

# EPD Environmental Product Declaration

5CDEB131



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## Milliken

### Per Contra

surface pile weight: 400 g/m<sup>2</sup>

pile material: polyamide 6 with 20% recycled content

backing: Comfort Lite®/Comfort Plus® recycled cushion back

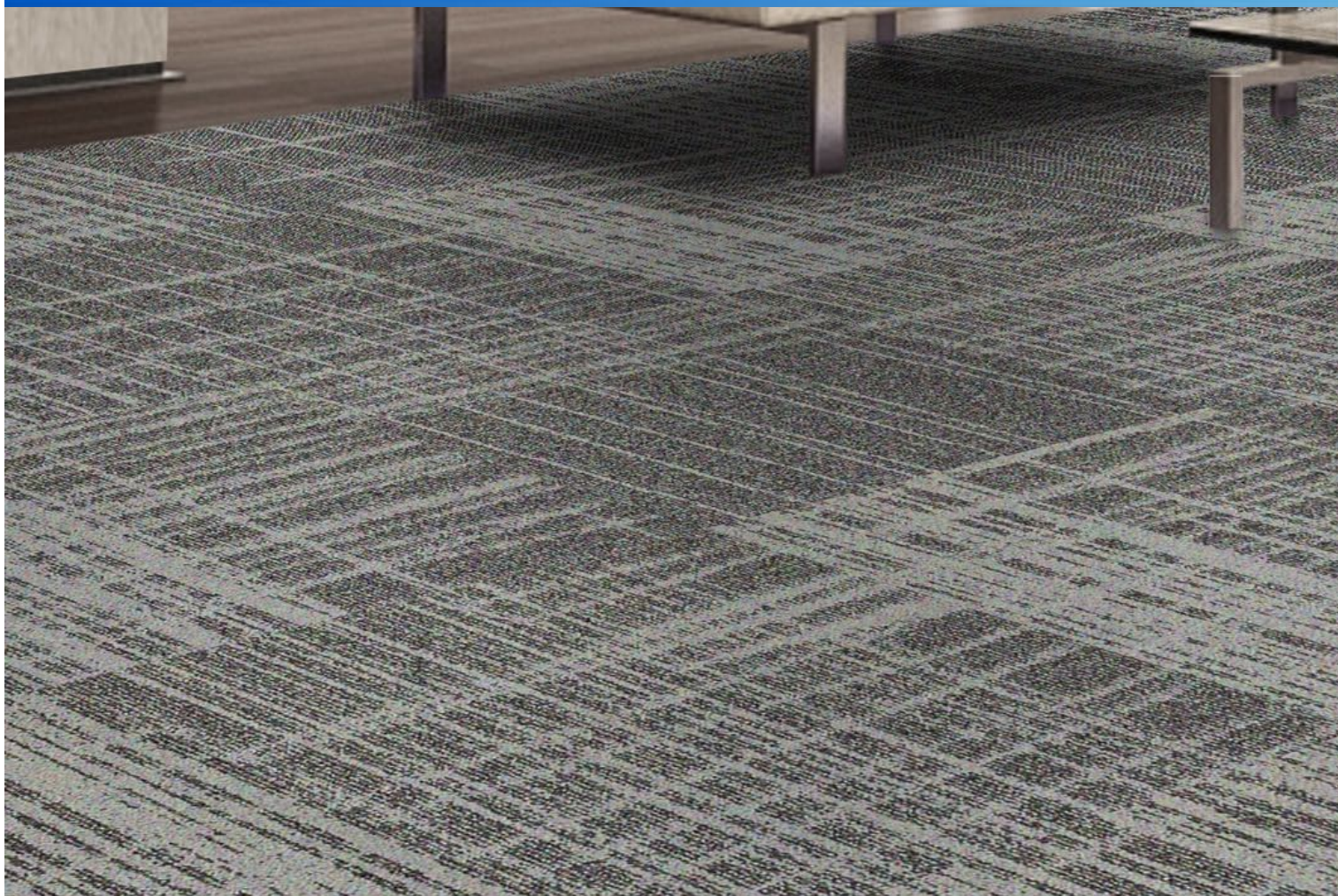
**These EPD data are only valid in combination with**

**the environmental product declaration EPD-MIL-20230034-CBC1-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 **900 g/m<sup>2</sup>**.

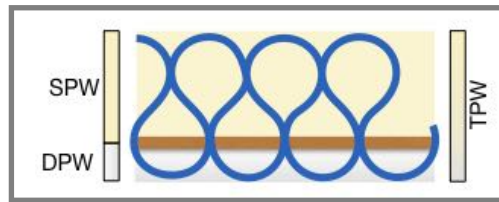
The respective declaration number is **EPD-MIL-20230034-CBC1-EN**.

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).

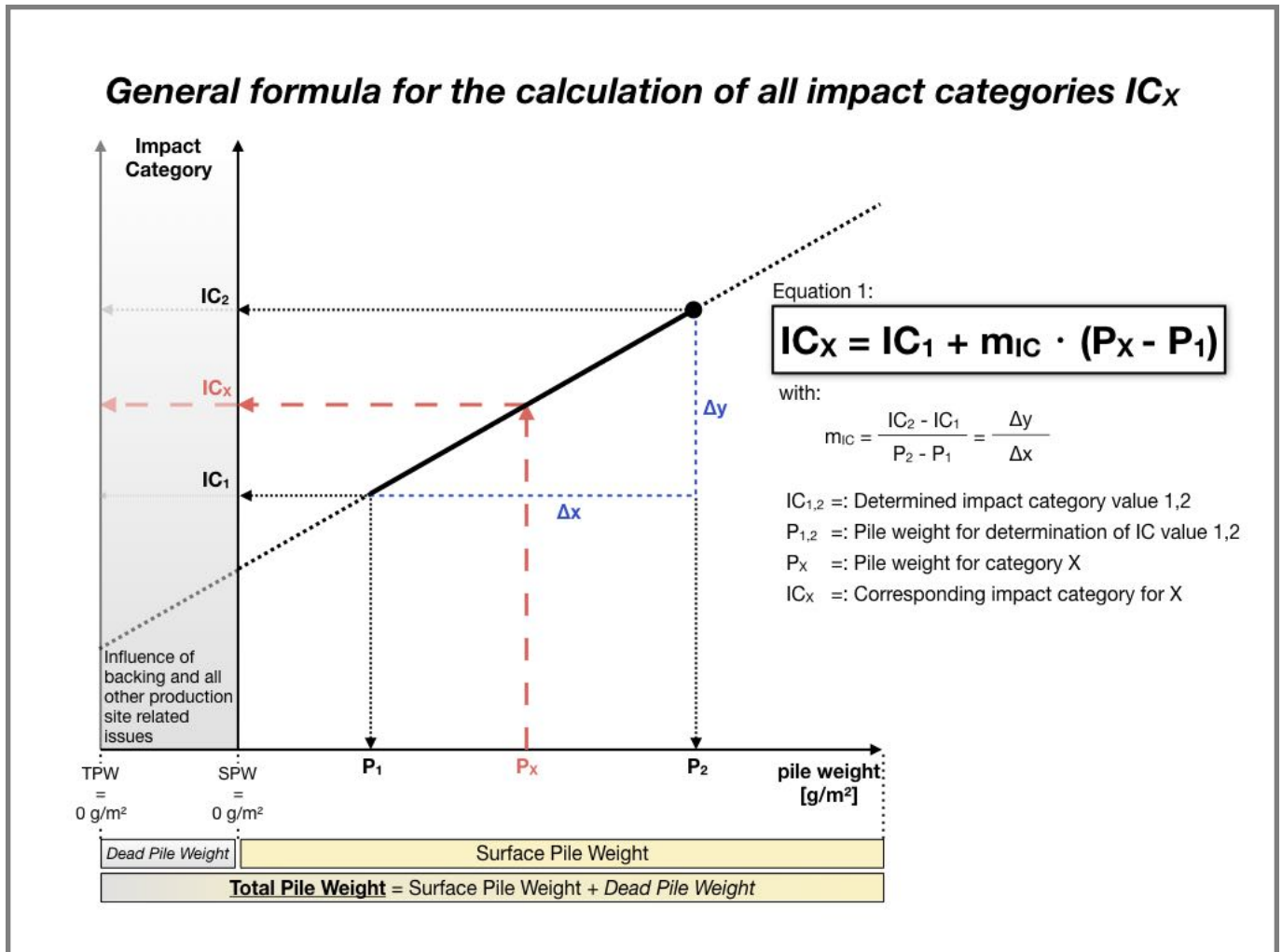
LCA results show a linear correlation with the total pile weight, for all impact categories (IC) and all modules (A-D). It is possible to calculate specific LCA results (IC<sub>x</sub>) for every carpet (x) within the declared group of products in relation to its total pile weight (P<sub>x</sub>).

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>).



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





# 1. Information on the product Per Contra

## Product description

### Constructional data according to EN 1307

| Name                | Value                                     | Unit             |
|---------------------|---|------------------|
| Product form        | Tiles or modules                          | -                |
| Type of manufacture | Tufted carpet                             | -                |
| Yarn type           | polyamide 6 with 20% recycled content     | -                |
| Total carpet weight | max. 4320                                 | g/m <sup>2</sup> |
| Surface pile weight | max. 400                                  | g/m <sup>2</sup> |
| Secondary backing   | Comfort Lite®/Plus® recycled cushion back | -                |

### Base materials/Ancillary materials

| Name                         | Value | Unit |
|------------------------------|-------|------|
| Polyamide 6                  | 15,5  | %    |
| Polyester                    | 5,0   | %    |
| Polypropylene                | 1,2   | %    |
| Limestone                    | 40,5  | %    |
| Bitumen                      | 11,7  | %    |
| Aluminium hydroxide (ATH)    | 7,3   | %    |
| Ethylene vinyl acetate (EVA) | 2,9   | %    |
| Glass fibre                  | 1,0   | %    |
| Polyurethane                 | 14,3  | %    |
| Additives                    | 0,5   | %    |

## LCA: Calculation rules

### Declared Unit

| Name          | Value | Unit              |
|---------------|-------|-------------------|
| Declared unit | 1     | m <sup>2</sup>    |
| Grammage      | 4,32  | 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 | 0,086 | 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)        | 0,0101 | l/100km |
| Transport distance                          | 700    | km      |
| Capacity utilisation (including empty runs) | 55     | %       |

### Installation in the building (A5)

| Name          | Value | Unit |
|---------------|-------|------|
| Material loss | 0,130 | 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 | 4,32 | 4,32 | -    | kg   |
| Collected separately                  | -    | -    | 4,32 | kg   |
| Landfilling                           | 4,32 | -    | -    | kg   |
| Energy recovery                       | -    | 4,32 | 2,21 | kg   |
| Recycling                             | -    | -    | 2,11 | kg   |

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

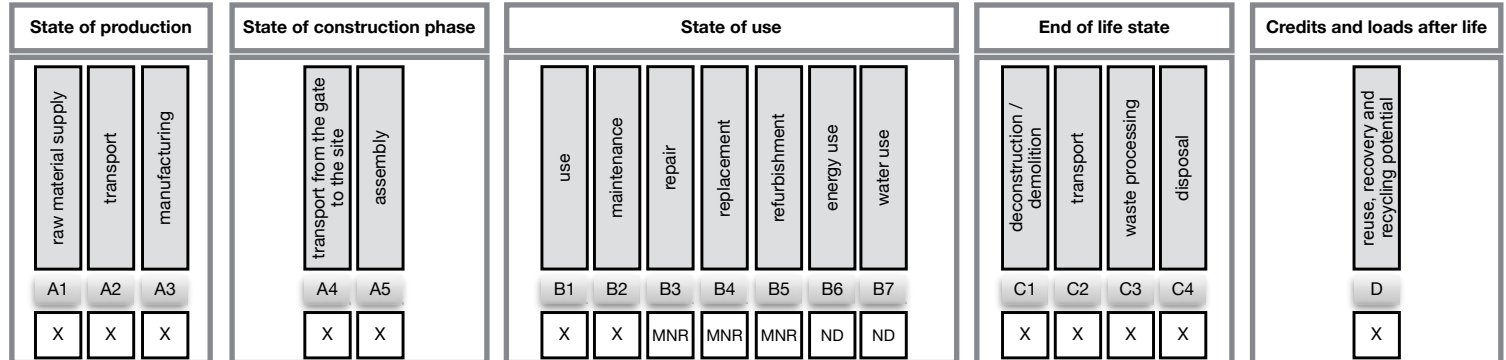


## LCA: Results

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)



### 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.]  | 8,13E+00  | 2,69E-01 | 7,41E-01 | 0,00E+00 | 4,16E-01 | 0,00E+00 | 1,47E-02 | 5,25E+00 | 5,31E+00 | 3,04E-01  | -3,68E-02 | 0,00E+00 | -9,78E-01 | -3,70E-01 |  |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]  | 8,43E+00  | 2,64E-01 | 4,34E-01 | 0,00E+00 | 2,15E-01 | 0,00E+00 | 1,44E-02 | 5,25E+00 | 5,31E+00 | 3,04E-01  | -3,66E-02 | 0,00E+00 | -9,70E-01 | -3,69E-01 |  |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]  | -3,29E-01 | 3,42E-03 | 3,05E-01 | 0,00E+00 | 4,16E-03 | 0,00E+00 | 1,86E-04 | 6,66E-04 | 1,33E-03 | -6,38E-10 | -1,87E-04 | 0,00E+00 | -4,95E-03 | -5,95E-04 |  |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]  | 4,31E-02  | 1,49E-03 | 1,35E-03 | 0,00E+00 | 1,96E-01 | 0,00E+00 | 8,15E-05 | 2,20E-04 | 4,29E-04 | 1,49E-04  | -4,01E-06 | 0,00E+00 | -1,06E-04 | -1,75E-04 |  |
| ODP            | [kg CFC <sub>11</sub> -Eq.]  | 9,38E-10  | 1,61E-14 | 2,82E-11 | 0,00E+00 | 3,42E-08 | 0,00E+00 | 8,76E-16 | 4,30E-13 | 7,56E-13 | 4,11E-13  | -2,46E-13 | 0,00E+00 | -6,53E-12 | -5,02E-13 |  |
| AP             | [kg H <sub>2</sub> -Eq.]   | 1,54E-02  | 1,60E-03 | 6,50E-04 | 0,00E+00 | 8,32E-04 | 0,00E+00 | 8,71E-05 | 4,42E-03 | 4,69E-03 | 9,08E-04  | -4,80E-05 | 0,00E+00 | -1,28E-03 | -1,36E-03 |  |
| EP-freshwater  | [kg P-Eq.]   | 2,34E-05  | 8,00E-07 | 7,51E-07 | 0,00E+00 | 5,19E-06 | 0,00E+00 | 4,37E-08 | 7,89E-07 | 9,62E-07 | 5,72E-05  | -5,01E-08 | 0,00E+00 | -1,33E-06 | -3,92E-07 |  |
| EP-marine      | [kg N-Eq.]   | 4,45E-03  | 7,83E-04 | 2,24E-04 | 0,00E+00 | 1,97E-04 | 0,00E+00 | 4,27E-05 | 2,14E-03 | 2,26E-03 | 2,00E-04  | -1,30E-05 | 0,00E+00 | -3,46E-04 | -4,16E-04 |  |
| EP-terrestrial | [kg N-Eq.]   | 4,27E-02  | 8,67E-03 | 2,29E-03 | 0,00E+00 | 2,83E-03 | 0,00E+00 | 4,73E-04 | 2,39E-02 | 1,09E-02 | 2,20E-03  | -1,40E-04 | 0,00E+00 | -3,71E-03 | -4,56E-03 |  |
| POCP           | [kg NMVOC-Eq.]   | 1,36E-02  | 1,48E-03 | 6,24E-04 | 4,18E-04 | 9,83E-04 | 0,00E+00 | 8,08E-05 | 5,49E-03 | 5,72E-03 | 6,46E-04  | -3,65E-05 | 0,00E+00 | -9,69E-04 | -1,25E-03 |  |
| ADPE           | [kg Sb-Eq.]  | 1,78E-06  | 2,24E-08 | 5,48E-08 | 0,00E+00 | 2,30E-07 | 0,00E+00 | 1,23E-09 | 2,51E-08 | 3,41E-08 | 2,13E-08  | -5,50E-09 | 0,00E+00 | -1,46E-07 | -3,51E-08 |  |
| ADPF           | [MJ]   | 1,82E+02  | 3,58E+00 | 5,66E+00 | 0,00E+00 | 5,90E+00 | 0,00E+00 | 1,95E-01 | 2,93E+00 | 3,82E+00 | 4,35E+00  | -8,21E-01 | 0,00E+00 | -1,65E+01 | -4,50E+01 |  |
| WDP            | [m <sup>3</sup> world-Eq. deprived]  | 5,73E-01  | 2,40E-03 | 3,98E-02 | 0,00E+00 | 9,99E-02 | 0,00E+00 | 1,31E-04 | 7,03E-01 | 7,08E-01 | -3,25E-03 | -3,83E-03 | 0,00E+00 | -1,02E-01 | -5,43E-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]  | 3,05E+01 | 2,03E-01 | 1,33E+00  | 0,00E+00 | 3,69E+00 | 0,00E+00 | 1,11E-02 | 5,03E-01  | 7,54E-01  | 3,57E-01 | -1,70E-01 | 0,00E+00 | -4,51E+00 | -5,11E-01 |  |
| PERM           | [MJ]  | 3,84E-01 | 0,00E+00 | -3,84E-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]  | 3,09E+01 | 2,03E-01 | 9,52E-01  | 0,00E+00 | 3,69E+00 | 0,00E+00 | 1,11E-02 | 5,03E-01  | 7,54E-01  | 3,57E-01 | -1,70E-01 | 0,00E+00 | -4,51E+00 | -5,11E-01 |  |
| PENRE          | [MJ]  | 1,33E+02 | 3,59E+00 | 5,88E+00  | 0,00E+00 | 5,90E+00 | 0,00E+00 | 1,96E-01 | 5,24E+01  | 5,33E+01  | 4,35E+00 | -6,22E-01 | 0,00E+00 | -1,65E+01 | -4,50E+01 |  |
| PENRM          | [MJ]  | 4,97E+01 | 0,00E+00 | -2,10E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -4,95E+01 | -4,95E+01 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  | 0,00E+00  |  |
| PENRT          | [MJ]  | 1,82E+02 | 3,59E+00 | 5,67E+00  | 0,00E+00 | 5,90E+00 | 0,00E+00 | 1,96E-01 | 2,93E+00  | 3,82E+00  | 4,35E+00 | -6,22E-01 | 0,00E+00 | -1,65E+01 | -4,50E+01 |  |
| SM             | [kg]  | 2,74E+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  | 2,50E-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> ]   | 3,69E-02 | 2,30E-04 | 1,65E-03  | 0,00E+00 | 3,34E-03 | 0,00E+00 | 1,26E-05 | 5,46E-01  | 1,69E-02  | 5,09E-05 | -1,62E-04 | 0,00E+00 | -4,31E-03 | -4,16E-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]  | 7,83E-08 | 1,72E-11 | 2,36E-09 | 0,00E+00 | 4,19E-05 | 0,00E+00 | 9,38E-13 | 4,32E-10 | 4,69E-10 | 6,70E-10 | -8,43E-11 | 0,00E+00 | -2,24E-09 | -2,76E-10 |  |
| NHWD           | [kg]  | 2,84E-01 | 5,14E-04 | 4,10E-02 | 0,00E+00 | 7,30E-03 | 0,00E+00 | 2,81E-05 | 1,08E+00 | 1,08E+00 | 4,30E+00 | -3,13E-04 | 0,00E+00 | -8,33E-03 | -1,51E-01 |  |
| RWD            | [kg]  | 3,29E-03 | 4,42E-06 | 1,02E-04 | 0,00E+00 | 3,76E-04 | 0,00E+00 | 2,41E-07 | 1,11E-04 | 1,75E-04 | 5,33E-05 | -4,88E-05 | 0,00E+00 | -1,29E-03 | -1,11E-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]  | 0,00E+00 | 0,00E+00 | 1,97E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,23E+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 | 2,37E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,79E+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 | 4,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,26E+01 | 7,06E+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]  | 1,33E-07 | 9,21E-09 | 4,95E-09 | 0,00E+00 | 6,84E-08 | 0,00E+00 | 5,03E-10 | 2,12E-08 | 2,29E-08 | 8,73E-09 | -3,97E-10 | 0,00E+00 | 0,00E+00 | -1,88E-08 |
| IRP            | [kBq U235-Eq.]   | 5,12E-01 | 6,48E-04 | 1,59E-02 | 0,00E+00 | 6,78E-02 | 0,00E+00 | 3,53E-05 | 1,68E-02 | 2,78E-02 | 7,88E-03 | -8,25E-03 | 0,00E+00 | 0,00E+00 | -1,29E-02 |
| ETP-fw         | [CTUe]   | 8,16E+01 | 2,49E+00 | 2,58E+00 | 3,60E-03 | 2,69E+00 | 0,00E+00 | 1,36E-01 | 1,50E+00 | 2,02E+00 | 4,25E+00 | -1,36E-01 | 0,00E+00 | 0,00E+00 | -8,04E+00 |
| HTP-c          | [CTUh]   | 2,50E-09 | 5,02E-11 | 7,90E-11 | 0,00E+00 | 6,21E-10 | 0,00E+00 | 2,74E-12 | 7,40E-11 | 8,58E-11 | 1,91E-10 | -6,27E-12 | 0,00E+00 | 0,00E+00 | -9,83E-11 |
| HTP-nc         | [CTUh]   | 1,02E-07 | 2,98E-09 | 3,30E-09 | 2,60E-11 | 9,46E-09 | 0,00E+00 | 1,62E-10 | 5,04E-09 | 5,62E-09 | 1,60E-08 | -2,41E-10 | 0,00E+00 | 0,00E+00 | -5,95E-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**  
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- ISO 14025**  
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