

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | Alloc AS                             |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher                | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number       | EPD-BAC-20220057-CBA1-EN             |
| Issue date               | 01.02.2023                           |
| Valid to                 | 31.01.2028                           |

**BerryAlloc HPF**  
High Pressure Laminate Floor Covering

[www.ibu-epd.com](http://www.ibu-epd.com) | <https://epd-online.com>






ECO PLATFORM

**EPD**  
VERIFIED



## General Information

|  |  |   |  |   |  |                                     |  |
|--|--|---|--|---|--|-------------------------------------|--|
| <p><b>BerryAlloc</b></p> <hr/> <p><b>Programme holder</b><br/>         IBU – Institut Bauen und Umwelt e.V.<br/>         Hegelplatz 1<br/>         10117 Berlin<br/>         Germany</p> <hr/> <p><b>Declaration number</b><br/>         EPD-BAC-20220057-CBA1-EN</p> <hr/> <p><b>This declaration is based on the product category rules:</b><br/>         Floor coverings, 09.2022<br/>         (PCR checked and approved by the SVR)</p> <hr/> <p><b>Issue date</b><br/>         01.02.2023</p> <hr/> <p><b>Valid to</b><br/>         31.01.2028</p> <hr/> <div style="text-align: center;"> <br/> <hr/> <p>Dipl. Ing. Hans Peters<br/>         (chairman of Institut Bauen und Umwelt e.V.)</p> </div> <hr/> <div style="text-align: center;"> <br/> <hr/> <p>Dr. Alexander Röder<br/>         (Managing Director Institut Bauen und Umwelt e.V.)</p> </div> | <p><b>BerryAlloc HPF</b></p> <hr/> <p><b>Owner of the declaration</b><br/>         Alloc AS<br/>         Fiboveien 26<br/>         4580 Lyngdal<br/>         Norway</p> <hr/> <p><b>Declared product / declared unit</b><br/>         1 m<sup>2</sup> high pressure laminate floor covering (9 mm, 8.67 kg/m<sup>2</sup>)</p> <hr/> <p><b>Scope:</b><br/>         This Environmental Product Declaration refers to 1 m<sup>2</sup> HPF floor covering with a thickness of 9 mm and a grammage of 8.67 kg/m<sup>2</sup>. The production site is located in Lyngdal, Norway.<br/>         The data is based on production during 2019/2020.<br/>         In order to enable the user of this EPD to calculate the LCA results for different product variances this EPD contains the respective calculation factors:</p> <ul style="list-style-type: none"> <li>• Additional thickness: 10.3 mm</li> <li>• Product including underlayment: for thickness 9 mm and 10.3 mm</li> </ul> <p>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.<br/>         The EPD was created according to the specifications of <i>EN 15804+A2</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p><b>Verification</b></p> <table border="1" style="width: 100%;"> <tr> <td colspan="2">The standard <i>EN 15804</i> serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to <i>ISO 14025:2011</i></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/> internally</td> <td style="text-align: center;"><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <div style="text-align: center;"> <br/> <hr/> <p>Dipl. Natw. ETH Sascha Iqbal<br/>         (Independent verifier)</p> </div> | The standard <i>EN 15804</i> serves as the core PCR |  | Independent verification of the declaration and data according to <i>ISO 14025:2011</i> |  | <input type="checkbox"/> internally | <input checked="" type="checkbox"/> externally |
| The standard <i>EN 15804</i> serves as the core PCR  |  |   |  |   |  |                                     |  |
| Independent verification of the declaration and data according to <i>ISO 14025:2011</i>  |  |   |  |   |  |                                     |  |
| <input type="checkbox"/> internally  | <input checked="" type="checkbox"/> externally   |   |  |   |  |                                     |  |

## Product

### Product description/Product definition

BerryAlloc HPF is a durable high pressure laminate floor covering performing according to the product standard *EN 13329* and *Regulation (EU) No 305/2011*, taking into consideration *EN 14041*. The complete manufacturing process is located in Lyngdal, Norway. The surface consists of several paper layers. The top layer has a transparent wear-resistant surface above a decorative paper. The body of the top layer is made of Kraft papers with a more flexible performance. The core consists of an impregnated high-density fiberboard (HDF). The backing layer consists of a balancing paper with PE. Optionally the product contains an underlayment. This underlayment (HEPS, High Elastified Polystyrene) is pre-attached to the backside of the floorboard.

The declared product has a thickness of 9 mm. In order to enable the user of this EPD to calculate the LCA results for different product variances this EPD contains the respective calculation factors:

- Additional thickness: 10.3 mm
- Product including underlayment: for thickness 9 mm and 10.3 mm

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA, with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies. The product needs a declaration of performance taking into consideration *EN 13329* and the CE-marking.

For the application and use the respective national provisions apply.

### Application

The HPF floor covering described in this EPD is intended to be used within a building, for the classes 21-23 and 31-34 described in the accompanying descriptions, according to *EN 13329* and *ISO 10 874*.

### Technical Data

#### Constructional data

| Name  | Value       | Unit              |
|---|-------------|-------------------|
| Product thickness (thickness of the element) acc. to EN 13329 | 9 - 10.3    | mm                |
| Grammage (9 mm)   | 8670        | g/m <sup>2</sup>  |
| Abrasion Class acc. to AC EN 13329                            | AC6         | -                 |
| Product Form  | Panel       | -                 |
| Length of the surface layer acc. to EN 13329                  | 1207 - 2410 | mm                |
| Width of the surface layer acc. to EN 13329                   | 198 - 303   | mm                |
| Density acc. to EN 323  | 930 - 1030  | kg/m <sup>3</sup> |
| Layer thickness (top layer) EN 324-1                          | 0.6         | mm                |

For detailed technical data: Technical datasheet for each individual product are available.

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 13329*.

#### Base materials/Ancillary materials

The composition of a HPF floor covering in mass % is:

- 83 % High-Density Fibre-board (HDF)
- 7 % paper
- 4,5 % resin
- 3,5 % aluminium (locking system)
- 1,5 % plastic
- <1 % corundum

#### HDF (high-density fibreboard)

The core board is an HDF board composed of wood fibres and a thermosetting resin, mainly MUF (melamine-urea-formaldehyde) resin.

#### Paper

The renewable resource wood is the main raw material for paper production.

#### Resins

The used amino resins are melamine-urea-formaldehyde and phenol resins. Amino resins are thermosetting resins that are cured using heat and pressure.

#### Aluminium

Mechanical locking system that allows planks to be precisely aligned and joined without using glue or special tools.

#### Plastic

HEPS underlayment for step-sound reduction.

#### Corundum

Bauxite is the mineral resource of corundum. By using aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) the surface layer of a HPF floor covering obtains abrasion and wear resistance. HPF floor coverings do not contain substances that are listed in the "Candidate List of Substances of Very

High Concern for Authorisation" *REACH* (version as of 10-Jun-2022, 224 list entry results).

### Reference service life

The estimated service life of a floor covering depends e.g. on the type of floor covering and the area of application, the user himself and the maintenance of the product. Comparisons of different floor coverings are only allowed if these parameters are considered in a consistent way.

According to Bundesinstitut für Bau, Stadt und Raumforschung (*BBSR*), a reference service life of 20 years can be assumed for laminate floor coverings.

Technical service life can be considerably longer. 20 years is the minimum reference service life for HPF floor coverings. For residential use, BerryAlloc offers a warranty for a lifetime > 20 years, while for commercial use BerryAlloc offers a warranty of 10 years ([www.berryalloc.com](http://www.berryalloc.com)).

The use stage is declared in this EPD for a one year usage assuming a 90 % domestic and 10 % commercial level of use.

#### Factors for different thicknesses

The LCA results for the HPF floor covering declared in this EPD refer to a laminate floor covering with the chosen thickness of 9 mm, which meets the requirements of the use class 34 according to *EN 13329* and *EN ISO 10874*. In order to enable the user of the EPD to calculate the results for a thickness of 10.3 mm and use class 34 the factors in the following table can be used for the calculation. For A1-A3, A4, A5, B2 and D the LCA results of the declared product (thickness 9 mm) have to be multiplied by these factors.

#### Factors to calculate the results for a 10.3 mm HPF flooring:

| thickness        | 10,3 mm           |                |                |                |                |                |                |               |
|------------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Use class        | 34                |                |                |                |                |                |                |               |
| Parameter        | Factors for A1-A3 | Factors for A4 | Factors for A5 | Factors for B1 | Factors for B2 | Factors for C2 | Factors for C3 | Factors for D |
| GWP – total      | 1,32              |                |                |                |                |                |                |               |
| GWP – fossil     | 1,12              |                |                |                |                |                |                |               |
| GWP – biogenic   | 1,18              |                |                |                |                |                |                |               |
| GWP – luluc      | 1,16              |                |                |                |                |                |                |               |
| ODP              | 1,05              |                |                |                |                |                |                |               |
| AP               | 1,09              |                |                |                |                |                |                |               |
| EP – freshwater  | 1,10              | 1,17           | 1,32           | 1,00           | 1,00           | 1,16           | 1,17           | 1,17          |
| EP – marine      | 1,09              |                |                |                |                |                |                |               |
| EP – terrestrial | 1,08              |                |                |                |                |                |                |               |
| POCP             | 1,08              |                |                |                |                |                |                |               |
| ADPE             | 1,12              |                |                |                |                |                |                |               |
| ADPF             | 1,11              |                |                |                |                |                |                |               |
| PERT             | 1,18              |                |                |                |                |                |                |               |
| PENRT            | 1,12              |                |                |                |                |                |                |               |

#### Factors to calculate the results for a 9 mm HPF flooring with underlayment:

| thickness        | 9 mm with underlayment |                |                |                |                |                |                |               |
|------------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Use class        | 34                     |                |                |                |                |                |                |               |
| Parameter        | Factors for A1-A3      | Factors for A4 | Factors for A5 | Factors for B1 | Factors for B2 | Factors for C2 | Factors for C3 | Factors for D |
| GWP – total      | 0,92                   |                |                |                |                |                | 1,02           |               |
| GWP – fossil     | 1,04                   |                |                |                |                |                | 3,64           |               |
| GWP – biogenic   | 1,00                   |                |                |                |                |                | 1,00           |               |
| GWP – luluc      | 1,01                   |                |                |                |                |                | 1,09           |               |
| ODP              | 1,00                   |                |                |                |                |                | 1,15           |               |
| AP               | 1,01                   |                |                |                |                |                | 1,01           |               |
| EP – freshwater  | 1,02                   | 1,01           | 1,00           | 1,00           | 1,01           | 1,01           | 1,12           | 1,01          |
| EP – marine      | 1,01                   |                |                |                |                |                | 1,01           |               |
| EP – terrestrial | 1,01                   |                |                |                |                |                | 1,02           |               |
| POCP             | 1,01                   |                |                |                |                |                | 1,01           |               |
| ADPE             | 1,03                   |                |                |                |                |                | 1,15           |               |
| ADPF             | 1,05                   |                |                |                |                |                | 1,22           |               |
| PERT             | 1,01                   |                |                |                |                |                | 1,19           |               |
| PENRT            | 1,05                   |                |                |                |                |                | 1,22           |               |

## Factors to calculate the results for 10.3 mm HPF flooring with underlayment:

| thickness        | 10,3 mm with underlayment |                |                |                |                |                |                |               |
|------------------|---------------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Use class        | 34                        |                |                |                |                |                |                |               |
| Parameter        | Factors for A1-A3         | Factors for A4 | Factors for A5 | Factors for B1 | Factors for B2 | Factors for C2 | Factors for C3 | Factors for D |
| GWP – total      | 1,24                      |                |                |                |                |                | 1,20           |               |
| GWP – fossil     | 1,16                      |                |                |                |                |                | 4,21           |               |
| GWP – biogenic   | 1,18                      |                |                |                |                |                | 1,17           |               |
| GWP – luluc      | 1,18                      |                |                |                |                |                | 1,26           |               |
| ODP              | 1,05                      |                |                |                |                |                | 1,33           |               |
| AP               | 1,10                      |                |                |                |                |                | 1,17           |               |
| EP – freshwater  | 1,12                      | 1,18           | 1,32           | 1,00           | 1,00           | 1,17           | 1,29           | 1,18          |
| EP – marine      | 1,10                      |                |                |                |                |                | 1,18           |               |
| EP – terrestrial | 1,09                      |                |                |                |                |                | 1,18           |               |
| POCP             | 1,10                      |                |                |                |                |                | 1,18           |               |
| ADPE             | 1,14                      |                |                |                |                |                | 1,34           |               |
| ADPF             | 1,17                      |                |                |                |                |                | 1,41           |               |
| PERT             | 1,18                      |                |                |                |                |                | 1,38           |               |
| PENRT            | 1,17                      |                |                |                |                |                | 1,41           |               |

## LCA: Calculation rules

### Declared Unit

The functional unit is 1 m<sup>2</sup> HPF floor covering (8.67 kg/m<sup>2</sup>, thickness 9 mm).

### Declared unit

| Name            | Value | Unit              |
|-----------------|-------|-------------------|
| Declared unit   | 1     | m <sup>2</sup>    |
| Grammage        | 8.67  | kg/m <sup>2</sup> |
| Layer thickness | 0.009 | m                 |

### System boundary

Type of EPD: cradle-to-gate - with options, modules C1–C4, and module D (A1–A3, C, D and additional modules, namely A4, A5, B1 and B2).

Modules A1-A3 include processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing.

Module A4 includes the transport to the point of installation.

Module A5 includes packaging waste processing during the construction process. Waste treatment in a waste incineration plant is assumed. Credits from energy substitution are declared in module D.

Module B1 includes the Volatile Organic Compounds (VOC) and formaldehyde emissions occurring during the lifetime of the product.

Module B2 includes the cleaning of the floor covering. Provision of water, cleaning agent and electricity for the cleaning of the floor covering is considered, incl. wastewater treatment. The LCA results in this EPD are declared for a one year usage assuming 90 % domestic and 10 % commercial level of use.

Modules C1 - C3 include manual dismantling, the transport to the end of life as well as the incineration of the product in a European biomass CHP plant. The release of biogenic carbon from incineration of the wood fraction (biogenic carbon) of the HPF floor covering is also covered by module C3.

Module D includes benefits from all net flows that leave the product boundary system.

### 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.

LCA Software: *GaBi ts software*

## LCA: Scenarios and additional technical information

### Characteristic product properties

#### Information on biogenic carbon

Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO<sub>2</sub>

#### Information on describing the biogenic Carbon Content at factory gate

| Name  | Value | Unit |
|---|-------|------|
| Biogenic carbon content in product                | 2.8   | kg C |
| Biogenic carbon content in accompanying packaging | 0.174 | kg C |

The following technical information is a basis for the declared modules or can be used for developing

specific scenarios in the context of a building assessment.

#### Transport to the construction site (A4)

| Name  | Value   | Unit    |
|---|---------|---------|
| Litres of fuel (consumption per kg)         | 0.00159 | l/100km |
| Transport distance                          | 250     | km      |
| Capacity utilisation (including empty runs) | 85      | %       |

For the calculation of a transport distance to a specific point of installation, the declared value for 250 km should be multiplied accordingly.

### Installation in the building (A5)

| Name   | Value | Unit |
|--|-------|------|
| Output substances following waste treatment on site (packaging material) | 0.45  | kg   |

The amount of installation waste varies and is not declared in this EPD. For the calculation of the environmental impact of 1 m<sup>2</sup> HPF floor covering including a certain amount of installation waste, the values for the production stage (A1-A3), delivery (A4), installation (A5) and end-of-life (D) have to be multiplied with the amount of waste (e.g. 3% installation waste, factor 1.03). No installation auxiliaries are considered in the installation scenario.

### relevant scenario information

For the thermal and electrical energy generated in Module A5 (treatment of packaging) and Module C3 (treatment of HDF product), avoided burdens have been calculated by the inversion of electricity grid mix and thermal energy from natural gas, using European datasets.

### Use (B1)

Environmental impacts from the use of the installed HDF results from emissions into the air. The following emissions are considered in Module B1.

| Name                                 | Value | Unit              |
|--------------------------------------|-------|-------------------|
| Formaldehyde emissions (for the RSL) | 139   | mg/m <sup>2</sup> |
| VOC emissions (for the RSL)          | 37    | mg/m <sup>2</sup> |

### Maintenance (B2)

The common cleaning method for HPF floor coverings is damp mopping. Loose dirt should be removed by means of a dry mop or a vacuum cleaner.

In case of higher requirements on hygiene (e.g. hospitals, care homes) or strongly frequented areas (shops) a need for a higher cleaning frequency is possible.

| Name  | Value  | Unit           |
|---|--------|----------------|
| Maintenance cycle (cleaning frequency per year) | 120    | Number/RSL     |
| Water consumption                               | 0.0068 | m <sup>3</sup> |
| Auxiliary (generic detergent)                   | 0.0507 | kg             |
| Electricity consumption                         | 0.074  | kWh            |

### Reference service life

| Name                   | Value | Unit |
|------------------------|-------|------|
| Reference service life | 20    | a    |

### End of Life (C1-C4)

The end-of-life scenarios are as follows:

C1 – The deconstruction of the HDF is assumed to be done manually

C2 – Transport to treatment/disposal site: average transport distance from the demolition site to waste treatment is assumed as 50 km.

C3 – Waste treatment: the HDF flooring is 100 % combusted in a European biomass CHP plant. The efficiency of energy recovery from HDF waste during incineration exceeds the R1 value of 0.6.

| Name                 | Value | Unit |
|----------------------|-------|------|
| Collected separately | 8.67  | kg   |
| Energy recovery      | 8.67  | kg   |

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

## LCA: Results

The results for module B2 refer to a period of one year.

The module D contains the loads and benefits beyond the system boundaries.

**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                | ND       | X   |

## RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> HPF floor covering (9 mm, 8.67 kg/m<sup>2</sup>)

| Core Indicator | Unit                               | A1-A3    | A4       | A5       | B1      | B2       | C1      | C2       | C3       | D         |
|----------------|------------------------------------|----------|----------|----------|---------|----------|---------|----------|----------|-----------|
| GWP-total      | [kg CO <sub>2</sub> -Eq.]          | -3.58E+0 | 1.12E-1  | 6.43E-1  | 0.00E+0 | 7.43E-2  | 0.00E+0 | 2.66E-2  | 1.04E+1  | -8.23E+0  |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]          | 7.03E+0  | 1.11E-1  | 9.57E-2  | 0.00E+0 | 7.02E-2  | 0.00E+0 | 2.64E-2  | 8.43E-2  | -8.18E+0  |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]          | -1.06E+1 | 0.00E+0  | 5.47E-1  | 0.00E+0 | 4.03E-3  | 0.00E+0 | 0.00E+0  | 1.03E+1  | -4.41E-2  |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]          | 8.42E-3  | 9.18E-4  | 8.57E-6  | 0.00E+0 | 6.78E-5  | 0.00E+0 | 2.18E-4  | 2.23E-5  | -6.33E-3  |
| ODP            | [kg CFC11-Eq.]                     | 9.83E-12 | 1.47E-17 | 9.93E-17 | 0.00E+0 | 8.32E-16 | 0.00E+0 | 3.40E-18 | 1.91E-16 | -1.05E-13 |
| AP             | [mol H <sup>+</sup> -Eq.]          | 3.76E-2  | 6.35E-4  | 8.97E-5  | 0.00E+0 | 2.42E-4  | 0.00E+0 | 1.53E-4  | 1.68E-2  | -1.14E-2  |
| EP-freshwater  | [kg P-Eq.]                         | 2.06E-5  | 3.33E-7  | 1.41E-8  | 0.00E+0 | 4.44E-6  | 0.00E+0 | 7.91E-8  | 3.79E-8  | -1.20E-5  |
| EP-marine      | [kg N-Eq.]                         | 1.59E-2  | 3.10E-4  | 2.88E-5  | 0.00E+0 | 6.14E-5  | 0.00E+0 | 7.51E-5  | 4.13E-3  | -3.15E-3  |
| EP-terrestrial | [mol N-Eq.]                        | 1.64E-1  | 3.44E-3  | 4.25E-4  | 0.00E+0 | 4.91E-4  | 0.00E+0 | 8.32E-4  | 4.56E-2  | -3.37E-2  |
| POCP           | [kg NMVOC-Eq.]                     | 3.83E-2  | 5.98E-4  | 7.88E-5  | 1.71E-4 | 1.47E-4  | 0.00E+0 | 1.45E-4  | 1.34E-2  | -8.81E-3  |
| ADPE           | [kg Sb-Eq.]                        | 1.29E-6  | 8.61E-9  | 1.49E-9  | 0.00E+0 | 8.46E-8  | 0.00E+0 | 2.03E-9  | 3.26E-9  | -1.48E-6  |
| ADPF           | [MJ]                               | 1.48E+2  | 1.49E+0  | 1.54E-1  | 0.00E+0 | 1.60E+0  | 0.00E+0 | 3.55E-1  | 2.79E-1  | -1.42E+2  |
| WDP            | [m <sup>3</sup> world-Eq deprived] | 6.60E-1  | 9.77E-4  | 6.62E-2  | 0.00E+0 | 2.05E-2  | 0.00E+0 | 2.31E-4  | 4.55E-1  | -7.05E-1  |

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> HPF floor covering (9 mm, 8.67 kg/m<sup>2</sup>)

| Indicator | Unit              | A1-A3   | A4      | A5       | B1      | B2      | C1      | C2      | C3       | D        |
|-----------|-------------------|---------|---------|----------|---------|---------|---------|---------|----------|----------|
| PERE      | [MJ]              | 4.60E+1 | 8.34E-2 | 6.32E+0  | 0.00E+0 | 2.86E-1 | 0.00E+0 | 1.98E-2 | 1.10E+2  | -3.61E+1 |
| PERM      | [MJ]              | 1.16E+2 | 0.00E+0 | -6.29E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -1.10E+2 | 0.00E+0  |
| PERT      | [MJ]              | 1.62E+2 | 8.34E-2 | 3.07E-2  | 0.00E+0 | 2.86E-1 | 0.00E+0 | 1.98E-2 | 4.66E-2  | -3.61E+1 |
| PENRE     | [MJ]              | 1.09E+2 | 1.50E+0 | 1.66E+0  | 0.00E+0 | 1.60E+0 | 0.00E+0 | 3.55E-1 | 3.73E+1  | -1.42E+2 |
| PENRM     | [MJ]              | 3.85E+1 | 0.00E+0 | -1.51E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -3.70E+1 | 0.00E+0  |
| PENRT     | [MJ]              | 1.48E+2 | 1.50E+0 | 1.54E-1  | 0.00E+0 | 1.60E+0 | 0.00E+0 | 3.55E-1 | 2.79E-1  | -1.42E+2 |
| SM        | [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  |
| 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  |
| 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  |
| FW        | [m <sup>3</sup> ] | 3.66E-2 | 9.55E-5 | 1.56E-3  | 0.00E+0 | 6.08E-4 | 0.00E+0 | 2.27E-5 | 1.06E-2  | -3.52E-2 |

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> HPF floor covering (9 mm, 8.67 kg/m<sup>2</sup>)

| Indicator | Unit | A1-A3   | A4       | A5       | B1      | B2      | C1      | C2       | C3       | D        |
|-----------|------|---------|----------|----------|---------|---------|---------|----------|----------|----------|
| HWD       | [kg] | 2.15E-7 | 7.55E-11 | 2.78E-11 | 0.00E+0 | 3.51E-6 | 0.00E+0 | 1.79E-11 | 6.61E-10 | -3.26E-8 |
| NHWD      | [kg] | 1.72E-1 | 2.23E-4  | 1.24E-2  | 0.00E+0 | 7.32E-3 | 0.00E+0 | 5.28E-5  | 7.42E-2  | -7.08E-2 |
| RWD       | [kg] | 6.84E-3 | 1.85E-6  | 7.99E-6  | 0.00E+0 | 9.60E-5 | 0.00E+0 | 4.30E-7  | 6.60E-6  | -1.16E-2 |
| 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  |
| MFR       | [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  |
| MER       | [kg] | 0.00E+0 | 0.00E+0  | 3.40E-1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 8.67E+0  | 0.00E+0  |
| EEE       | [MJ] | 0.00E+0 | 0.00E+0  | 9.92E-1  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 3.86E+1  | 0.00E+0  |
| EET       | [MJ] | 0.00E+0 | 0.00E+0  | 1.78E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 5.47E+1  | 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> HPF floor covering (9 mm, 8.67 kg/m<sup>2</sup>)

| Indicator | Unit  | A1-A3   | A4       | A5       | B1       | B2       | C1      | C2       | C3       | D        |
|-----------|---|---------|----------|----------|----------|----------|---------|----------|----------|----------|
| PM        | [Disease Incidence]   | 3.61E-7 | 2.19E-9  | 5.52E-10 | 0.00E+0  | 1.89E-9  | 0.00E+0 | 5.35E-10 | 7.20E-8  | -9.78E-8 |
| IRP       | [kBq U235-Eq.]  | 9.40E-1 | 2.66E-4  | 1.23E-3  | 0.00E+0  | 1.57E-2  | 0.00E+0 | 6.15E-5  | 6.70E-4  | -1.91E+0 |
| ETP-fw    | [CTUe]  | 4.57E+1 | 1.08E+0  | 7.63E-2  | 7.85E-3  | 1.49E+0  | 0.00E+0 | 2.56E-1  | 3.51E-1  | -3.33E+1 |
| HTP-c     | [CTUh]  | 6.75E-8 | 2.18E-11 | 4.81E-12 | 4.89E-10 | 3.54E-11 | 0.00E+0 | 5.17E-12 | 9.93E-10 | -1.40E-9 |
| HTP-nc    | [CTUh]  | 8.78E-8 | 1.20E-9  | 2.67E-10 | 1.47E-11 | 2.58E-9  | 0.00E+0 | 2.86E-10 | 8.65E-8  | -5.47E-8 |
| SQP       | [-]   | 8.09E+2 | 5.13E-1  | 4.12E-2  | 0.00E+0  | 2.04E-1  | 0.00E+0 | 1.22E-1  | 4.64E-2  | -2.47E+1 |
| 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 |         |          |          |          |          |         |          |          |          |

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”.

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

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”.

The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

## References

### Standards

#### EN 323

EN 323: 1993: Wood-based panels; determination of density

#### EN 324-1

EN 324-1: 1993: Wood-based panels; determination of dimensions of boards; part 1: determination of thickness, width and length

#### EN 13329

Laminate floor coverings - Elements with a surface layer based on aminoplastic thermosetting resins - Specifications, requirements and test methods

#### EN 14041

EN 14041:2004: Resilient, textile and laminate floor coverings - Essential characteristics

#### EN 15804

EN 15804+A2+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

#### EN ISO 10874

Resilient, textile and laminate floor coverings - Classification (ISO 10874:2009)

#### EN ISO 14025

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

### Further References

#### BBSR

Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR): Nutzungsdauer von Bauteilen für

Lebenszyklusanalyse nach Bewertungssystem Nachhaltiges Bauen (BNB), 2011

#### GaBi ts software

Sphera Solutions GmbH  
GaBi Software System and Database for Life Cycle Engineering  
CUP Version: 2021.2  
University of Stuttgart  
LeinfeldenEchterdingen

#### IBU

Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. <http://www.ibu-epd>

#### PCR Part A

PCR - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, Institut Bauen und Umwelt e.V., [www.ibu-epd.com](http://www.ibu-epd.com), Version 1.2, 17.11.2021

#### PCR Part B

Institut Bauen und Umwelt e.V.: Requirements on the EPD for floor coverings, Version 1.2, 14.02.2018

#### REACH

Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals

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

Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011

**Publisher**

Institut Bauen und Umwelt e.V.  
Hegelplatz 1  
10117 Berlin  
Germany

Tel +49 (0)30 3087748- 0  
Fax +49 (0)30 3087748- 29  
Mail [info@ibu-epd.com](mailto:info@ibu-epd.com)  
Web [www.ibu-epd.com](http://www.ibu-epd.com)

**Programme holder**

Institut Bauen und Umwelt e.V.  
Hegelplatz 1  
10117 Berlin  
Germany

Tel +49 (0)30 - 3087748- 0  
Fax +49 (0)30 – 3087748 - 29  
Mail [info@ibu-epd.com](mailto:info@ibu-epd.com)  
Web [www.ibu-epd.com](http://www.ibu-epd.com)

**Author of the Life Cycle  
Assessment**

Sphera Solutions GmbH  
Hauptstraße 111- 113  
70771 Leinfelden-Echterdingen  
Germany

Tel +49 711 341817-0  
Fax +49 711 341817-25  
Mail [info@sphera.com](mailto:info@sphera.com)  
Web [www.sphera.com](http://www.sphera.com)

**Owner of the Declaration**

Alloc AS  
Fiboveien 26  
4580 Lyngdal  
Norway

Tel +47 38 34 22 00  
Fax -  
Mail [info@berryalloc.com](mailto:info@berryalloc.com)  
Web [www.berryalloc.com](http://www.berryalloc.com)