0  | 5.39E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 1.60E+1  | 8.61E+1  | 0.00E+0  | 0.00E+0   | 0.00E+0 | 0.00E+0  | 0.00E+0   |

|         |                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Caption | HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

## RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m<sup>2</sup> floor covering

| Indicator | Unit                | A1-A3   | A4       | A5       | B1       | B2       | C1      | C2       | C3/2     | C3/3     | C4/1     | D         | D/1     | D/2     | D/3       |
|-----------|---------------------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|-----------|---------|---------|-----------|
| PM        | [Disease Incidence] | 1.89E-7 | 1.10E-8  | 6.88E-9  | 0.00E+0  | 6.84E-8  | 0.00E+0 | 6.14E-10 | 2.83E-8  | 3.03E-8  | 1.07E-8  | -6.57E-10 | 0.00E+0 | 0.00E+0 | -2.29E-8  |
| IRP       | [kBq U235-Eq.]      | 9.73E-1 | 7.75E-4  | 2.99E-2  | 0.00E+0  | 6.78E-2  | 0.00E+0 | 4.32E-5  | 2.08E-2  | 3.42E-2  | 9.63E-3  | -1.37E-2  | 0.00E+0 | 0.00E+0 | -1.45E-2  |
| ETP-fw    | [CTUe]              | 1.58E+2 | 2.97E+0  | 4.89E+0  | 3.60E-3  | 2.69E+0  | 0.00E+0 | 1.66E-1  | 1.85E+0  | 2.48E+0  | 5.19E+0  | -2.25E-1  | 0.00E+0 | 0.00E+0 | -1.17E+1  |
| HTP-c     | [CTUh]              | 4.68E-9 | 6.01E-11 | 1.45E-10 | 0.00E+0  | 6.21E-10 | 0.00E+0 | 3.35E-12 | 9.29E-11 | 1.07E-10 | 2.33E-10 | -1.04E-11 | 0.00E+0 | 0.00E+0 | -1.27E-10 |
| HTP-nc    | [CTUh]              | 2.01E-7 | 3.57E-9  | 6.34E-9  | 2.60E-11 | 9.46E-9  | 0.00E+0 | 1.99E-10 | 6.40E-9  | 7.12E-9  | 1.95E-8  | -3.98E-10 | 0.00E+0 | 0.00E+0 | -7.28E-9  |
| SQP       | [-]                 | ND      | ND       | ND       | ND       | ND       | 0.00E+0 | ND       | ND       | ND       | ND       | ND        | ND      | ND      | ND        |

|         |                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Caption | PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

No substantiated values can be given for the SQP indicator with the existing database.

The result figures given in module B2 refer to a period of 1 year because a reference service life is not declared. They have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration.

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, from 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 or as there is limited experience with the indicator.

## References

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DIN EN 1307: 2014+A1:2016+A2:2018-05: Textile floor coverings - Classification

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### EN 14041

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#### **PCR Part B**

Product Category Rules for Building-Related Products  
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# EPD

Environmental  
Product  
Declaration

F49C27E0



[www.gut-prodis.eu](http://www.gut-prodis.eu)



**modulyss®**

**PATTERN - PIXEL - PATCHWORK comfortBack**

surface pile weight: 372 g/m<sup>2</sup>

pile material: polyamide 6

backing: comfortBack

These EPD data are only valid in combination with

the environmental product declaration **EPD-MOD-20220309-CBA1-EN** published by Institut  
Bauen und Umwelt e.V. (IBU) and a GUT/Prodis license

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This data set gives product specific LCA results

based on the calculation procedure described in the above mentioned EPD.



## Calculation method for similar Products of the EPD document

The EPD document is valid for all products with a surface pile weight lower or equal to the declared maximum pile weight of **1300 g/m<sup>2</sup>**.

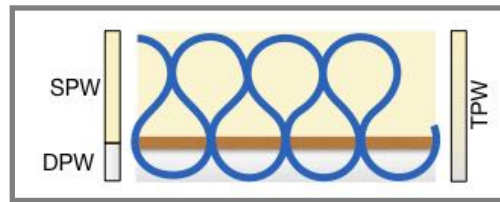
The respective declaration number is **EPD-MOD-20220309-CBA1-EN**

This document indicates more specific LCA results for (a) product(s) with identical material compositions and production parameters. The product(s) belong(s) to the same family of products and only differ in its/their pile weight(s).

LCA results show a linear correlation with the total pile weight, for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC<sub>x</sub>) for every carpet (x) within the declared group of products in relation to its total pile weight (P<sub>x</sub>).

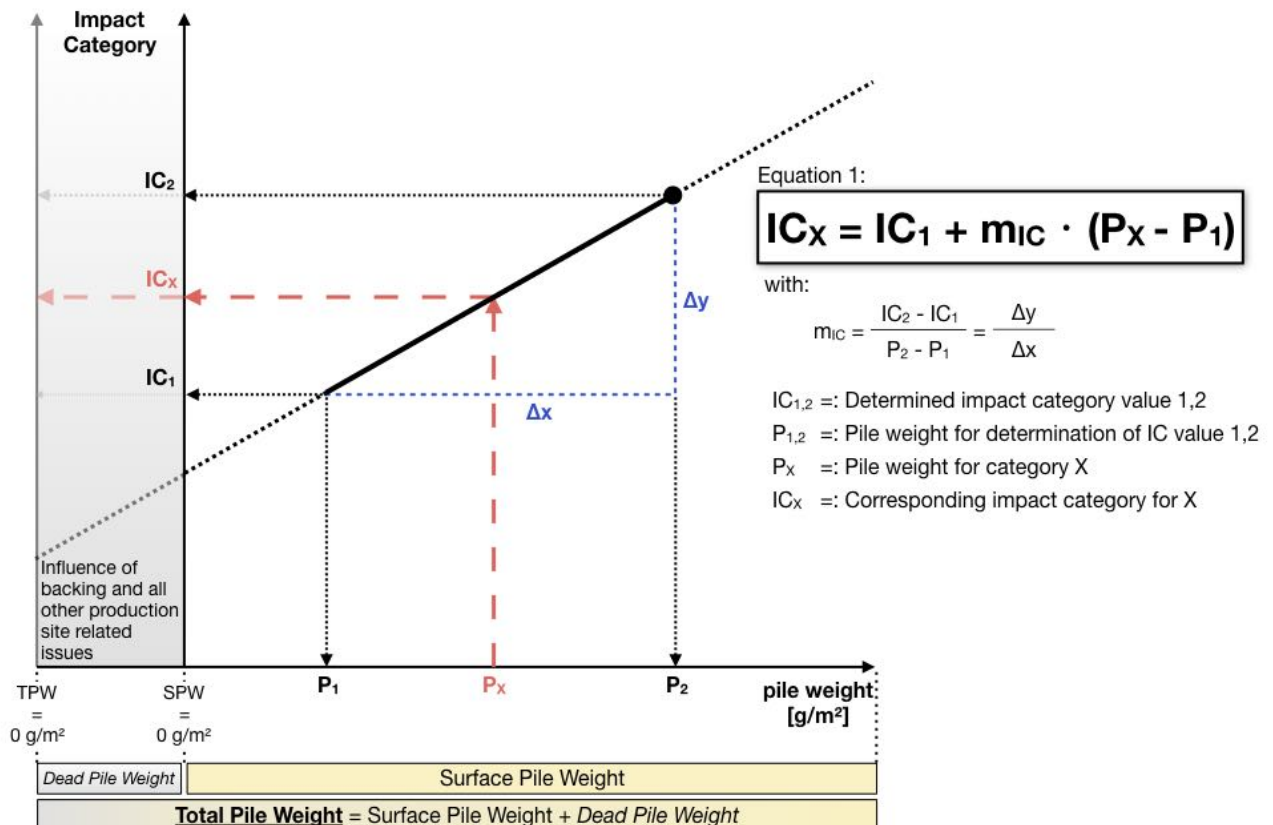
The total pile weight (TPW) is the sum of surface pile weight (SPW) and dead pile weight (DPW):

$$TPW = SPW + DPW$$



The surface pile weight is the technical relevant value according to EN 1307 and has to be mentioned in technical specification. As shown in the figure below alternatively to the total pile weight the surface pile weight can be used to calculate LCA results (IC<sub>x</sub>).

### General formula for the calculation of all impact categories IC<sub>x</sub>



**Graph 1:** General formula for the calculation of all impact categories IC<sub>x</sub>.

# 1. Information on the product PATTERN - PIXEL - PATCHWORK comfortBack

## Product description

### Constructional data according to EN 1307

| Name                | Value                                     | Unit             |
|---------------------|-------------------------------------------|------------------|
| Product form        | Modular carpet tiles                      | -                |
| Type of manufacture | Tufted carpet                             | -                |
| Yarn type           | Polyamide 6                               | -                |
| Total carpet weight | max. 4582                                 | g/m <sup>2</sup> |
| Surface pile weight | max. 372                                  | g/m <sup>2</sup> |
| Secondary backing   | Bitumen heavy backing with textile bottom | -                |

### Base materials/Ancillary materials

| Name                      | Value | Unit |
|---------------------------|-------|------|
| Polyamide 6               | 13,2  | %    |
| Polyester                 | 11,8  | %    |
| Polypropylene             | 0,7   | %    |
| SBR-Latex                 | 5,6   | %    |
| SBS-Copolymer             | 1,2   | %    |
| Bitumen                   | 13,0  | %    |
| Limestone                 | 47,2  | %    |
| Aluminium hydroxide (ATH) | 6,1   | %    |
| Glass fibre               | 0,2   | %    |
| Additives                 | 1,1   | %    |

## LCA: Calculation rules

### Declared Unit

| Name          | Value | Unit              |
|---------------|-------|-------------------|
| Declared unit | 1     | m <sup>2</sup>    |
| Grammage      | 4,582 | kg/m <sup>2</sup> |

## LCA: Scenarios and additional technical information

All indicated values refer to the declared functional unit

### Characteristic product properties: Information on biogenic Carbon

| Name                                                              | Value | Unit |
|-------------------------------------------------------------------|-------|------|
| Biogenic Carbon Content in accompanying packaging at factory gate | 0,057 | kg C |

1 kg biogenic Carbon is equivalent to 44/12 kg of CO<sub>2</sub>

### Transport to the construction site (A4)

| Name                                        | Value  | Unit    |
|---------------------------------------------|--------|---------|
| Litres of fuel (truck, EURO 0-6 mix)        | 0,0107 | l/100km |
| Transport distance                          | 700    | km      |
| Capacity utilisation (including empty runs) | 55     | %       |

### Installation in the building (A5)

| Name          | Value | Unit |
|---------------|-------|------|
| Material loss | 0,137 | kg   |

### Maintenance (B2)

| Name                                | Value | Unit           |
|-------------------------------------|-------|----------------|
| Maintenance cycle (vacuum cleaning) | 208   | 1/year         |
| Maintenance cycle (wet cleaning)    | 1,50  | 1/year         |
| Water consumption (wet cleaning)    | 0,004 | m <sup>3</sup> |
| Cleaning agent (wet cleaning)       | 0,09  | kg             |
| Electricity consumption             | 0,314 | kWh            |

Indication per m<sup>2</sup> and year

### Service life

| Name                                                                                          | Value                                                      | Unit |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------|------|
| Life Span (according to BBSR)                                                                 | 10                                                         | year |
| Declared product properties (at the gate) and finishes                                        | Corresponds to the specifications of EN 1307               | -    |
| An assumed quality of work, when installed in accordance with the manufacturer's instructions | Conforms to the manufacturer's instructions                | -    |
| Usage conditions, e.g. frequency of use, mechanical exposure                                  | Use in areas defined by the use class according to EN 1307 | -    |
| Maintenance e.g. required frequency, type and quality and replacement of components           | According to the manufacturers instructions                | -    |

### End of life scenarios (SC1-SC3)

| Name                                  | SC1  | SC2  | SC3  | Unit |
|---------------------------------------|------|------|------|------|
| Collected as mixed construction waste | 4,58 | 4,58 | -    | kg   |
| Collected separately                  | -    | -    | 4,58 | kg   |
| Landfilling                           | 4,58 | -    | -    | kg   |
| Energy recovery                       | -    | 4,58 | 2,13 | kg   |
| Recycling                             | -    | -    | 2,45 | kg   |

**SC1:** 100% landfill disposal, **SC2:** 100% municipal waste incineration (MWI) with R1>0.6, **SC3:** 100% recovery in the cement industry

## LCA: Results

The modules C3/1, C4/2 and C4/3 cause no additional impact (see chapter "LCA: Calculation rules"). Module C2 represents the transport for scenarios 1, 2 and 3. The values in column D result from module A5.

## Description of the system boundary

(X = Included in LCA; ND = Module or indicator not declared; MNR = Module not relevant)

| State of production |           |               | State of construction phase         |          | State of use |             |        |             |               |            |           | End of life state           |           |                  |          | Credits and loads after life            |  |
|---------------------|-----------|---------------|-------------------------------------|----------|--------------|-------------|--------|-------------|---------------|------------|-----------|-----------------------------|-----------|------------------|----------|-----------------------------------------|--|
| raw material supply | transport | manufacturing | transport from the gate to the site | assembly | use          | maintenance | repair | replacement | refurbishment | energy use | water use | deconstruction / demolition | transport | waste processing | disposal | reuse, recovery and recycling potential |  |
| A1                  | A2        | A3            | A4                                  | A5       | B1           | B2          | B3     | B4          | B5            | B6         | B7        | C1                          | C2        | C3               | C4       | D                                       |  |
| X                   | X         | X             | X                                   | X        | X            | X           | MNR    | MNR         | MNR           | ND         | ND        | X                           | X         | X                | X        | X                                       |  |

## Results of the LCA - Environmental impact according to EN 15804+A2: for 1 m<sup>2</sup> floor covering

| Core Indicator | Unit                                                                                                                                                                                                                                                                                                                                                                                                                | A1-A3     | A4       | A5       | B1       | B2       | C1       | C2       | C3/2     | C3/3     | C4/1      | D         | D/1      | D/2       | D/3       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|-----------|
| GWP-total      | [kg CO <sub>2</sub> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                           | 8,65E+00  | 2,80E-01 | 6,47E-01 | 0,00E+00 | 4,16E-01 | 0,00E+00 | 1,55E-02 | 5,00E+00 | 5,06E+00 | 3,22E-01  | -3,88E-02 | 0,00E+00 | -1,05E+00 | -3,73E-01 |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                           | 8,81E+00  | 2,75E-01 | 4,39E-01 | 0,00E+00 | 2,15E-01 | 0,00E+00 | 1,53E-02 | 4,99E+00 | 5,05E+00 | 3,25E-01  | -3,87E-02 | 0,00E+00 | -1,04E+00 | -3,72E-01 |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                           | -1,46E-01 | 3,56E-03 | 2,08E-01 | 0,00E+00 | 4,16E-03 | 0,00E+00 | 1,97E-04 | 6,66E-04 | 1,37E-03 | 0,00E+00  | -1,97E-04 | 0,00E+00 | -5,31E-03 | -5,79E-04 |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                           | 3,79E-03  | 1,56E-03 | 1,72E-04 | 0,00E+00 | 1,96E-01 | 0,00E+00 | 8,65E-05 | 2,56E-04 | 4,77E-04 | 1,58E-04  | -4,23E-06 | 0,00E+00 | -1,14E-04 | -1,73E-04 |
| ODP            | [kg CFC <sub>11</sub> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                         | 6,95E-10  | 1,67E-14 | 2,08E-11 | 0,00E+00 | 3,42E-08 | 0,00E+00 | 9,29E-16 | 4,17E-13 | 7,64E-13 | 4,36E-13  | -2,60E-13 | 0,00E+00 | -6,99E-12 | -5,27E-13 |
| AP             | [kg H <sup>+</sup> -Eq.]                                                                                                                                                                                                                                                                                                                                                                                            | 1,59E-02  | 1,66E-03 | 6,42E-04 | 0,00E+00 | 8,32E-04 | 0,00E+00 | 9,23E-05 | 3,68E-03 | 9,63E-04 | 5,07E-05  | 0,00E+00  | 0,00E+00 | -1,36E-03 | -1,33E-03 |
| EP-freshwater  | [kg P-Eq.]                                                                                                                                                                                                                                                                                                                                                                                                          | 3,29E-05  | 8,34E-07 | 1,04E-06 | 0,00E+00 | 5,19E-06 | 0,00E+00 | 4,63E-08 | 9,03E-07 | 1,09E-06 | 6,06E-05  | -5,29E-08 | 0,00E+00 | -1,42E-06 | -3,91E-07 |
| EP-marine      | [kg N-Eq.]                                                                                                                                                                                                                                                                                                                                                                                                          | 4,73E-03  | 8,17E-04 | 2,21E-04 | 0,00E+00 | 1,97E-04 | 0,00E+00 | 4,53E-05 | 1,74E-03 | 1,86E-03 | 2,13E-04  | -1,38E-05 | 0,00E+00 | -3,71E-04 | -4,12E-04 |
| EP-terrestrial | [kg N-Eq.]                                                                                                                                                                                                                                                                                                                                                                                                          | 4,38E-02  | 9,04E-03 | 2,20E-03 | 0,00E+00 | 2,83E-03 | 0,00E+00 | 5,02E-04 | 1,95E-02 | 7,99E-03 | 2,33E-03  | -1,48E-04 | 0,00E+00 | -3,98E-03 | -4,51E-03 |
| POCP           | [kg NMVOC-Eq.]                                                                                                                                                                                                                                                                                                                                                                                                      | 1,43E-02  | 1,54E-03 | 6,14E-04 | 4,18E-04 | 9,83E-04 | 0,00E+00 | 8,57E-05 | 4,47E-03 | 4,72E-03 | 6,85E-04  | -3,86E-05 | 0,00E+00 | -1,04E-03 | -1,25E-03 |
| ADPE           | [kg Sb-Eq.]                                                                                                                                                                                                                                                                                                                                                                                                         | 1,39E-06  | 2,33E-08 | 4,33E-08 | 0,00E+00 | 2,30E-07 | 0,00E+00 | 1,30E-09 | 2,64E-08 | 3,60E-08 | 2,25E-08  | -5,81E-09 | 0,00E+00 | -1,57E-07 | -3,50E-08 |
| ADPF           | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                | 1,97E+02  | 3,74E+00 | 6,10E+00 | 0,00E+00 | 5,90E+00 | 0,00E+00 | 2,08E-01 | 3,01E+00 | 3,95E+00 | 4,61E+00  | -6,58E-01 | 0,00E+00 | -1,77E+01 | -4,73E+01 |
| WDP            | [m <sup>3</sup> world-Eq. deprived]                                                                                                                                                                                                                                                                                                                                                                                 | 1,07E+00  | 2,50E-03 | 5,48E-02 | 0,00E+00 | 9,99E-02 | 0,00E+00 | 1,39E-04 | 7,00E-01 | 7,05E-01 | -3,44E-03 | -4,05E-03 | 0,00E+00 | -1,09E-01 | -5,55E-02 |
| Caption        | GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non- fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential |           |          |          |          |          |          |          |          |          |           |           |          |           |           |

## Results of the LCA - Indicators to describe resource use according to EN 15804+A2: for 1 m<sup>2</sup> floor covering

| Core Indicator | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A1-A3    | A4       | A5        | B1       | B2       | C1       | C2       | C3/2      | C3/3      | C4/1     | D         | D/1      | D/2       | D/3       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|----------|-----------|-----------|
| PERE           | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2,10E+01 | 2,13E-01 | 9,14E-01  | 0,00E+00 | 3,69E+00 | 0,00E+00 | 1,18E-02 | 5,37E-01  | 8,02E-01  | 3,79E-01 | -1,79E-01 | 0,00E+00 | -4,83E+00 | -5,01E-01 |
| PERM           | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2,54E-01 | 0,00E+00 | -2,54E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| PERT           | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2,12E+01 | 2,13E-01 | 6,60E-01  | 0,00E+00 | 3,69E+00 | 0,00E+00 | 1,18E-02 | 5,37E-01  | 8,02E-01  | 3,79E-01 | -1,79E-01 | 0,00E+00 | -4,83E+00 | -5,01E-01 |
| PENRE          | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,44E+02 | 3,74E+00 | 6,32E+00  | 0,00E+00 | 5,90E+00 | 0,00E+00 | 2,08E-01 | 5,53E+01  | 5,63E+01  | 4,61E+00 | -6,58E-01 | 0,00E+00 | -1,77E+01 | -4,73E+01 |
| PENRM          | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5,25E+01 | 0,00E+00 | -2,15E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -5,23E+01 | -5,23E+01 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| PENRT          | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,97E+02 | 3,74E+00 | 6,11E+00  | 0,00E+00 | 5,90E+00 | 0,00E+00 | 2,08E-01 | 3,01E+00  | 3,95E+00  | 4,61E+00 | -6,58E-01 | 0,00E+00 | -1,77E+01 | -4,73E+01 |
| SM             | [kg]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2,75E+00 | 0,00E+00 | 8,24E-02  | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 1,90E-01  |
| RSF            | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| NRSF           | [MJ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| FW             | [m <sup>3</sup> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4,32E-02 | 2,40E-04 | 1,84E-03  | 0,00E+00 | 3,34E-03 | 0,00E+00 | 1,34E-05 | 5,59E-01  | 1,68E-02  | 5,40E-05 | -1,72E-04 | 0,00E+00 | -4,62E-03 | -4,34E-03 |
| Caption        | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |          |          |           |          |          |          |          |           |           |          |           |          |           |           |

## Results of the LCA - Waste categories and output flows according to EN 15804+A2: for 1 m<sup>2</sup> floor covering

| Core Indicator | Unit                                                                                                                                                                                                                                                                    | A1-A3    | A4       | A5       | B1       | B2       | C1       | C2       | C3/2     | C3/3     | C4/1     | D         | D/1      | D/2       | D/3       |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|-----------|-----------|
| HWD            | [kg]                                                                                                                                                                                                                                                                    | 6,00E-04 | 1,79E-11 | 1,80E-05 | 0,00E+00 | 4,19E-05 | 0,00E+00 | 9,96E-13 | 4,32E-10 | 4,72E-10 | 7,11E-10 | -8,91E-11 | 0,00E+00 | -2,41E-09 | -2,53E-10 |
| NHWD           | [kg]                                                                                                                                                                                                                                                                    | 2,66E-01 | 5,36E-04 | 4,65E-02 | 0,00E+00 | 7,30E-03 | 0,00E+00 | 2,98E-05 | 1,28E+00 | 1,28E+00 | 4,57E+00 | -3,32E-04 | 0,00E+00 | -8,93E-03 | -1,33E-01 |
| RWD            | [kg]                                                                                                                                                                                                                                                                    | 3,98E-03 | 4,61E-06 | 1,23E-04 | 0,00E+00 | 3,76E-04 | 0,00E+00 | 2,56E-07 | 1,17E-04 | 1,86E-04 | 5,66E-05 | -5,15E-05 | 0,00E+00 | -1,39E-03 | -1,08E-04 |
| CRU            | [kg]                                                                                                                                                                                                                                                                    | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| MFR            | [kg]                                                                                                                                                                                                                                                                    | 1,79E-02 | 0,00E+00 | 1,30E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,41E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| MER            | [kg]                                                                                                                                                                                                                                                                    | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| EEE            | [MJ]                                                                                                                                                                                                                                                                    | 0,00E+00 | 0,00E+00 | 1,94E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,36E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| EET            | [MJ]                                                                                                                                                                                                                                                                    | 0,00E+00 | 0,00E+00 | 3,64E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,02E+01 | 6,39E+01 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |
| Caption        | HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy |          |          |          |          |          |          |          |          |          |          |           |          |           |           |

## Results of the LCA - Additional impact categories according to EN 15804+A2: for 1 m<sup>2</sup> floor covering

| Core Indicator | Unit                                                                                                                                                                                                                                                                                                                                                           | A1-A3    | A4       | A5       | B1       | B2       | C1       | C2       | C3/2     | C3/3     | C4/1     | D         | D/1      | D/2      | D/3       |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|----------|-----------|
| PM             | [Disease Incidence]                                                                                                                                                                                                                                                                                                                                            | 1,16E-07 | 9,61E-09 | 4,45E-09 | 0,00E+00 | 6,84E-08 | 0,00E+00 | 5,33E-10 | 2,16E-08 | 2,34E-08 | 9,26E-09 | -4,20E-10 | 0,00E+00 | 0,00E+00 | -1,83E-08 |
| IRP            | [kBq U235-Eq.]                                                                                                                                                                                                                                                                                                                                                 | 6,48E-01 | 6,76E-04 | 2,01E-02 | 0,00E+00 | 6,78E-02 | 0,00E+00 | 3,75E-05 | 1,79E-02 | 2,95E-02 | 8,36E-03 | -8,72E-03 | 0,00E+00 | 0,00E+00 | -1,22E-02 |
| ETP-fw         | [CTUe]                                                                                                                                                                                                                                                                                                                                                         | 9,76E+01 | 2,59E+00 | 3,06E+00 | 3,60E-03 | 2,69E+00 | 0,00E+00 | 1,44E-01 | 1,66E+00 | 2,21E+00 | 4,51E+00 | -1,44E-01 | 0,00E+00 | 0,00E+00 | -8,38E+00 |
| HTP-c          | [CTUh]                                                                                                                                                                                                                                                                                                                                                         | 2,92E-09 | 5,24E-11 | 9,17E-11 | 0,00E+00 | 6,21E-10 | 0,00E+00 | 2,91E-12 | 7,95E-11 | 9,21E-11 | 2,02E-10 | -6,63E-12 | 0,00E+00 | 0,00E+00 | -9,79E-11 |
| HTP-nc         | [CTUh]                                                                                                                                                                                                                                                                                                                                                         | 1,37E-07 | 3,10E-09 | 4,40E-09 | 2,60E-11 | 9,46E-09 | 0,00E+00 | 1,73E-10 | 5,84E-09 | 6,47E-09 | 1,70E-08 | -2,55E-10 | 0,00E+00 | 0,00E+00 | -5,81E-09 |
| SQP            | [-]                                                                                                                                                                                                                                                                                                                                                            | ND       | ND       | ND       | ND       | ND       | ND       | ND       | ND       | ND       | ND       | ND        | ND       | ND       | ND        |
| Caption        | PM = Potential incidence of disease due to PM emissions; IRP = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index |          |          |          |          |          |          |          |          |          |          |           |          |          |           |

No substantiated values can be given for the SQP indicator with the existing database.

The result figures given in module B2 refer to a period of 1 year because a reference service life is not declared. They have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration.

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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from 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 or as there is limited experienced with the indicator.

## References

### EN 1307

DIN EN 1307: 2014+A1:2016+A2:2018-05: Textile floor coverings - Classification

### EN 13501-1

DIN EN 13501-1:2019-05: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

### EN 14041

DIN EN 14041: 2018-05 and DIN EN 14041: 2008-05: Resilient, textile and laminate floor coverings - Essential characteristics

### EN 15804

DIN EN 15804:2012+A2:2019 + AC:2021, Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products

### EN 16810

DIN EN 16810: 2017-08: Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules

### ISO 10874

DIN EN ISO 10874: 2012+A1:2021-04: Resilient, textile and laminate floor coverings - Classification

### ISO 14025

DIN EN /ISO 14025:2011-10/, Environmental labels and declarations – Type III environmental declarations – Principles and procedures

### ISO 14040

DIN EN ISO 14040:2006+A1:2020 Environmental management - Life cycle assessment - Principles and framework

### ISO 14044

DIN EN ISO 14044:2006+A1:2018+A2:2020 Environmental management - Life cycle assessment - Requirements and guidelines

### ISO 15686

ISO 15686: Buildings and constructed assets - Service life planning

ISO 15686-1: 2011-05: Part 1: General principles and framework

ISO 15686-2: 2012-05: Part 2: Service life prediction procedures

ISO 15686-7: 2017-04: Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

### Regulation (EU) No. 305/2011

Regulation No. 305/2011 Construction Products Regulation (CPR) of the European Council and of the European Parliament, April 2011

### General Instructions for the IBU-EPD Program

General Instructions for the EPD-Program of the Institut Bauen und Umwelt e.V., The Preparation of Environmental Product Declarations - EPDs, version 2.0, Institut Bauen und Umwelt e.V., Berlin, January 2021, [www.ibu-epd.de](http://www.ibu-epd.de)

### BNB, Nutzungsdauer von Bauteilen

Bewertungssystem Nachhaltiges Bauen (BNB), Nutzungsdauer von Bauteilen, Bundesministerium des Inneren, für Bau und Heimat, 24.02.2017

### ECHA candidate list

Candidate List of substances of very high concern (SVHCs) for authorisation, 08.07.2021, European Chemicals Agency (ECHA), Helsinki, Finland

### ecoinvent

ecoinvent, Zurich, Switzerland, database version 3.7, published September 2020

### GaBi database

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### PCR Part A

Product Category Rules for Building-Related Products and Services Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, V1.2, Berlin: Institut Bauen und Umwelt e.V. (IBU), November 2021

### PCR Part B

Product Category Rules for Building-Related Products and Services Part B: Requirements on the EPD for floor coverings, V1.2, Berlin: Institut Bauen und Umwelt e.V. (IBU), February 2018

### PRODIS

Product Information System (PRODIS) of the European Carpet Industry, Gemeinschaft umweltfreundlicher Teppichboden e.V (GUT) and European Carpet and Rug Association (ECRA), <http://www.pro-dis.info>

### REACH

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), June 2017, last update: 08.07.2021

### VDZ e.V.

Association of German Cement Works, Ed. Environmental Data of the German Cement Industry 2020