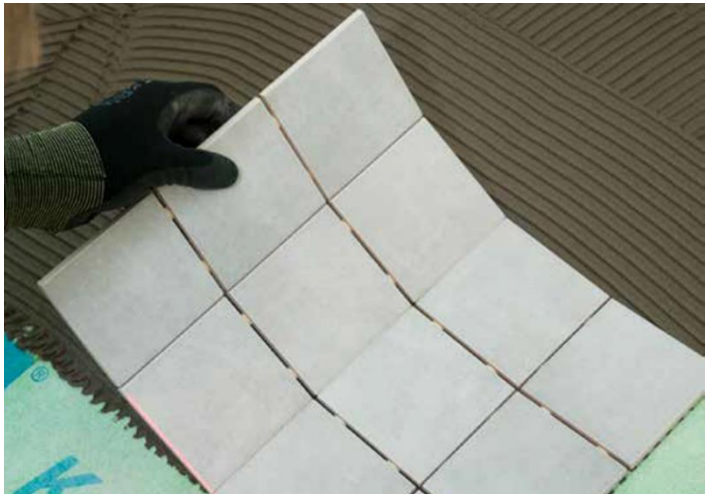

# ENVIRONMENTAL PRODUCT DECLARATION

## IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

**Kiilto Kerapid DF**

**Kiilto Oy**



**EPD HUB, HUB-1098**

Published on 09.02.2024, last updated on 09.02.2024, valid until 09.02.2029.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Kiilto Oy |
| Address | Tampereentie 408, 33880 Lempäälä |
| Contact details | lifecyclecalculations@kiilto.com |
| Website | www.kiilto.com |

## EPD STANDARDS, SCOPE AND VERIFICATION

| | |
|---|---|
| Program operator | EPD Hub, hub@epdhub.com |
| Reference standard | EN 15804+A2:2019 and ISO 14025 |
| PCR | EPD Hub Core PCR version 1.0, 1 Feb 2022 |
| Sector | Construction product |
| Category of EPD | Third party verified EPD |
| Scope of the EPD | Cradle to gate with options, A4, and modules C1-C4, D |
| EPD author | Mari Borg, Kiilto Oy |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal certification ☑ External verification |
| EPD verifier | Elisabet Amat, as an authorized verifier acting for EPD Hub Limited |

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 | Kiilto Kerapid DF |
| Product reference | T3552 |
| Place of production | Kiilto Oy Lempäälä, Finland |
| Period for data | 01/01/2022-31/12/2022 |
| Averaging in EPD | No averaging |
| Variation in GWP-fossil for A1-A3 | - |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| Declared unit | 1 kg of Kiilto Kerapid DF |
| Declared unit mass | 1 kg |
| GWP-fossil, A1-A3 (kgCO2e) | 0,619 |
| GWP-total, A1-A3 (kgCO2e) | 0,619 |
| Secondary material, inputs (%) | 0,0184 |
| Secondary material, outputs (%) | 0,0 |
| Total energy use, A1-A3 (kWh) | 0,872 |
| Total water use, A1-A3 (m3e) | 0,00147 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Kiilto is a growing, family-owned company, with over a hundred-year history and a vision looking ahead to 2080. We develop, produce and sell chemical industry solutions in four business areas: construction, industrial adhesives and fireproofing, professional hygiene and consumer goods. Please find more info at www.kiilto.com.

## PRODUCT DESCRIPTION

Kiilto Kerapid DF is fast-setting cementitious adhesive for laying ceramic tiles, stone and moisture-sensitive natural stone. Grouting can be carried out as soon as 2–4 hours. Also for exterior applications. M1-certificate and CE marking.

Further information can be found at www.kiilto.com.

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|---|---|---|
| Minerals | 90-95 | Europe |
| Fossil materials | 5-10 | Europe |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

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

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 kg of Kiilto Kerapid DF |
| Mass per declared unit | 1 kg |

## 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 | MND | 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 | Deconstr./demol. | 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.

Raw materials are simple and come from national suppliers (Finland) or Europe. Main raw materials are cement, sand and fillers (Calcium carbonate etc.). The raw materials coming from Europe are transported by trucks or train and then shipped to the coast of Finland. Within Finland the raw materials are transported by trucks to Lempäälä.

The production of the cementitious adhesive product consists of four steps: raw material manufacturing, raw material transportation to Kiilto, mixing and packaging. During the mixing all raw materials are added in big mixing vessel where they are mixed with together few minutes. Then the product is packed in polyethylene (PE) bag. 50 % of polyethylene is recycled. The capacity of the bag is 15 kg. The most manufactured package size has been considered in this study.

Eventually, the product is moved out and transported to the customer in the package.

The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission. There is no internal transport in the factory site because manufacturing place is very compact. Only resource that has been used is electricity. Emissions to air are not relevant either.

## 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 transportation impacts that occur from the delivery of the final product to the construction site cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is defined according to average distance, and is assumed to be 300 km and the transportation method is assumed to be a lorry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly.

Installation does not apply to the product and that is why there are no

material or energy consumption to be considered during the installation stage.

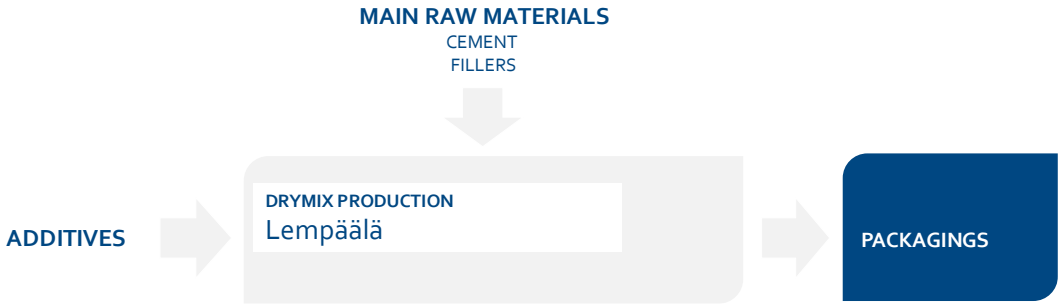
### PRODUCT USE AND MAINTENANCE (B1-B7)

Product use and maintenance is considered negligible due to their minor existence.
Air, soil, and water impacts during the use phase have not been studied.

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

At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as separate construction waste. (C1). All of end-of-life product is assumed to be sent to the closest facilities (C2). 90% of the end-of-life product is sent to recycling (C3). 10% is sent to the landfill (C4). Due to the 90% recycling potential, the benefits for recycling brick and load for rock crushing are considered, and the end-of-life product is converted into recycled raw materials (D).

## MANUFACTURING PROCESS (A3)



# 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.

## 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 materials | Not applicable |
| Ancillary materials | Not applicable |
| Manufacturing energy and waste | Allocated by mass or volume |

## AVERAGES AND VARIABILITY

| | |
|---|---|
| Type of average | No averaging |
| Averaging 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. Ecoinvent v3.8, Plastic Europe and One Click LCA databases were used as sources of environmental data.

# ENVIRONMENTAL IMPACT DATA

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP – total[1)] | kg $CO_2$e | 4,70E-01 | 1,36E-01 | 1,31E-02 | 6,19E-01 | 3,83E-02 | MND | MND | MND | MND | MND | MND | MND | MND | 3,31E-03 | 6,39E-03 | 7,45E-03 | 5,27E-04 | -7,26E-03 |
| GWP – fossil | kg $CO_2$e | 4,70E-01 | 1,36E-01 | 1,31E-02 | 6,19E-01 | 3,83E-02 | MND | MND | MND | MND | MND | MND | MND | MND | 3,31E-03 | 6,39E-03 | 7,43E-03 | 5,27E-04 | -7,23E-03 |
| GWP – biogenic | kg $CO_2$e | 0,00E+00 | 0,00E+00 | 3,60E-06 | 3,60E-06 | 1,59E-05 | MND | MND | MND | MND | MND | MND | MND | MND | 6,06E-07 | 2,65E-06 | 1,61E-05 | 3,43E-07 | -2,16E-05 |
| GWP – LULUC | kg $CO_2$e | 1,04E-04 | 5,77E-05 | 7,22E-06 | 1,69E-04 | 1,53E-05 | MND | MND | MND | MND | MND | MND | MND | MND | 3,30E-07 | 2,55E-06 | 5,81E-06 | 4,97E-07 | -9,95E-06 |
| Ozone depletion pot. | kg $CFC_{-11}$e | 8,97E-09 | 3,12E-08 | 1,36E-09 | 4,16E-08 | 8,93E-09 | MND | MND | MND | MND | MND | MND | MND | MND | 7,07E-10 | 1,49E-09 | 1,52E-09 | 2,13E-10 | -5,89E-10 |
| Acidification potential | mol $H^+$e | 8,56E-04 | 9,25E-04 | 4,40E-05 | 1,83E-03 | 1,57E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 3,44E-05 | 2,61E-05 | 6,39E-05 | 4,95E-06 | -4,68E-05 |
| EP-freshwater[2)] | kg Pe | 4,57E-05 | 9,37E-07 | 2,27E-07 | 4,69E-05 | 2,79E-07 | MND | MND | MND | MND | MND | MND | MND | MND | 1,10E-08 | 4,64E-08 | 1,95E-07 | 5,52E-09 | -4,11E-07 |
| EP-marine | kg Ne | 1,56E-04 | 2,55E-04 | 7,72E-06 | 4,19E-04 | 4,66E-05 | MND | MND | MND | MND | MND | MND | MND | MND | 1,52E-05 | 7,77E-06 | 2,39E-05 | 1,71E-06 | -1,01E-05 |
| EP-terrestrial | mol Ne | 3,48E-03 | 2,82E-03 | 8,30E-05 | 6,39E-03 | 5,14E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 1,67E-04 | 8,57E-05 | 2,63E-04 | 1,89E-05 | -1,32E-04 |
| POCP ("smog")[3)] | kg NMVOCe | 9,49E-04 | 8,21E-04 | 3,76E-05 | 1,81E-03 | 1,62E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 4,59E-05 | 2,69E-05 | 7,34E-05 | 5,48E-06 | -3,39E-05 |
| ADP-minerals & metals[4)] | kg Sbe | 2,56E-06 | 4,23E-07 | 2,15E-07 | 3,19E-06 | 1,27E-07 | MND | MND | MND | MND | MND | MND | MND | MND | 1,68E-09 | 2,11E-08 | 2,46E-08 | 1,21E-09 | -7,04E-08 |
| ADP-fossil resources | MJ | 1,34E+00 | 2,01E+00 | 2,87E-01 | 3,64E+00 | 5,75E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 4,45E-02 | 9,59E-02 | 1,28E-01 | 1,44E-02 | -1,05E-01 |
| Water use[5)] | $m^3$e depr. | 1,19E-01 | 9,29E-03 | 4,03E-03 | 1,33E-01 | 2,76E-03 | MND | MND | MND | MND | MND | MND | MND | MND | 1,20E-04 | 4,59E-04 | 1,30E-03 | 4,58E-05 | -1,38E-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 PO4e; 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, PEF

| 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 | 2,80E-09 | 1,24E-08 | 3,33E-10 | 1,56E-08 | 3,75E-09 | MND | MND | MND | MND | MND | MND | MND | MND | 9,22E-10 | 6,25E-10 | 8,04E-09 | 9,97E-11 | -6,03E-10 |
| Ionizing radiation[6)] | kBq U235e | 1,17E+01 | 1,04E-02 | 6,53E-04 | 1,17E+01 | 3,02E-03 | MND | MND | MND | MND | MND | MND | MND | MND | 2,05E-04 | 5,03E-04 | 1,26E-03 | 6,53E-05 | -1,56E-03 |
| Ecotoxicity (freshwater) | CTUe | 2,44E+00 | 1,65E+00 | 1,43E-01 | 4,23E+00 | 4,84E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 2,68E-02 | 8,07E-02 | 9,01E-02 | 9,42E-03 | -1,32E-01 |
| Human toxicity, cancer | CTUh | 3,99E-10 | 5,37E-11 | 6,00E-12 | 4,59E-10 | 1,45E-11 | MND | MND | MND | MND | MND | MND | MND | MND | 1,03E-12 | 2,42E-12 | 5,24E-12 | 2,35E-13 | -7,28E-12 |
| Human tox. non-cancer | CTUh | 1,01E-08 | 1,66E-09 | 1,60E-10 | 1,19E-08 | 4,98E-10 | MND | MND | MND | MND | MND | MND | MND | MND | 1,94E-11 | 8,30E-11 | 7,58E-11 | 6,16E-12 | -1,35E-10 |
| SQP[7)] | - | 1,24E+00 | 1,67E+00 | 2,15E-02 | 2,94E+00 | 5,15E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 5,79E-03 | 8,58E-02 | 1,31E-01 | 3,09E-02 | -1,00E-01 |

*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[8)] | MJ | 4,78E-02 | 2,78E-02 | 1,09E-01 | 1,84E-01 | 8,33E-03 | MND | MND | MND | MND | MND | MND | MND | MND | 2,54E-04 | 1,39E-03 | 7,01E-03 | 1,25E-04 | -9,39E-03 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renew. PER | MJ | 4,78E-02 | 2,78E-02 | 1,09E-01 | 1,84E-01 | 8,33E-03 | MND | MND | MND | MND | MND | MND | MND | MND | 2,54E-04 | 1,39E-03 | 7,01E-03 | 1,25E-04 | -9,39E-03 |
| Non-re. PER as energy | MJ | 7,58E-01 | 2,01E+00 | 1,87E-01 | 2,95E+00 | 5,75E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 4,45E-02 | 9,59E-02 | 1,28E-01 | 1,44E-02 | -1,05E-01 |
| Non-re. PER as material | MJ | 5,85E-01 | 0,00E+00 | 2,00E-01 | 7,86E-01 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -7,07E-01 | -7,86E-02 | -7,86E-01 |
| Total use of non-re. PER | MJ | 1,34E+00 | 2,01E+00 | 3,87E-01 | 3,74E+00 | 5,75E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 4,45E-02 | 9,59E-02 | -5,79E-01 | -6,41E-02 | -8,91E-01 |
| Secondary materials | kg | 1,84E-04 | 6,78E-04 | 2,58E-03 | 3,44E-03 | 1,91E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 1,74E-05 | 3,18E-05 | 4,61E-05 | 3,03E-06 | -1,15E-04 |
| Renew. secondary fuels | MJ | 1,84E-06 | 6,49E-06 | 3,41E-07 | 8,67E-06 | 1,97E-06 | MND | MND | MND | MND | MND | MND | MND | MND | 5,70E-08 | 3,28E-07 | 6,69E-07 | 7,93E-08 | -8,23E-07 |
| Non-ren. secondary fuels | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | 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 | $m^3$ | 1,11E-03 | 2,56E-04 | 1,04E-04 | 1,47E-03 | 7,67E-05 | MND | MND | MND | MND | MND | MND | MND | MND | 2,70E-06 | 1,28E-05 | 7,30E-05 | 1,58E-05 | -3,33E-04 |

*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 | 3,08E-03 | 2,33E-03 | 4,12E-04 | 5,82E-03 | 6,61E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 5,96E-05 | 1,10E-04 | 2,81E-04 | 0,00E+00 | -6,12E-04 |
| Non-hazardous waste | kg | 9,17E-02 | 3,92E-02 | 1,12E-02 | 1,42E-01 | 1,17E-02 | MND | MND | MND | MND | MND | MND | MND | MND | 4,19E-04 | 1,95E-03 | 1,65E-01 | 1,00E-01 | -1,80E-02 |
| Radioactive waste | kg | 3,46E-06 | 1,38E-05 | 2,01E-07 | 1,75E-05 | 3,96E-06 | MND | MND | MND | MND | MND | MND | MND | MND | 3,13E-07 | 6,59E-07 | 8,61E-07 | 0,00E+00 | -5,22E-07 |

## 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy rec | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND | 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 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

## ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Warming Pot. | kg $CO_2$e | 1,68E-01 | 1,35E-01 | 1,27E-02 | 3,15E-01 | 3,79E-02 | MND | MND | MND | MND | MND | MND | MND | MND | 3,27E-03 | 6,32E-03 | 7,34E-03 | 5,16E-04 | -7,05E-03 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 4,43E-09 | 2,48E-08 | 1,19E-09 | 3,04E-08 | 7,08E-09 | MND | MND | MND | MND | MND | MND | MND | MND | 5,60E-10 | 1,18E-09 | 1,21E-09 | 1,69E-10 | -4,88E-10 |
| Acidification | kg $SO_2$e | 3,62E-04 | 7,28E-04 | 3,67E-05 | 1,13E-03 | 1,22E-04 | MND | MND | MND | MND | MND | MND | MND | MND | 2,45E-05 | 2,03E-05 | 4,74E-05 | 3,74E-06 | -3,63E-05 |
| Eutrophication | kg $PO_4^3$e | 1,03E-04 | 1,27E-04 | 1,11E-05 | 2,41E-04 | 2,77E-05 | MND | MND | MND | MND | MND | MND | MND | MND | 5,69E-06 | 4,62E-06 | 1,56E-05 | 8,07E-07 | -1,70E-05 |
| POCP (“smog”) | kg $C_2H_4$e | 1,29E-05 | 2,44E-05 | 4,35E-06 | 4,17E-05 | 4,95E-06 | MND | MND | MND | MND | MND | MND | MND | MND | 5,36E-07 | 8,24E-07 | 1,42E-06 | 1,57E-07 | -2,47E-06 |
| ADP-elements | kg Sbe | 4,41E-07 | 4,13E-07 | 2,14E-07 | 1,07E-06 | 1,24E-07 | MND | MND | MND | MND | MND | MND | MND | MND | 1,65E-09 | 2,06E-08 | 2,42E-08 | 1,19E-09 | -6,97E-08 |
| ADP-fossil | MJ | 1,34E+00 | 2,01E+00 | 2,87E-01 | 3,64E+00 | 5,75E-01 | MND | MND | MND | MND | MND | MND | MND | MND | 4,45E-02 | 9,59E-02 | 1,28E-01 | 1,44E-02 | -1,05E-01 |

## ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-GHG[9)] | kg $CO_2$e | 4,70E-01 | 1,36E-01 | 1,31E-02 | 6,19E-01 | 3,83E-02 | MND | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -7,23E-03 |

*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 - CH4 fossil, CH4 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 CO2 is set to zero.*

# VERIFICATION STATEMENT

## VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

## THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elisabet Amat, as an authorized verifier acting for EPD Hub Limited
09.02.2024