



# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

## Kerabit Katusaumo Sealing Compound Kerabit Oy



### EPD HUB, HUB-3669

Published on 18.07.2025, last updated on 18.07.2025, valid until 17.07.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.



Created with One Click LCA

**Kerabit**

## GENERAL INFORMATION

### MANUFACTURER

|                 |                                        |
|-----------------|----------------------------------------|
| Manufacturer    | Kerabit Oy                             |
| Address         | Puistokatu 25-27, 08150 Lohja, Finland |
| Contact details | tuotteet@kerabit.fi                    |
| Website         | kerabit.fi/tuotteet                    |

### EPD STANDARDS, SCOPE AND VERIFICATION

|                    |                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Program operator   | EPD Hub, hub@epdhub.com                                                                                                                                                            |
| Reference standard | EN 15804:2012+A2:2019/AC:2021 and ISO 14025                                                                                                                                        |
| PCR                | EPD Hub Core PCR Version 1.1, 5 Dec 2023                                                                                                                                           |
| Sector             | Construction product                                                                                                                                                               |
| Category of EPD    | Third party verified EPD                                                                                                                                                           |
| Parent EPD number  | -                                                                                                                                                                                  |
| Scope of the EPD   | Cradle to gate with options, A4-A5, and modules C1-C4, D                                                                                                                           |
| EPD author         | Jaana Valjus, Kerabit Oy                                                                                                                                                           |
| EPD verification   | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification |
| EPD verifier       | Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.                                                                                                                |

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

### PRODUCT

|                                            |                                    |
|--------------------------------------------|------------------------------------|
| Product name                               | Kerabit Katusaumo Sealing Compound |
| Additional labels                          | -                                  |
| Product reference                          | 15737                              |
| Place(s) of raw material origin            | Several                            |
| Place of production                        | Lohja, Finland                     |
| Place(s) of installation and use           | Finland                            |
| Period for data                            | 01/01/2023-31/12/2023              |
| Averaging in EPD                           | No grouping                        |
| Variation in GWP-fossil for A1-A3 (%)      | -                                  |
| GTIN (Global Trade Item Number)            | 6417547157373                      |
| NOBB (Norwegian Building Product Database) | -                                  |
| A1-A3 Specific data (%)                    | 75,2                               |

### ENVIRONMENTAL DATA SUMMARY

|                                             |                           |
|---------------------------------------------|---------------------------|
| Declared unit                               | 1 kg of Kerabit Katusaumo |
| Declared unit mass                          | 1 kg                      |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)     | 3,54E-01                  |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)      | 3,24E-01                  |
| Secondary material, inputs (%)              | 0,01                      |
| Secondary material, outputs (%)             | 67,2                      |
| Total energy use, A1-A3 (kWh)               | 1,81                      |
| Net freshwater use, A1-A3 (m <sup>3</sup> ) | 0                         |

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Kerabit Oy is a Finnish company manufacturing and marketing Kerabit products with a hundred years of experience and know-how. The Kerabit product range includes a number of high-quality roofing and waterproofing products, in addition to bituminous roofing.

Kerabit bitumen roofing manufactured in Lohja plant bears the Key Flag symbol as a sign of high-quality Finnish work. Kerabit bitumen roofing has been manufactured in Lohja since 1955.

Kerabit product range consists of following products among others:

- SBS-elastomer bitumen membranes
- SBS-elastomer bitumen roofing shingles
- self-adhesive membranes
- single-ply roofing membranes
- underlayers.

Kerabit Oy is part of Nordic Waterproofing Group which is part of Kingspan Group. Nordic Waterproofing is one of Europe's leading producers and suppliers of waterproofing products and services for buildings and infrastructure.

### PRODUCT DESCRIPTION

Kerabit Katusaumo is a hot-applied, elastic modified bitumen sealing compound. This product contains bitumen and SBS elastomer but no solvents or other substances hazardous to health. Katusaumo is suitable for sealing horizontal movement joints and cracks in asphalt and concrete surfaces. Also for sealing the joints between the rails and the concrete substrate. Adheres well on clean asphalt and concrete surfaces. Product standard is EN 14023.

Further information can be found at: [kerabit.fi/tuotteet](http://kerabit.fi/tuotteet)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|-----------------------|----------------|-----------------|
| Metals                | -              | -               |
| Minerals              | 38             | Finland         |
| Fossil materials      | 62             | EU              |
| Bio-based materials   | -              | -               |

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|                                            |        |
|--------------------------------------------|--------|
| Biogenic carbon content in product, kg C   | 0      |
| Biogenic carbon content in packaging, kg C | 0,0325 |

### FUNCTIONAL UNIT AND SERVICE LIFE

|                        |                           |
|------------------------|---------------------------|
| Declared unit          | 1 kg of Kerabit Katusaumo |
| Mass per declared unit | 1 kg                      |
| Functional unit        | -                         |
| Reference service life | -                         |

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

## PRODUCT LIFE-CYCLE

### SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

| Product stage |           |               | Assembly stage |          | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Beyond the system boundaries |           |
|---------------|-----------|---------------|----------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------|-----------|
| A1            | A2        | A3            | A4             | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                            |           |
| x             | x         | x             | x              | x        | MND       | MND         | MND    | MND         | MND           | MND                    | MND                   | x                          | x         | x                | x        | x                            |           |
| Raw materials | Transport | Manufacturing | Transport      | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction/ demolition | Transport | Waste processing | Disposal | Reuse                        | Recovery  |
|               |           |               |                |          |           |             |        |             |               |                        |                       |                            |           |                  |          |                              | Recycling |

Modules not declared = MND. Modules not relevant = MNR

### MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

Katusaumo sealing compound is produced in the factory in Lohja, Finland. The bitumen is delivered hot from the petroleum refinery to the manufacturing site, where it is further heated. The manufacturing is done by heating the raw materials, bitumen and copolymers such as SBS, fillers and additives, to a specific temperature and mixing them. After mixing, the bitumen compound is poured into cardboard boxes, where it is left to cool. After cooling the packages are moved to the packaging area. Product packages are placed on wooden pallets. Each pallet contains 49 packages. The pallet is wrapped with PE shrink wrap hood for storage and transportation.

Manufacturing process uses electricity from renewable sources. Transport methods of raw materials are checked from manufacturers, distances are checked either from manufacturers or with Google maps.

Waste from manufacturing and raw material packaging are included in the study. Product waste is sent to the closest facility for waste treatment to be crushed and used in asphalt manufacturing replacing virgin raw materials in road paving. Plastic and metal waste is sent to recycling. Wood pallets are sent to be reused. Mineral waste is sent to landfill. Other combustible waste is sent to energy recovery. Transport methods and distances of manufacturing waste are checked from waste handling companies. The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

### TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The average transport distance from the production plant to building site is assumed to be 60 km and the transportation method is lorry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. It may vary but since the share of transport emissions in the total results is small, it is assumed that the load variation is negligible. Empty returns are not taken into account as it is assumed that return trips are used by the transportation company to serve the needs of other clients. Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 100 % for the nested packaged products.

Installation phase A5 includes the material loss during installation, energy needed and waste generated.

Kerabit Katusaumo is heated in a bitumen boiler equipped with a stirrer and a thermostatic control unit. The boiler must be equipped with a blender to ensure a constant temperature and homogeneous consistency of the bitumen. The mixing and application temperature must be +200...210 °C.

The installation loss is estimated to be 1 %. Product waste is assumed to be recycled and packaging materials (carton box, pallet, plastic film) to be incinerated or recycled according to Finnish waste statistics.

### PRODUCT USE AND MAINTENANCE (B1-B7)

Use phase was not included in the study.

Air, soil, and water impacts during the use phase have not been studied.

Although re-application may be necessary in some use cases, it is not considered typical or required under standard use conditions. Therefore, B-modules have been considered optional and are not included in the declared EPD scope. If re-application is performed, its environmental

impacts would fall under B2 (maintenance) or B5 (refurbishment), which are outside the current scope.

### PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase the disassembling of the product is assumed to be done using diesel powered machinery.

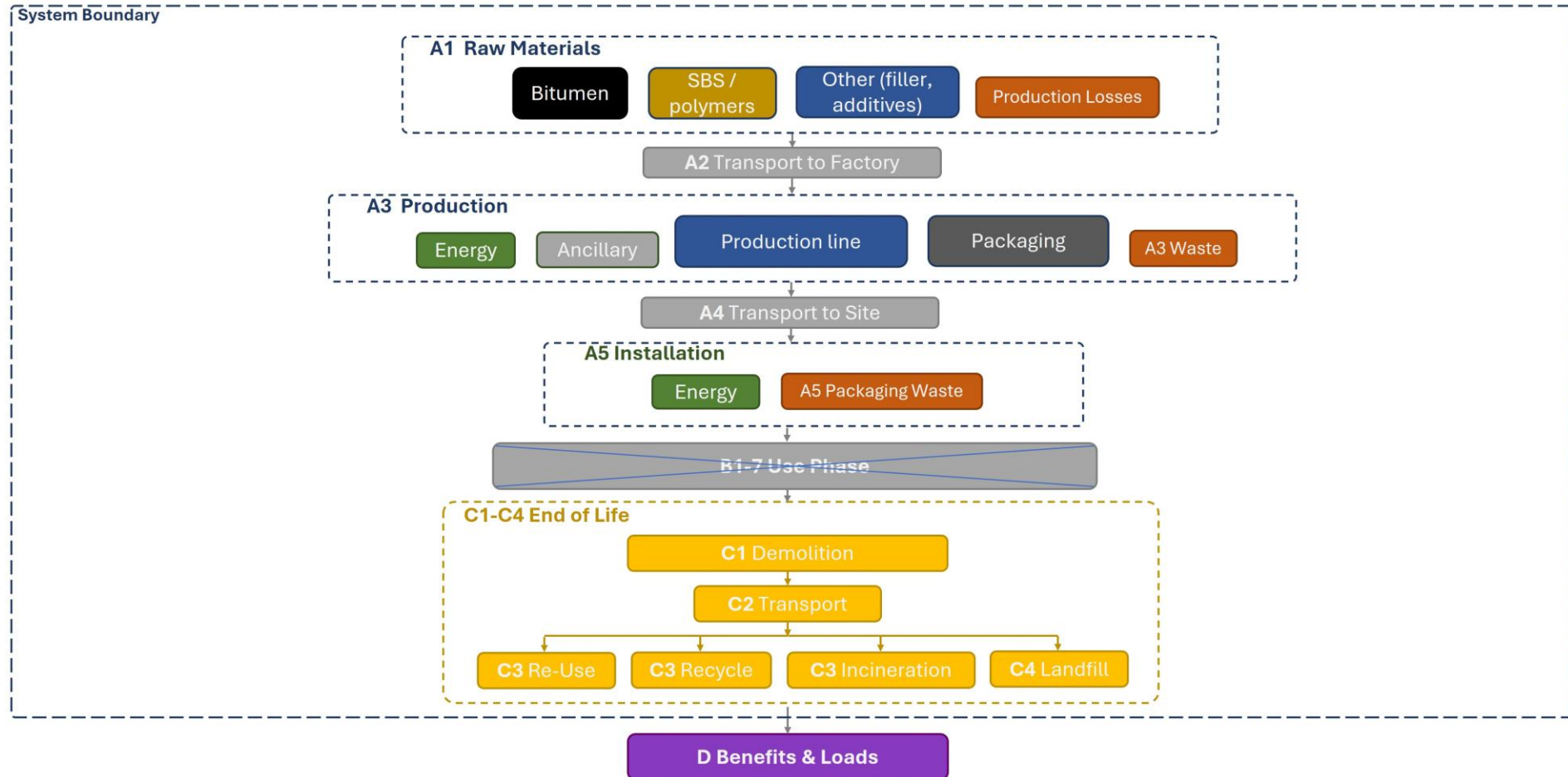
It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed to have the same weight with the declared product. All of the end-of-life product is assumed to be sent to the closest facility for waste treatment. Transportation distance to the closest waste treatment plant is estimated as 50 km and the transportation method is lorry.

The end-of-life scenario for the bitumen compound is based on assumptions and may vary depending on the specific application and removal conditions. For instance, the material may remain attached to replaced tram rails and be directed to metal recycling, or it may be disposed of together with stones or soil at a landfill site.

For the purpose of this EPD, the assumed end-of-life distribution is as follows:

- 50 % to recycling
- 17 % to incineration with energy
- 17 % to landfill and
- 17 % to be reused as a part of new compound seams.

## MANUFACTURING PROCESS



## LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

For easier modelling and because of lack of accuracy in data and available modelling resources few constituents under 0,1% of product mass are excluded. These include some ancillary materials which are all present in the product only in very small amounts and have no serious impact on the emissions of the product.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided

specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

### ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

| Data type                      | Allocation                  |
|--------------------------------|-----------------------------|
| Raw materials                  | No allocation               |
| Packaging material             | No allocation               |
| Ancillary materials            | Allocated by mass or volume |
| Manufacturing energy and waste | Allocated by mass or volume |

Explanation of the main product material composition: Nothing is calculated to metals. Lime is calculated to minerals. Bitumen and SBS are calculated to fossil materials.

### PRODUCT & MANUFACTURING SITES GROUPING

|                                      |                |
|--------------------------------------|----------------|
| Type of grouping                     | No grouping    |
| Grouping method                      | Not applicable |
| Variation in GWP-fossil for A1-A3, % | -              |

This EPD is product and factory specific and does not contain average calculations.

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

## ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

### CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category                     | Unit                   | A1       | A2       | A3        | A1-A3     | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3        | C4        | D         |
|-------------------------------------|------------------------|----------|----------|-----------|-----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|-----------|-----------|-----------|
| GWP – total <sup>1)</sup>           | kg CO <sub>2</sub> e   | 3,06E-01 | 2,25E-02 | -4,97E-03 | 3,24E-01  | 6,48E-03 | 2,90E-01 | MND | MND | MND | MND | MND | MND | MND | 4,71E-03 | 9,68E-03 | 3,96E-01  | 2,90E-03  | -3,15E-01 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 3,05E-01 | 2,25E-02 | 2,62E-02  | 3,54E-01  | 6,48E-03 | 1,95E-01 | MND | MND | MND | MND | MND | MND | MND | 4,71E-03 | 9,67E-03 | 3,96E-01  | 2,91E-03  | -3,14E-01 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | 6,22E-04 | 4,01E-06 | -3,14E-02 | -3,08E-02 | 1,41E-06 | 9,44E-02 | MND | MND | MND | MND | MND | MND | MND | 4,80E-07 | 1,92E-06 | -6,21E-06 | -1,05E-05 | -3,69E-04 |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 9,59E-05 | 8,67E-06 | 2,50E-04  | 3,55E-04  | 2,52E-06 | 4,06E-05 | MND | MND | MND | MND | MND | MND | MND | 4,82E-07 | 3,42E-06 | 7,57E-06  | 1,39E-06  | -3,87E-04 |
| Ozone depletion pot.                | kg CFC-11e             | 1,62E-08 | 4,29E-10 | 7,41E-10  | 1,74E-08  | 1,35E-10 | 3,12E-09 | MND | MND | MND | MND | MND | MND | MND | 7,21E-11 | 1,92E-10 | 2,89E-10  | 4,93E-11  | -9,94E-09 |
| Acidification potential             | mol H <sup>+</sup> e   | 1,51E-03 | 1,52E-04 | 1,81E-04  | 1,84E-03  | 1,53E-05 | 3,76E-04 | MND | MND | MND | MND | MND | MND | MND | 4,25E-05 | 3,02E-05 | 1,40E-04  | 1,41E-05  | -2,24E-03 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 1,12E-05 | 1,38E-06 | 1,14E-05  | 2,40E-05  | 4,53E-07 | 1,17E-05 | MND | MND | MND | MND | MND | MND | MND | 1,36E-07 | 6,41E-07 | 1,99E-06  | 2,08E-07  | -1,46E-04 |
| EP-marine                           | kg Ne                  | 2,40E-03 | 4,24E-05 | 3,25E-05  | 2,48E-03  | 4,01E-06 | 1,43E-04 | MND | MND | MND | MND | MND | MND | MND | 1,97E-05 | 1,02E-05 | 4,09E-05  | 2,01E-05  | -2,17E-03 |
| EP-terrestrial                      | mol Ne                 | 1,63E-03 | 4,67E-04 | 3,58E-04  | 2,46E-03  | 4,34E-05 | 1,29E-03 | MND | MND | MND | MND | MND | MND | MND | 2,16E-04 | 1,11E-04 | 3,80E-04  | 5,53E-05  | -2,32E-03 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 2,69E-03 | 1,61E-04 | 1,41E-04  | 3,00E-03  | 2,66E-05 | 5,98E-04 | MND | MND | MND | MND | MND | MND | MND | 6,43E-05 | 4,74E-05 | 1,02E-04  | 1,93E-05  | -1,34E-03 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 1,24E-06 | 6,61E-08 | 7,79E-07  | 2,09E-06  | 1,85E-08 | 3,97E-07 | MND | MND | MND | MND | MND | MND | MND | 1,69E-09 | 3,16E-08 | 5,79E-08  | 4,47E-09  | -2,90E-07 |
| ADP-fossil resources                | MJ                     | 3,17E+01 | 3,10E-01 | 4,03E-01  | 3,24E+01  | 9,73E-02 | 2,65E+00 | MND | MND | MND | MND | MND | MND | MND | 6,16E-02 | 1,36E-01 | 9,74E-02  | 4,24E-02  | -2,63E+01 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 8,96E-02 | 1,44E-03 | 9,96E-03  | 1,01E-01  | 4,98E-04 | 1,11E-02 | MND | MND | MND | MND | MND | MND | MND | 1,54E-04 | 6,67E-04 | 1,20E-02  | 2,67E-04  | -8,27E-02 |

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO<sub>4</sub>e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category                  | Unit          | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|----------------------------------|---------------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| Particulate matter               | Incidence     | 1,49E+00 | 1,61E-09 | 2,07E-09 | 1,49E+00 | 6,32E-10 | 1,49E-02 | MND | MND | MND | MND | MND | MND | MND | 1,21E-09 | 7,60E-10 | 9,59E-10 | 3,06E-10 | -1,29E+00 |
| Ionizing radiation <sup>6)</sup> | kBq<br>11235e | 1,89E-02 | 3,63E-04 | 1,48E-03 | 2,07E-02 | 1,17E-04 | 2,18E-03 | MND | MND | MND | MND | MND | MND | MND | 2,73E-05 | 1,73E-04 | 2,81E-04 | 4,29E-05 | -8,22E-02 |
| Ecotoxicity (freshwater)         | CTUe          | 6,54E-01 | 3,85E-02 | 1,62E-01 | 8,54E-01 | 1,15E-02 | 1,87E-01 | MND | MND | MND | MND | MND | MND | MND | 3,39E-03 | 1,78E-02 | 6,73E-02 | 5,65E-03 | -4,51E-01 |
| Human toxicity, cancer           | CTUh          | 1,02E-09 | 3,98E-12 | 4,79E-11 | 1,07E-09 | 1,08E-12 | 3,84E-11 | MND | MND | MND | MND | MND | MND | MND | 4,84E-13 | 1,65E-12 | 1,78E-11 | 4,44E-13 | -3,12E-10 |
| Human tox. non-cancer            | CTUh          | 1,78E-01 | 1,80E-10 | 7,16E-10 | 1,78E-01 | 6,29E-11 | 1,78E-03 | MND | MND | MND | MND | MND | MND | MND | 7,66E-12 | 8,53E-11 | 3,31E-10 | 1,13E-11 | -1,54E-01 |
| SQP <sup>7)</sup>                | -             | 5,23E-01 | 1,65E-01 | 2,91E+00 | 3,60E+00 | 9,79E-02 | 1,94E-01 | MND | MND | MND | MND | MND | MND | MND | 4,31E-03 | 8,08E-02 | 5,06E-02 | 9,72E-02 | -1,40E+00 |

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

## USE OF NATURAL RESOURCES

| Impact category                    | Unit | A1       | A2       | A3        | A1-A3    | A4       | A5        | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3        | C4        | D         |
|------------------------------------|------|----------|----------|-----------|----------|----------|-----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|-----------|-----------|-----------|
| Renew. PER as energy <sup>8)</sup> | MJ   | 1,76E-01 | 4,98E-03 | 9,68E-01  | 1,15E+00 | 1,58E-03 | -6,43E-01 | MND | MND | MND | MND | MND | MND | MND | 3,90E-04 | 2,35E-03 | 4,56E-03  | 6,78E-04  | -8,24E-01 |
| Renew. PER as material             | MJ   | 0,00E+00 | 0,00E+00 | 2,86E-01  | 2,86E-01 | 0,00E+00 | -2,86E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 1,10E-03  |
| Total use of renew. PER            | MJ   | 1,76E-01 | 4,98E-03 | 1,25E+00  | 1,44E+00 | 1,58E-03 | -9,29E-01 | MND | MND | MND | MND | MND | MND | MND | 3,90E-04 | 2,35E-03 | 4,56E-03  | 6,78E-04  | -8,23E-01 |
| Non-re. PER as energy              | MJ   | 4,73E+00 | 3,10E-01 | 3,21E-01  | 5,36E+00 | 9,73E-02 | 2,04E+00  | MND | MND | MND | MND | MND | MND | MND | 6,16E-02 | 1,36E-01 | -4,92E+00 | -3,06E-01 | -4,81E+00 |
| Non-re. PER as material            | MJ   | 2,68E+01 | 0,00E+00 | -3,38E-01 | 2,64E+01 | 0,00E+00 | -8,29E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -2,19E+01 | -4,39E+00 | -2,10E+01 |
| Total use of non-re. PER           | MJ   | 3,15E+01 | 3,10E-01 | -1,73E-02 | 3,18E+01 | 9,73E-02 | 1,96E+00  | MND | MND | MND | MND | MND | MND | MND | 6,16E-02 | 1,36E-01 | -2,69E+01 | -4,70E+00 | -2,58E+01 |
| Secondary materials                | kg   | 5,44E-05 | 1,43E-04 | 1,56E-02  | 1,58E-02 | 4,21E-05 | 1,30E-03  | MND | MND | MND | MND | MND | MND | MND | 2,56E-05 | 6,22E-05 | 7,73E-05  | 1,56E-05  | -3,89E-04 |
| Renew. secondary fuels             | MJ   | 2,85E-07 | 1,60E-06 | 1,01E-02  | 1,01E-02 | 5,31E-07 | 1,07E-04  | MND | MND | MND | MND | MND | MND | MND | 6,68E-08 | 7,85E-07 | 8,42E-07  | 2,86E-07  | -1,45E-05 |
| Non-ren. secondary fuels           | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00 | 0,00E+00  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00  | 0,00E+00  |
| Use of net fresh water             | m³   | 2,33E-03 | 3,92E-05 | 2,55E-04  | 2,63E-03 | 1,44E-05 | 2,46E-04  | MND | MND | MND | MND | MND | MND | MND | 4,07E-06 | 1,83E-05 | 2,05E-04  | -6,17E-04 | -3,20E-03 |

8) PER = Primary energy resources.

## END OF LIFE – WASTE

| Impact category     | Unit | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|---------------------|------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| Hazardous waste     | kg   | 8,71E-04 | 4,43E-04 | 5,22E-03 | 6,54E-03 | 1,41E-04 | 5,75E-03 | MND | MND | MND | MND | MND | MND | MND | 6,85E-05 | 1,95E-04 | 1,10E-02 | 8,62E-05 | -1,77E-02 |
| Non-hazardous waste | kg   | 3,99E-02 | 8,92E-03 | 5,95E-02 | 1,08E-01 | 2,82E-03 | 1,25E-01 | MND | MND | MND | MND | MND | MND | MND | 9,34E-04 | 4,11E-03 | 2,53E-01 | 8,32E-01 | -7,07E-01 |
| Radioactive waste   | kg   | 2,97E-04 | 9,00E-08 | 3,65E-06 | 3,00E-04 | 2,90E-08 | 3,49E-06 | MND | MND | MND | MND | MND | MND | MND | 6,69E-09 | 4,30E-08 | 7,30E-08 | 1,05E-08 | -2,70E-04 |

## END OF LIFE – OUTPUT FLOWS

| Impact category               | Unit | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D        |
|-------------------------------|------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|----------|
| Components for re-use         | kg   | 0,00E+00 | 0,00E+00 | 4,44E-04 | 4,44E-04 | 0,00E+00 | 4,44E-06 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 1,67E-01 | 0,00E+00 | 0,00E+00 |
| Materials for recycling       | kg   | 2,33E-03 | 0,00E+00 | 3,67E-02 | 3,90E-02 | 0,00E+00 | 2,01E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 1,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec      | kg   | 0,00E+00 | 0,00E+00 | 1,16E-06 | 1,16E-06 | 0,00E+00 | 1,16E-08 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy               | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,33E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Electricity | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,11E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Heat        | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,52E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## ENVIRONMENTAL IMPACTS – GWP-GHG

| Impact category       | Unit                 | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|-----------------------|----------------------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| GWP-GHG <sup>9)</sup> | kg CO <sub>2</sub> e | 3,05E-01 | 2,25E-02 | 2,65E-02 | 3,54E-01 | 6,48E-03 | 1,95E-01 | MND | MND | MND | MND | MND | MND | MND | 4,71E-03 | 9,67E-03 | 3,96E-01 | 2,91E-03 | -3,14E-01 |

9) This indicator 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). In addition, the characterisation factors for the flows - CH<sub>4</sub> fossil, CH<sub>4</sub> biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO<sub>2</sub> is set to zero.

## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

| Scenario parameter                       | Value                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Electricity data source and quality      | Electricity production, wind, >3MW turbine, onshore<br>(Reference product: electricity, high voltage) |
| Electricity CO2e / kWh                   | 0,0316                                                                                                |
| District heating data source and quality | -                                                                                                     |
| District heating CO2e / kWh              | -                                                                                                     |

### Transport scenario documentation A4

| Scenario parameter                                              | Value                |
|-----------------------------------------------------------------|----------------------|
| Fuel and vehicle type. Eg, electric truck, diesel powered truck | Diesel powered truck |
| Average transport distance, km                                  | 60                   |
| Capacity utilization (including empty return) %                 | 100                  |
| Bulk density of transported products                            | 854                  |
| Volume capacity utilization factor                              | <1                   |

### Installation scenario documentation A5

| Scenario information                                                                                                                                                           | Value |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Ancillary materials for installation (specified by material) / kg or other units as appropriate                                                                                | 0     |
| Water use / m <sup>3</sup>                                                                                                                                                     | 0     |
| Other resource use / kg                                                                                                                                                        | 0     |
| Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ                                                             | 0,48  |
| Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg                                                 | 0,04  |
| Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg | 0,04  |
| Direct emissions to ambient air, soil and water / kg                                                                                                                           | 0     |

### End of life scenario documentation

| Scenario information                               | Value                                           |
|----------------------------------------------------|-------------------------------------------------|
| Collection process – kg collected separately       | 0                                               |
| Collection process – kg collected with mixed waste | 1                                               |
| Recovery process – kg for re-use                   | 0,17                                            |
| Recovery process – kg for recycling                | 0,5                                             |
| Recovery process – kg for energy recovery          | 0,17                                            |
| Disposal (total) – kg for final deposition         | 0,17                                            |
| Scenario assumptions e.g. transportation           | Transportation distance is assumed to be 50 km. |

## THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

### Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, as an authorized verifier acting for EPD Hub Limited.

18.07.2025

