

# Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## Sika® Ucrete® TZAS

from

**Sika Services AG**



**BUILDING TRUST**

|                                                                                                                                                                                              |                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Programme:                                                                                                                                                                                   | The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
| Programme operator:                                                                                                                                                                          | EPD International AB                                                                      |
| EPD registration number:                                                                                                                                                                     | EPD-IES-0024562:001                                                                       |
| Version date:                                                                                                                                                                                | 2025-09-30                                                                                |
| Validity date:                                                                                                                                                                               | 2030-09-29                                                                                |
| An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see <a href="http://www.environdec.com">www.environdec.com</a> |                                                                                           |



## General information

### Programme information

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| <b>Programme:</b> | The International EPD® System                                       |
| <b>Address:</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| <b>Website:</b>   | <a href="http://www.environdec.com">www.environdec.com</a>          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Accountabilities for PCR, LCA and independent, third-party verification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                      |
| <b>Product Category Rules (PCR)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                      |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                      |
| Product Category Rules (PCR): PCR 2019:14 VERSION 2.0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                      |
| <p>PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on <a href="http://www.environdec.com">www.environdec.com</a>.</p> <p>The review panel may be contacted via <a href="mailto:support@environdec.com">support@environdec.com</a></p> <p>Members of the Technical Committee were requested to state any potential conflict of interest with the PCR Committee, and if there were conflicts of interest they were excused from the review.</p> <p>Rob Rouwette (chair), Noa Meron (co-chair)</p> |                                                                                      |
| <b>Life Cycle Assessment (LCA)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                      |
| <p>LCA accountability: Terra Neutral PC</p> <p>Kaisareias 39, 11527, Athens</p> <p><a href="http://www.terraneutral.gr">www.terraneutral.gr</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| <b>Third-party verification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                      |
| <input checked="" type="checkbox"/> EPD verification by accredited certification body                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <p>Third-party verifier: Eurocert S.A.</p> <p>89 Chlois St. &amp; Likovriseos, 14452, Greece</p> <p>email: <a href="mailto:info@eurocert.gr">info@eurocert.gr</a></p> <p><a href="http://www.eurocert.gr">www.eurocert.gr</a></p>                                                                                                                                                                                                                                                                                                                                         |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                      |
| Eurocert S.A. is an approved certification body accountable for the third-party verification. The certification body is accredited by: Hellenic Accreditation System SA (E.S.Y.D), Accreditation number 21-8                                                                                                                                                                                                                                                                                                                                                              |                                                                                      |
| Procedure for follow-up of data during EPD validity involves third party verifier:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                      |
| <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                      |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

## Scope

The goal of this report is the development of a specific Environmental Product Declaration (EPD) presenting the environmental performance of Sika® Ucrete® TZAS manufactured by Sika UK Limited located in 19 Broad Ground Road, Redditch during the reporting year 2024.

The intended use of this report as well as EPDs aims to inform construction companies, builders, engineers, concrete users, and end users.

## Company information

Owner of the EPD: Sika Services AG, Tüffenwies 16, 8048 Zürich

Sika is a specialty chemicals company with a globally leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protection in the building sector and industrial manufacturing. Sika has subsidiaries in 102 countries around the world and, in over 400 factories, produces innovative technologies for customers worldwide. In doing so, it plays a crucial role in enabling the transformation of the construction and transportation sector toward greater environmental compatibility.

## Product information

Sika® Ucrete® TZAS is a smooth, polyurethane, heavyduty terrazzo floor with a decorative aesthetic. It has very good resistance to aggressive chemicals, heavy abrasion and temperatures up to +150 °C. Sika® Ucrete® TZAS complies with requirements according to EN 13813 "Screed material and floor screeds - Screed material - Properties and requirements".

For more information see the PDS (Product Data Sheet) on Sika website [www.gbr.sika.com](http://www.gbr.sika.com).

| Category                                          | Weight (kg per kg of product) | Post-consumer material | Biogenic carbon content (kg C per kg of product) |
|---------------------------------------------------|-------------------------------|------------------------|--------------------------------------------------|
| <b>Inorganic binders / Cementitious Materials</b> | <0.15                         | 0.000                  | 0.000                                            |
| <b>Fillers / Aggregates</b>                       | <0.65                         | 0.000                  | 0.000                                            |
| <b>Pigments / Colorants</b>                       | <0.01                         | 0.000                  | 0.000                                            |
| <b>Liquids / Additives / Modifiers</b>            | <0.07                         | 0.000                  | 0.043                                            |
| <b>Water</b>                                      | <0.05                         | 0.000                  | 0.000                                            |
| <b>Organic polymers / Resins / Elastomers</b>     | <0.10                         | 0.000                  | 0.000                                            |
| <b>Packaging</b>                                  |                               |                        |                                                  |
| <b>Paper bag</b>                                  | 0.004                         | 0.000                  | 0.002                                            |
| <b>Plastic film/pouch</b>                         | 0.015                         | 0.000                  | 0.000                                            |

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in the products above the threshold for registration with the European Chemicals Agency (< 0,1% wt/wt)

## System Boundaries

The approach followed is “Cradle to gate with modules A4-A5, C1–C4 and module D (A1-A3, A4-A5, C and D)”, covering the mandatory Product stage, the installation stage, the End-of-life stage and the Benefits and loads beyond the system boundary. The following life cycle stages were considered:

### A1: Raw material extraction and processing, processing of secondary material input

This module considers the supply and processing of all raw materials (fillers, binders, pigments and other additives) and energy carriers (electricity, natural gas) that occur upstream of the manufacturing process.

### A2: Transportation of all raw materials to the manufacturing plant

Raw and packaging materials are transported to the manufacturing site of Sika UK in Redditch. The transportation of raw materials is performed by land transport. Raw materials come from England and other countries located in central Europe.

### A3: Manufacturing process

This module includes all emissions that may occur during the manufacturing process (direct emissions in water/air from fuels combustion and water treatment, manufacturing waste treatment), as well as the production of packaging materials (paper bags, plastic films/pouches)

The manufacturing process of the products in the form of dry mortars is as follows: The raw materials used in production are cement and various fillers, as well as various additives. Firstly, the proper weighing must be done, so the necessary amount of each raw material is selected according to the recipe of the product. Then all the raw materials are mixed according to the relevant mixing formula. After that quality control inspects the mixture upon certain properties to ensure it meets all the specifications. Finally, the product is packaged and stored until it is sent to the client.

### A4: Downstream Transport

In module A4 the transportation of the final products to the construction sites is considered. As a representative assumption, a distance of 1000 km and EURO 6 truck is considered from Redditch to end user.

### A5: Installation

In this module, impacts that occur during installation stage are included. In this case, waste treatment of packaging materials is included. As a conservative assumption, all packaging materials are expected to be landfilled after the installation. Electricity and ancillary materials used for installation are considered negligible, since it is conducted with hand tools

### C1: De-construction, demolition

The end-of-life stages begin with the deconstruction and demolition from the installation, and then they are transferred for recycling and disposal. Mortars are not removed from the applied material during the deconstruction. Thus, the impacts of deconstruction/demolition of mortars are assumed to be zero.

### C2: Transport to waste processing

This module accounts for all emissions during the transportation of product waste up to treatment facilities. A distance of 100km and EURO 6 truck is assumed for the transportation of mortars as C&D waste, to waste processing after deconstruction.

### C3: Waste processing for reuse, recovery and/or recycling

This module includes waste processing of the product after its life cycle in order to be recycled and reused in another product system. As a conservative assumption, the whole product will be landfilled after its useful life, so the impacts in this module are zero.

### C4: Disposal

This module includes the final disposal of the product. As stated above, whole product will be landfilled after its useful life.

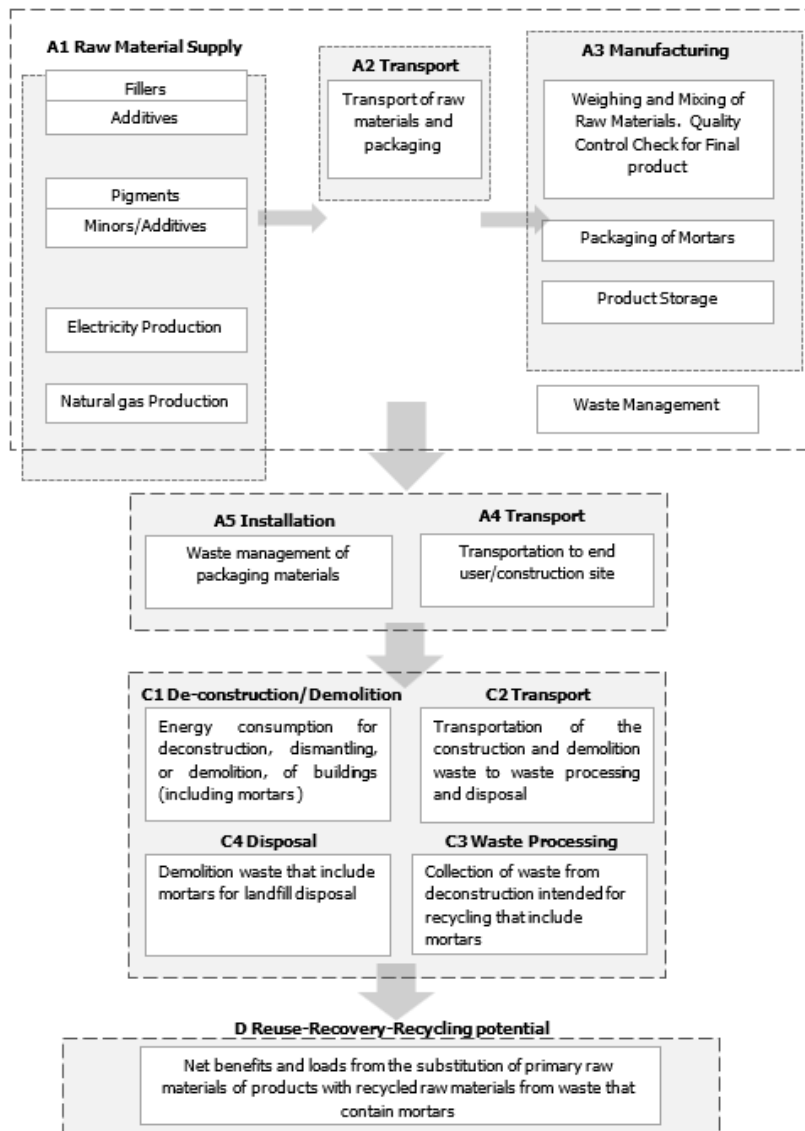
### D: Reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.

Module D generally includes potential avoided burdens related to the potential reuse and/or recycling of the product after its end-of-life stage.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

|                      | Product stage       |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage            |
|----------------------|---------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw material supply | Transport | Manufacturing | Transport                  | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module               | A1                  | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules declared     | x                   | x         | x             | x                          | x                         | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | x                          | x         | x                | x        | x                                  |
| Geography            | GLO                 | GLO       | GB            | GLO                        | GLO                       | NR        | NR          | NR     | NR          | NR            | NR                     | NR                    | GLO                        | GLO       | GLO              | GLO      | GLO                                |
| Specific data used   | 10.09%              |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – products | NR                  |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – sites    | NR                  |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

### System diagram:



## LCA information

### Declared unit

The declared unit is 1kg of Sika® Ucrete® TZAS

### Time representativeness

All primary data used in this study is for the reporting year 2024

### Databases used

The databases used were the following: Ecoinvent v.3.11.1 and EN15804 add-on for Ecoinvent. The impact assessment method used was EN15804+A2. The characterization factors are based on EF 3.1 reference package.

### Geographical Scope

Worldwide

### Cut-off rules and exceptions

All inputs and outputs were included in the calculation of the unit processes of the production stage. The cut-off criteria were 1% for the total mass input and 1% for the renewable and non-renewable

primary energy usage for each process, where the maximum was 5% for energy usage and mass that was included for all processes, according to EN 15804 and PCR 2019:14.

In this study, cut-off was applied in manufacturing waste that were not easily classified somewhere. The percentage of the cut-off materials was 1,3%

The following activities and processes have been exempted from the LCA report: the manufacturing processes of the capital goods or spare parts, infrastructure for general management, office and headquarters operations as well as people activities (common activities, travel for work, etc.), and waste streams relating to maintenance of equipment. Also, construction use stage (B1-B7) was excluded.

### **Data Quality**

All the datasets used for calculations cover either the area of Great Britain, or Europe or the Rest of the World. The best available datasets are picked each time, as far as geography and date are concerned. Technological coverage is specific or average. The LCA was modelled with OpenLCA 2.4.1. All the data used to model the manufacturing process for the specific products covered by this EPD, is specific data and there are no data gaps.

The data used as Input in the Process Unit include all the components in order to produce the product expressed as kg/kg of mortar. The components (raw materials) for each product are calculated based on bill of materials for their manufacture.

The production of raw materials included selected datasets for the reference year. All data sets were from the representative geographical area. Each material has been combined with a dataset containing LCI-data, selected from database EN15804 add-on for Ecoinvent.

Specific data for the reference year were used for electricity and natural gas consumption. Data was taken from invoices for the reference year.

Electricity has been combined with a dataset containing LCI-data, selected from database EN 15804 add on for Great Britain. This dataset describes the residual mix on the medium voltage level in United Kingdom. The residual mix is a virtual mix. It represents the energy mix of untracked consumption, i.e., electricity consumption that is not explicitly tracked through mechanisms such as Guarantees of Origin (GO). The shares have been calculated based on statistics from AIB (2024).

| RE<br>unspec<br>ified | RE<br>biomas<br>s | RE<br>solar | RE<br>geothe<br>rmal | RE<br>wind | RE<br>hydro | Nuclea<br>r | FO<br>unspec<br>ified | FO<br>hard<br>coal | FO<br>lignite | FO oil | FO gas     |
|-----------------------|-------------------|-------------|----------------------|------------|-------------|-------------|-----------------------|--------------------|---------------|--------|------------|
| 0.01%                 | 0.34%             | 1.49%       | 0.00%                | 0.80%      | 0.65%       | 23.86<br>%  | 5.01%                 | 19.40<br>%         | 0.18%         | 1.42%  | 46.84<br>% |

The GWP-GHG indicator for electricity has a value of 0,47 kg CO<sub>2</sub>eq/KWh.

The transportation of raw materials is performed by land transport. Raw materials are imported from England and other countries located in central Europe and the distances are calculated with Google maps. The dataset used for Land Transport represents the service of 1tkm freight transport in a lorry of the size class > 32 metric tons gross vehicle weight (GVW) and EURO 6 emissions class.

The material transportation is modeled using datasets from EN 15804 add-on database and specific data from the transportation distances of raw materials from other units.

Specific data for the reference year were used for packaging material based on the quantity of plastic packaging (film/pouch), paper bags used for the packaging of the products. The production of these

packaging materials combined with a dataset containing LCI-data, selected from database EN15804 add-on for Ecoinvent.

The End-of Life stage was modeled using datasets from EN 15804 add-on database. Modules C1-C4 were based on scenarios. The scenarios included are currently in use and are representative of one of the most probable alternatives.

| Process                                                          | Source type    | Source                         | Reference year | Data category  | Share of primary data, of GWP-GHG results for A1-A3 |
|------------------------------------------------------------------|----------------|--------------------------------|----------------|----------------|-----------------------------------------------------|
| Manufacturing of product                                         | Collected data | EPD owner                      | 2024           | Primary data   | 2.69%                                               |
| Generation of electricity used in manufacturing of product       | Database       | Ecoinvent v3.11+EN15804 add-on | 2024           | Primary data   | 2.78%                                               |
| Transport of materials to manufacturing site                     | Database       | Ecoinvent v3.11+EN15804 add-on | 2024           | Primary data   | 4.61%                                               |
| Production of raw materials                                      | Database       | Ecoinvent v3.11+EN15804 add-on | 2024           | Secondary data | 0%                                                  |
| Production of packaging                                          | Database       | Ecoinvent v3.11+EN15804 add-on | 2024           | Secondary data | 0%                                                  |
| <b>Total share of primary data, of GWP-GHG results for A1-A3</b> |                |                                | <b>10.09%</b>  |                |                                                     |

Note: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

### Assumptions

The following assumptions have been made in this LCA study:

- LCA study does not include the manufacturing processes of capital goods or spare parts, and equipment maintenance.
- The environmental impact of infrastructure for general management, office and headquarters operations is not included.
- The impact caused by people (common activities, travel for work, office activities) was not considered.
- The environmental impact of external transport has been calculated using lorries from the EN 15804 add-on database, EURO 6. These lorries have been selected to reflect the most realistic scenario possible.
- For the production of some chemicals used as raw materials into the mortars (mainly functional agents), due to their ambiguous nature, general datasets from Ecoinvent for organic or inorganic chemicals production were used.

- For module A4, as a representative assumption, a distance of 1000 km and EURO 6 truck is considered from Redditch to end user.
- For module A5, as a conservative assumption, all packaging materials are expected to be landfilled after the installation. Electricity and ancillary materials used for installation are considered negligible, since it is conducted with hand tools
- Concerning module C1, mortars are not removed from the applied material during the deconstruction. Thus, the impacts of deconstruction/demolition of mortars are assumed to be zero.
- For module C2 a distance of 100km and EURO 6 truck is assumed for the transportation of mortars, to waste processing after deconstruction.
- As a conservative assumption, the whole product will be landfilled after its useful life, so the impacts in this module are zero
- Modules C1-C4 were based on scenarios. The scenarios included are currently in use and are representative of one of the most probable alternatives.

### **Allocations**

In co-product allocation, the sum of inputs and outputs allocated to the product and co-products shall be equal to the total inputs and outputs of the allocated unit process, and consistent allocation procedures shall be uniformly applied to similar inputs and outputs of the product system under consideration.

In this project, co-product allocation based on physical properties (mass allocation) was conducted for the following streams:

- Electricity
- Natural gas
- Water
- Generated waste

In these streams, allocation took place by sharing the quantities of each studied product in relation to the total quantity of the production in 2024. In this way, specific consumptions (in kWh of electricity/kg of product, lt of diesel/ kg of product and kg of waste/ kg of product) were calculated.

Economic allocation was not used in any case.

## Results of the environmental performance indicators

For 1 kg Sika® Ucrete® TZAS

| Core environmental impact indicators                 | Unit                              | A1-A3     | A4       | A5       | C1       | C2       | C3       | C4       | D        |
|------------------------------------------------------|-----------------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|
| GWP-total                                            | kg CO <sub>2</sub> eq.            | 5.57E-01  | 1.02E-01 | 8.61E-03 | 0.00E+00 | 1.02E-02 | 0.00E+00 | 1.14E-01 | 0.00E+00 |
| GWP-fossil                                           | kg CO <sub>2</sub> eq.            | 6.60E-01  | 1.02E-01 | 1.88E-03 | 0.00E+00 | 1.02E-02 | 0.00E+00 | 6.26E-03 | 0.00E+00 |
| GWP-biogenic                                         | kg CO <sub>2</sub> eq.            | -1.10E-01 | 6.45E-05 | 6.73E-03 | 0.00E+00 | 6.45E-06 | 0.00E+00 | 1.08E-01 | 0.00E+00 |
| GWP-luluc                                            | kg CO <sub>2</sub> eq.            | 6.57E-03  | 3.79E-05 | 1.54E-07 | 0.00E+00 | 3.79E-06 | 0.00E+00 | 3.56E-06 | 0.00E+00 |
| ODP                                                  | kg CFC-11 eq.                     | 5.58E-07  | 2.31E-09 | 5.36E-12 | 0.00E+00 | 2.31E-10 | 0.00E+00 | 1.74E-10 | 0.00E+00 |
| AP                                                   | mol H <sup>+</sup> eq.            | 2.06E-03  | 2.47E-04 | 1.95E-06 | 0.00E+00 | 2.47E-05 | 0.00E+00 | 4.38E-05 | 0.00E+00 |
| EP-freshwater                                        | kg P eq.                          | 7.92E-05  | 7.44E-06 | 2.65E-08 | 0.00E+00 | 7.44E-07 | 0.00E+00 | 5.48E-07 | 0.00E+00 |
| EP-marine                                            | kg N eq.                          | 1.75E-03  | 6.51E-05 | 6.47E-06 | 0.00E+00 | 6.51E-06 | 0.00E+00 | 1.68E-05 | 0.00E+00 |
| EP-terrestrial                                       | mol N eq.                         | 4.86E-03  | 7.04E-04 | 6.51E-06 | 0.00E+00 | 7.04E-05 | 0.00E+00 | 1.84E-04 | 0.00E+00 |
| POCP                                                 | kg NMVOC eq.                      | 1.77E-03  | 4.14E-04 | 4.45E-06 | 0.00E+00 | 4.14E-05 | 0.00E+00 | 6.63E-05 | 0.00E+00 |
| ADPE                                                 | kg Sb eq.                         | 2.05E-06  | 3.04E-07 | 4.22E-10 | 0.00E+00 | 3.04E-08 | 0.00E+00 | 9.37E-09 | 0.00E+00 |
| ADPF                                                 | MJ, net calorific value           | 1.29E+01  | 1.54E+00 | 4.81E-03 | 0.00E+00 | 1.54E-01 | 0.00E+00 | 1.53E-01 | 0.00E+00 |
| WDP                                                  | m <sup>3</sup> world eq. deprived | 1.91E-01  | 8.97E-03 | 2.09E-04 | 0.00E+00 | 8.97E-04 | 0.00E+00 | 6.73E-03 | 0.00E+00 |
| Additional mandatory environmental impact indicators | Unit                              | A1-A3     | A4       | A5       | C1       | C2       | C3       | C4       | D        |
| GWP-GHG                                              | kg CO <sub>2</sub> eq.            | 6.67E-01  | 1.02E-01 | 6.71E-03 | 0.00E+00 | 1.02E-02 | 0.00E+00 | 6.26E-03 | 0.00E+00 |
| Indicators describing resource use                   | Unit                              | A1-A3     | A4       | A5       | C1       | C2       | C3       | C4       | D        |
| PERE                                                 | MJ, net calorific value           | 2.28E+00  | 2.38E-02 | 8.00E-05 | 0.00E+00 | 2.38E-03 | 0.00E+00 | 1.43E-03 | 0.00E+00 |
| PERM                                                 | MJ, net calorific value           | 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, net calorific value           | 2.28E+00  | 2.38E-02 | 8.00E-05 | 0.00E+00 | 2.38E-03 | 0.00E+00 | 1.43E-03 | 0.00E+00 |
| PENRE                                                | MJ, net calorific value           | 1.29E+01  | 1.54E+00 | 4.81E-03 | 0.00E+00 | 1.54E-01 | 0.00E+00 | 1.53E-01 | 0.00E+00 |
| PENRM                                                | MJ, net calorific value           | 0.00E+00  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT                                                | MJ, net calorific value           | 1.29E+01  | 1.54E+00 | 4.81E-03 | 0.00E+00 | 1.54E-01 | 0.00E+00 | 1.53E-01 | 0.00E+00 |
| SM                                                   | kg                                | 1.31E-02  | 1.40E-03 | 3.54E-06 | 0.00E+00 | 1.40E-04 | 0.00E+00 | 6.80E-05 | 0.00E+00 |
| RSF                                                  | MJ, net calorific value           | 5.37E-03  | 2.99E-04 | 6.55E-07 | 0.00E+00 | 2.99E-05 | 0.00E+00 | 1.28E-05 | 0.00E+00 |

|                                                       |                         |          |          |           |          |          |          |          |          |
|-------------------------------------------------------|-------------------------|----------|----------|-----------|----------|----------|----------|----------|----------|
| NRSF                                                  | MJ, net calorific value | 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                                                    | m3                      | 4.94E-03 | 2.08E-04 | -7.06E-05 | 0.00E+00 | 2.08E-05 | 0.00E+00 | 1.58E-04 | 0.00E+00 |
| Environmental information describing waste categories | Unit                    | A1-A3    | A4       | A5        | C1       | C2       | C3       | C4       | D        |
| HWD                                                   | kg                      | 5.19E-02 | 1.60E-03 | 6.30E-06  | 0.00E+00 | 1.60E-04 | 0.00E+00 | 1.24E-04 | 0.00E+00 |
| NHWD                                                  | kg                      | 3.73E-01 | 1.49E-02 | 1.90E-02  | 0.00E+00 | 1.49E-03 | 0.00E+00 | 1.00E+00 | 0.00E+00 |
| RWD                                                   | kg                      | 6.11E-06 | 4.25E-07 | 1.26E-09  | 0.00E+00 | 4.25E-08 | 0.00E+00 | 2.24E-08 | 0.00E+00 |
| Environmental information describing output flows     | Unit                    | A1-A3    | A4       | A5        | C1       | C2       | C3       | C4       | D        |
| 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 |
| MFR                                                   | kg                      | 1.09E-02 | 1.20E-03 | 2.55E-06  | 0.00E+00 | 1.20E-04 | 0.00E+00 | 5.67E-05 | 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 |
| EEE                                                   | MJ, net calorific value | 7.65E-03 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EET                                                   | MJ, net calorific value | 7.33E-03 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Additional voluntary environmental impact indicators  | Unit                    | A1-A3    | A4       | A5        | C1       | C2       | C3       | C4       | D        |
| PM                                                    | Disease incidence       | 2.09E-08 | 1.01E-08 | 3.50E-11  | 0.00E+00 | 1.01E-09 | 0.00E+00 | 1.01E-09 | 0.00E+00 |
| IRP                                                   | kBq U235 eq.            | 3.30E-02 | 1.73E-03 | 5.15E-06  | 0.00E+00 | 1.73E-04 | 0.00E+00 | 9.17E-05 | 0.00E+00 |
| ETP-fw                                                | CTUe                    | 5.93E+00 | 1.81E-01 | 1.61E-01  | 0.00E+00 | 1.81E-02 | 0.00E+00 | 1.11E-02 | 0.00E+00 |
| HTP-c                                                 | CTUh                    | 1.70E-10 | 1.69E-11 | 1.24E-13  | 0.00E+00 | 1.69E-12 | 0.00E+00 | 1.14E-12 | 0.00E+00 |
| HTP-nc                                                | CTUh                    | 8.64E-09 | 9.93E-10 | 2.52E-11  | 0.00E+00 | 9.93E-11 | 0.00E+00 | 2.56E-11 | 0.00E+00 |
| SQP                                                   | dimensionless           | 1.89E+01 | 1.55E+00 | 1.10E-02  | 0.00E+00 | 1.55E-01 | 0.00E+00 | 3.01E-01 | 0.00E+00 |

The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

**Disclaimer 1:** The indicator GWP-GHG includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013).

**Disclaimer 2:** The results of the environmental impact indicators ADPE, ADPF and WDP shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

**Disclaimer 3:** Ionizing radiation potential (IRP) 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 4:** This product/packaging contains biogenic carbon. Biogenic carbon flows leaving the product system in Modules A5 or C have been accounted for consistently with those entering in A1–A3. No double-counting or omission occurs.

## Version history

Original version of the EPD

## References

1. General Program Instructions of the International EPD® System Version 5.0.1
2. ISO 14040:2006 Environmental management Life cycle assessment. Principles and framework
3. ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines
4. ISO 14020:2000 Environmental labels and declarations – General principles
5. ISO 14025:2010 Environmental labels and declarations – Type III Environmental Declarations– Principles and procedures
6. PCR – “2019:14 Construction products” (Version 2.0.1)
7. EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

## Abbreviations

|           |                                                                  |
|-----------|------------------------------------------------------------------|
| ADPE      | Environment: Abiotic depletion potential (elements)              |
| ADPF      | Environment: Abiotic depletion potential (fossils)               |
| AP        | Environment: Acidification potential                             |
| ETPF      | Environment: Ecotoxicity potential (freshwater)                  |
| EPF       | Environment: Eutrophication potential (freshwater)               |
| EPM       | Environment: Eutrophication potential (marine)                   |
| EPT       | Environment: Eutrophication potential (terrestrial)              |
| GWPB      | Environment: Global warming potential (biogenic)                 |
| GWPF      | Environment: Global warming potential (fossil)                   |
| GWPL      | Environment: Global warming potential (land use)                 |
| GWPT      | Environment: Global warming potential (total)                    |
| GWP - GHG | Environment: Global warming potential (greenhouse gas emissions) |
| HTC       | Environment: Human toxicity (carcinogenic)                       |
| HTNC      | Environment: Human toxicity (non-carcinogenic)                   |
| IRP       | Environment: Ionising radiation (human health)                   |
| LULUC     | Environment: Land use and land use change                        |
| ODP       | Environment: Ozone depletion potential                           |
| PM        | Environment: Particulate matter formation                        |
| POCP      | Environment: Photochemical ozone creation potential              |
| WDP       | Environment: Water deprivation potential                         |
| PENRE     | Primary energy: Non-renewable (energy use)                       |
| PENRM     | Primary energy: Non-renewable (material use)                     |
| PENRT     | Primary energy: Non-renewable (total)                            |
| PERE      | Primary energy: Renewable (energy use)                           |
| PERM      | Primary energy: Renewable (material use)                         |
| PERT      | Primary energy: Renewable (total)                                |
| FW        | Resource: Net use of fresh water                                 |
| NRSF      | Resource: Non-renewable secondary fuels                          |
| RSF       | Resource: Renewable secondary fuels                              |
| SM        | Resource: Secondary materials                                    |
| CRU       | Output: Components for reuse                                     |
| EEE       | Output: Exported energy (electrical)                             |
| EET       | Output: Exported energy (thermal)                                |
| MER       | Output: Materials for energy recovery                            |
| MFR       | Output: Materials for recycling                                  |
| HWD       | Waste: Hazardous waste disposed                                  |
| NHWD      | Waste: Non-hazardous waste disposed                              |
| RWD       | Waste: Radioactive waste disposed                                |

