
# ENVIRONMENTAL PRODUCT DECLARATION

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

## MAPECRETE SRA-N

EPD®
THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

epd-norway
Global Program Operator

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| **The International EPD® System; www.environdec.com** | **EPD International AB** | **S-P-09626** | **2023-07-07** | **2028-07-06** | **Global** |

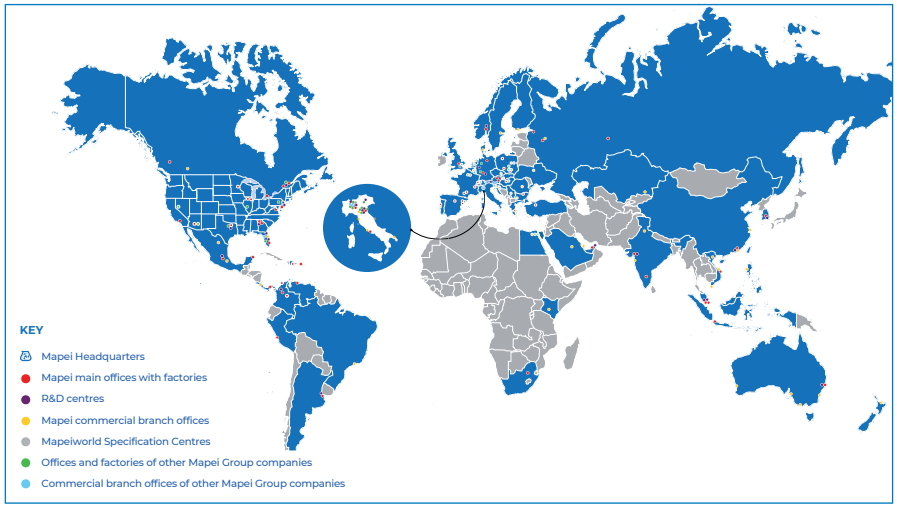
MAPEI®

# 1. COMPANY DESCRIPTION / GOAL & SCOPE

Founded in 1937 in Milan, Italy, Mapei produces adhesives and complementary products for laying all types of floor, wall and coating materials, and also specializes in other chemical products used in the building industry, such as waterproofing products, specialty mortars, admixtures for concrete, cement additives, products for underground constructions and for the restoration of concrete and historical buildings.

There are currently 100 subsidiaries in the Mapei Group, with a total of 86 production facilities located around the world in 35 different countries and in 5 different continents. Mapei also has 31 central laboratories. Most locations are ISO 9001 and ISO 14001 or EMAS-certified.

Mapei invests 12% in its company's total workforce and 5% of its turnover in Research & Development; in particular, 70% of its R&D efforts are directed to develop eco-sustainable and environmentally friendly products, which give important contribution to all major green rating systems for eco-sustainable buildings such as LEED and BREEAM.




**LEED V4.1** is the latest version of Leadership in Environmental and Energy Design, an American protocol that enables buildings to be certified as eco-sustainable according to parameters and credits described in the most widely adopted green building criteria in the world. Issued by the GBC US, it is mandatory for all LEED projects registered after October 2016.

Numerous changes have been made to the previous version: Mapei products play a part in obtaining important credits thanks to their EPD's (type III environmental declarations) and their products with very low emission of VOC.

Launched in the UK in 1990, **BREEAM** (BRE Environmental Assessment Method) is a protocol for sustainable building practices adopted mainly in the United Kingdom and in Scandinavian countries with the version **BREEAM NOR**.

By adopting this protocol, thanks to their EPD's and very low emission of VOC, Mapei products help towards obtaining relative credits.

Furthermore, Mapei has developed a sales and technical service network with offices all over the world and offers an efficient Technical Assistance Service that is valued by architects, engineers, contractors and owners.

Mapei Nordic production site is located in Sagstua, Norway. The production site consists of 5 factories: Two factories for powder-based products, two factories for liquid admixtures and one factory for thermosetting plastic-based products.

The total size of the buildings is 24.000 sqm. The energy in these factories is provided from water electricity, geothermal heating and remaining approximately 10 % heated by bio-oil.

Mapei Nordic focuses both on energy and on logistic optimisation,

as for example the systematic Lean based improvement work. With 60 – 80 trailers per day, and 600 transport lines, requires Mapei to work actively on optimizing our logistic process.

The goal of the study is to provide necessary data and documentation to produce an EPD according to the requirements of PCR Environdec (version 1.11, 2021-02-05) under EN 15804:2012+A2:2019/AC:2021 and to have more comprehension about the environmental impacts related to **Mapecrete SRA-N** manufactured in Mapei SpA located in Mediglia (Italy), including packaging of the finished product.

Target audiences of the study are customers and other parties with an interest in the environmental impacts of **Mapecrete SRA-N**. This analysis shall not support comparative assertions intended to be disclosed to the public.

## 2. PRODUCT DESCRIPTION

**Mapecrete SRA-N** is added to all types of concrete and mortars, to reduce the volume reduction from hydraulic shrinkage. This property helps reduce the formation of micro-cracks and also guarantees that the final level of hydraulic shrinkage is extremely low.

**Mapecrete SRA-N** is available in 1000l IBC, 25l cans, 200l drums, and in tank.

For more information about the product see the TDS (Technical Data Sheet) on Mapei AS website (www.mapei.com/no).

## 3. CONTENT DECLARATION

The main components and ancillary materials of the product included in this EPD are the following:

*Table 1: Composition referred to 1kg of packaged product*

| Materials | Percentage (%) by mass |
|---|---|
| Glycols | < 100% |
| **Packaging** | **Percentage (%) by mass** |
| HDPE (IBC) | < 0,5% |
| Metal (IBC) | < 0,5% |
| Wood (IBC) | < 0,5% (40% of biogenic Carbon) |

The product does not contain a concentration higher than 0,1% (by unit weight) of either carcinogenic substances or substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency.

## 4. DECLARED UNIT AND REFERENCE SERVICE LIFE

**The declared unit is 1 kg of finished product with packaging.**

Due to the selected system boundary, the reference service life of the products is not specified.

## 5. SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The approach is “cradle to gate” (A1–A3) with option (modules A4 – A5):

- A1, A2, A3 (Product stage): extraction and processing of raw materials and packaging (A1), transportation up to the factory gate (A2), manufacturing of the finished product (A3).
- A4 – A5 (Construction process stage): transport of the finished product to final customers and installation into the building. Concerning module A5, the installation phase has been evaluated and considered as negligible (cut-off)

*Table 2: System boundaries*

| | 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 | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND |
| Geography | IT, EU | IT, EU | IT | EU | EU | - | - | - | - | - | - | - | - | - | - | - | - |
| Specific data | > 90% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | Not-relevant | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | Not-relevant | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

*MND: Module Not Declared*

A brief description of production process is the following:
The production process starts from raw materials, that are purchased from external and intercompany suppliers and stored in the plant. Bulk raw materials are stored in specific tanks and added in the production mixer, according to the formula of the product. Other raw materials, supplied in bags, tanks, drums and cans, are stored in the warehouse and added manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The semi-finished product is then filled in bags, put on wooden pallets and stored in the finished products warehouse. The quality of final products is controlled before the sale.

*Figure 1: Production process detail*

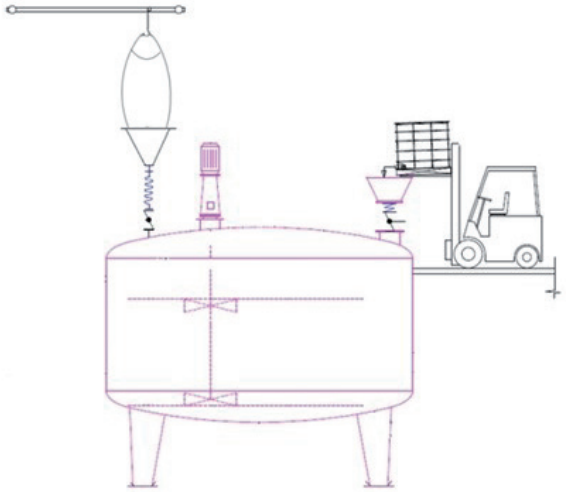


*Table 3: Transport to the building site (A4)*

| Scenario information* | Value | Unit |
|---|---|---|
| Means of transport: truck-trailer euro 6, gross weight 34-40 t, payload capacity 27 t | | |
| Diesel consumption | 0,002 | l/100km |
| Transport distance | 1000 | km |
| Capacity utilisation (including empty runs) | 85 | % |
| Gross density of products transported | - | kg/m³ |
| Capacity utilisation volume factor | 1 | - |

**This is a conservative scenario with regard to the type of truck and distance. If the finished product is delivered by an electric truck, please consider a specific GWP coming from the truck manufacturer (if available).*

*Table 4: Installation into the building (A5)*

| Scenario information | Value | Unit |
|---|---|---|
| Ancillary materials for installation | 0 | kg |
| Water use | 0 | m³ |
| Other resources use | 0 | kg |
| Electricity (Norwegian grid mix) | 0 | MJ |
| Waste materials on building site before waste processing, generated by the product's installation (specified by type) | 0,005 (wood)<br>0,0048 (metal)<br>0,0035 (plastics) | kg |
| Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route) | 0,0085 (energy recovery)<br>0,0048 (recycle) | kg |
| Direct emission to ambient air, soil and water | 0 | kg |

# 6. CUT-OFF RULES AND ALLOCATION

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied in order to hide data. Cut-off criteria, where applied, are described in Table 5.

Input flows are covered for the whole formula.

*Table 5: Cut-off criteria*

| Process excluded from study | Cut-off criteria | Quantified contribution from process |
|---|---|---|
| A3: Production (auxiliary materials) | Less than $10^{-5}$ kg/kg of finished product | Sensitivity study demonstrates a relative contribution lower than 0,5% |
| A3: particle emission | Less than $10^{-4}$ kg/kg of finished product | Sensitivity study demonstrates a relative contribution lower than 0,5% |
| A5: energy for installation | Less than 5% of the total energy used in the system boundary | Sensitivity study demonstrates a relative contribution lower than 3% |

For the allocation procedure and principles consider the following table (Table 6):

*Table 6: Allocation procedure and principles*

| Module | Allocation Principle |
|---|---|
| A1 | All data are referred to 1 kg of product:<br>A1: Electricity is allocated to the whole plant |
| A3 | All data are referred to 1 kg of packaged product:<br>A3-wastes: All data are allocated to the whole production plant |

# 7. ENVIRONMENTAL PERFORMANCE AND INTERPRETATION

**GWP**

**Climate change**
GWPtotal - Global Warming Potential refers to the emission/presence of GHGs (greenhouse gases) in the atmosphere (mainly $CO_2$, $N_2O$, $CH_4$) which contribute to the increase in the temperature of the planet.
GWP-total considers:
- GWP-fossil
- GWP-biogenic
- GWP-luluc (land use and land use change)

**ODP**

**Ozone Depletion**
Ozone Depletion Potential refers to the degradation of the stratospheric layer of the ozone involved in blocking the UV component of sunrays. Depletion is due to particularly reactive components that originate from chlorofluorocarbon (CFC) or chlorofluoromethane (CFM).

**AP**

**Acidification**
Acidification Potential refers to the emission of specific acidifying substances (i.e. NOx, SOx) in the air. These substances decrease the pH of the rainfall with predictable damages to the ecosystem.

**EP**

**Eutrophication**
Eutrophication Potential refers to the nutrient enrichment, which determines unbalance in ecosystems and causes the death of the fauna and decreased biodiversity in flora.
It considers:
- EP-freshwater: acquatic freshwater
- EP-marine: acquatic marine
- EP-terrestrial

**POCP**

**Photochemical ozone formation**
The Photochemical Ozone Creation Potential is the ozone formation in low atmosphere. This is quite common in the cities where a great amount of pollutants (like VOC and NOx) are emitted every day (industrial emissions and vehicles). It is mainly diffused during the summertime.

**ADP minerals&metals**

**Depletion of abiotic resources – minerals and metals**
Abiotic Depletion Potential elements refers to the depletion of the mineral resources.

**ADP - fossil**

**Depletion of abiotic resources – fossil fuel**
Abiotic Depletion Potential fossil fuel refers to the depletion of the fossil fuel resources.

**WDP**

**Water use**
It expresses the potential deprivation of water, that consists in not having the water needs satisfied.

The following tables show the environmental impacts for the products considered according to the requirements of EN15804:2012+A2:2019/AC:2021. The results are referred to the declared unit (see § 4). The additional environmental indicators are not declared.

*NOTE: in the whole document, the comma " , " is the decimal separator, while the point " . " is the thousands separator.*

## MAPECRETE SRA-N

*Table 7: Mapecrete SRA-N: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product in IBC*

| Indicator | Unit | A1 | A2 | A3 | A1 – A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|
| **$GWP_{TOTAL}$** | (kg $CO_2$ eq.) | 4,18E+00 | 9,52E-02 | 1,50E-02 | 4,29E+00 | 6,16E-02 | 1,73E-02 |
| $GWP_{FOSSIL}$ | (kg $CO_2$ eq.) | 4,12E+00 | 9,41E-02 | 2,04E-02 | 4,23E+00 | 6,08E-02 | 1,10E-02 |
| $GWP_{BIOGENIC}$ | (kg $CO_2$ eq.) | 5,19E-02 | 4,61E-04 | -5,46E-03 | 4,69E-02 | 2,18E-04 | 6,36E-03 |
| $GWP_{LULUC}$ | (kg $CO_2$ eq.) | 4,62E-03 | 5,87E-04 | 1,34E-05 | 5,22E-03 | 5,53E-04 | 1,32E-06 |
| ODP | (kg CFC 11 eq.) | 1,60E-06 | 3,44E-13 | 5,52E-10 | 1,60E-06 | 7,77E-15 | 1,99E-15 |
| AP | (mol $H^+$ eq.) | 1,82E-02 | 6,91E-04 | 6,15E-05 | 1,90E-02 | 1,93E-04 | 6,08E-06 |
| $EP_{FRESHWATER}$ | (kg P eq.) | 1,75E-03 | 3,01E-07 | 3,17E-06 | 1,75E-03 | 2,18E-07 | 1,53E-09 |
| $EP_{MARINE}$ | (kg N eq.) | 3,68E-03 | 2,22E-04 | 1,41E-05 | 3,92E-03 | 8,73E-05 | 2,39E-06 |
| $EP_{TERRESTRIAL}$ | (mol N eq.) | 3,63E-02 | 2,45E-03 | 1,48E-04 | 3,89E-02 | 9,82E-04 | 2,73E-05 |
| POCP | (kg NMVOC eq.) | 1,38E-02 | 5,61E-04 | 5,09E-05 | 1,44E-02 | 1,74E-04 | 6,13E-06 |
| $ADP_{MINERALS\&METALS}$* | (kg Sb eq.) | 6,17E-05 | 7,07E-09 | 5,90E-08 | 6,18E-05 | 3,93E-09 | 2,48E-11 |
| $ADP_{FOSSIL}$* | (MJ) | 9,66E+01 | 1,38E+00 | 4,80E-01 | 9,85E+01 | 8,14E-01 | 6,85E-03 |
| WDP* | ($m^3$ world eq.) | 4,20E+00 | 4,82E-03 | 6,60E-03 | 4,22E+00 | 7,22E-04 | 1,36E-03 |

**$GWP_{TOTAL}$**: Global Warming Potential total; **$GWP_{FOSSIL}$**: Global Warming Potential fossil fuels; **$GWP_{BIOGENIC}$**: Global Warming Potential biogenic; **$GWP_{LULUC}$**: Global Warming Potential land use and land use change; **ODP**: Depletion Potential of the stratospheric Ozone layer; **AP**: Acidification Potential; **$EP_{FRESHWATER}$**: Eutrophication Potential, freshwater; **$EP_{MARINE}$**: Eutrophication Potential, marine; **$EP_{TERRESTRIAL}$**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **$ADP_{MINERALS\&METALS}$**: Abiotic Depletion Potential for non-fossil resources; **$ADP_{FOSSIL}$**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is a limited experienced with the indicator*

*Table 8: Mapecrete SRA-N: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product in IBC*

| Indicator | Unit | A1 | A2 | A3 | A1 – A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|
| **GWP-GHG** | (kg $CO_2$ eq.) | 3,99E+00 | 9,30E-02 | 2,00E-02 | 4,10E+00 | 6,00E-02 | 1,10E-02 |

**GWP-GHG**: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

*Table 9: Mapecrete SRA-N: Use of resources referred to 1 kg of product in IBC*

| Indicator | Unit | A1 | A2 | A3 | A1 – A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|
| PERE | MJ | 5,56E+00 | 2,91E-01 | 1,56E-01 | 6,00E+00 | 5,92E-02 | 1,30E-03 |
| PERM | MJ | 0,00E+00 | 0,00E+00 | 9,71E-02 | 9,71E-02 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | 5,56E+00 | 2,91E-01 | 2,53E-01 | 6,10E+00 | 5,92E-02 | 1,30E-03 |
| PENRE | MJ | 9,66E+01 | 1,38E+00 | 4,80E-01 | 9,85E+01 | 8,17E-01 | 6,86E-03 |
| PENRM | MJ | 0,00E+00 | 0,00E+00 | 1,61E-01 | 1,61E-01 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | 9,66E+01 | 1,38E+00 | 6,41E-01 | 9,86E+01 | 8,17E-01 | 6,86E-03 |
| SM* | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | $m^3$ | 9,79E-02 | 2,54E-04 | 1,78E-04 | 9,83E-02 | 6,49E-05 | 3,22E-05 |

**PERE**: Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM**: Use of renewable primary energy resources used as raw materials; **PERT**: Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials); **PENRE**: Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM**: Use of non-renewable primary energy resources used as raw materials; **PENRT**: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM**: Use of secondary material; **RSF**: Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **FW**: Net use of fresh water.

** Referred only to 1 kg of product without packaging*

*Table 10: Mapecrete SRA-N: Waste production and output flows referred to 1 kg of product in IBC*

| Indicator | Unit | A1 | A2 | A3 | A1 – A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|
| HWD | kg | 2,26E-11 | -2,68E-11 | 1,81E-03 | 1,81E-03 | 2,53E-12 | 1,90E-13 |
| NHWD | kg | 3,18E-05 | 4,24E-04 | 1,96E-03 | 2,42E-03 | 1,25E-04 | 1,48E-03 |
| RWD | kg | 1,01E-06 | 6,25E-05 | 9,06E-06 | 7,26E-05 | 1,53E-06 | 2,32E-07 |
| Components for re-use | kg | 0,00E+00 | 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 | 8,49E-03 | 8,49E-03 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery | kg | 0,00E+00 | 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 | 0,00E+00 |
| Exported energy, thermal | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

**HWD**: Hazardous waste disposed; **NHWD**: Non-Hazardous waste disposed; **RWD**: Radioactive waste disposed

*Table 11: Mapecrete SRA-N: Information on biogenic carbon content at the factory gate referred to 1 kg of product in IBC*

| Biogenic Carbon Content | Unit | Quantity |
|---|---|---|
| Biogenic carbon content in product | kg C | 0,00E+00 |
| Biogenic carbon content in packaging | kg C | 2,20E-03 |

Tables from 7 to 11 show absolute results for all the environmental categories considered.

The main contribution to all the environmental categories comes from extraction and processing of raw materials (**module A1**). The production stage (**module A3**) is relevant only for the $GWP_{BIOGENIC}$ with a negative contribution due to the packaging components. This negative contribution is balanced in **module A5**, when the packaging reaches its end of life.

More details about electrical mix used in this EPD, is shown below:

| | Data source | GWP-GHG | Unit |
|---|---|---|---|
| Residual electricity grid mix (IT) – 2022 | AIB | 0,562* | kg $CO_2$-eqv/kWh |

** CML2001 – Aug. 2016*

# 8. DATA QUALITY

*Table 12: Data quality*

| Dataset & Geographical reference | Database (source) | Temporary reference |
|---|---|---|
| **A1; A3** | | |
| Glycols | Ecoinvent 3.8 | 2021 |
| Residual electricity grid mix (IT) | Sphera Database; AIB | 2019-2022 |
| Electricity from photovoltaic (IT) | Sphera Database | 2019 |
| Packaging components (EU) | Sphera Database; Ecoinvent 3.8; | 2022 |
| Electricity grid mix (AU) | Sphera Database | 2020 |
| Packaging components (GLO) | Sphera Database, PlasticsEurope | 2005 – 2020 |
| **A2** | | |
| Truck, Euro 5, 27t payload (GLO) | Sphera Database | 2022 |
| Oceanic ship (27500 DWT – GLO) | Sphera Database | 2022 |
| Light train, gross tonne weight 500t / 363t payload (GLO) | Sphera Database | 2022 |
| Electricity grid mix (EU) | Sphera Database | 2019 |
| Diesel for transport (EU) | Sphera Database | 2019 |
| Heavy Fuel Oil (EU) | Sphera Database | 2019 |
| **A4** | | |
| Truck, Euro 6, 27t payload (GLO) | Sphera Database | 2022 |
| Diesel for transport (EU) | Sphera Database | 2019 |
| **A5** | | |
| Commercial waste in municipal waste incineration plant | Sphera Database | 2022 |
| Inert matter on landfill | Sphera Database | 2022 |

All data included in table above refer to a period between 2019 and 2022; the most relevant ones are specific from supplier, while the

others (i.e. transport and minor contribution dataset), come from European and global databases.

All dataset are not more than 10 years old according to EN 15804 §6.3.8.2 “Data quality requirements”. The Quality level concerning datasets used in the EPD can be considered as ”very good” or ”good” according to Annex E of the EN 15804 (current version).

Primary data concern the year 2022 and represent the whole annual production.

# 9. ADDITIONAL INFORMATION

## 9.1 Indication for the calculation of Module A4 (Transport from the factory to the jobsite)

To calculate the impact of transporting 1 kg of product from the factory gate (Sagstua) to the jobsite, use the following formula:

*Transport Impact = EF (kg/DU) * distance (km)*

*EF: Emission Factor; DU: declared Unit*

*Table 13: The EFs are related to 1 kg of product transported with truck EURO 5 and EURO 6*

| Impact Category | Unit | EF (EURO 5) | EF (EURO 6) |
|---|---|---|---|
| **$GWP_{TOTAL}$** | (kg $CO_2$ eq.)/km | 6,08E-05 | 5,96E-05 |
| $GWP_{FOSSIL}$ | (kg $CO_2$ eq.) /km | 6,00E-05 | 5,89E-05 |
| $GWP_{BIOGENIC}$ | (kg $CO_2$ eq.) /km | 2,15E-07 | 2,12E-07 |
| $GWP_{LULUC}$ | (kg $CO_2$ eq.) /km | 5,46E-07 | 5,37E-07 |
| ODP | (kg CFC 11 eq.) /km | 7,67E-18 | 7,55E-18 |
| AP | (mol H+ eq.) /km | 1,90E-07 | 7,15E-08 |
| $EP_{FRESHWATER}$ | (kg P eq.) /km | 2,16E-10 | 2,12E-10 |
| $EP_{MARINE}$ | (kg N eq.) /km | 8,62E-08 | 2,38E-08 |
| $EP_{TERRESTRIAL}$ | (mol N eq.) /km | 9,69E-07 | 2,87E-07 |
| POCP | (kg NMVOC eq.) /km | 1,72E-07 | 6,15E-08 |
| $ADP_{MINERALS\&METALS}$ | (kg Sb eq.) /km | 3,88E-12 | 3,82E-12 |
| $ADP_{FOSSIL}$ | (MJ) /km | 8,03E-04 | 7,90E-04 |
| WDP | ($m^3$ world eq.) /km | 7,12E-07 | 7,01E-07 |

Example:
If the product is transported by truck (EURO 6) from Sagstua (production plant) to Oslo (Jobsite) for approximately 90 km, the GWP impact will be:

*$GWP_{TOTAL}$ = 5,96E-05 * 90km = 5,36E-03 kg $CO_2$eq*

## 10. VERIFICATION AND REGISTRATION

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

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

| CEN standard EN 15804 served as the Core Product Category Rules (PCR) | |
|---|---|
| PCR: | PCR 2019:14 Construction products (EN 15804:A2), Version 1.11, 2021-02-05, UN CPC code 54 |
| PCR review was conducted by: | The Technical Committee of the International EPD® System.<br>See www.environdec.com/TC for a list of members.<br>Review chair: Claudia A. Peña, University of Concepción, Chile.<br>The review panel may be contacted via the Secretariat www.environdec.com/contact. |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006: | ☒ EPD Process Certification<br>☐ EPD Verification |
| Third party verifier: | Certiquality S.r.l.<br>Number of accreditation: 003H rev15 |
| Accredited or approved by: | Accredia |
| Procedure for follow-up of data during EPD validity involves third-party verifier | ☒ Yes<br>☐ No |

## 11. REFERENCES


- EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- EUROPEAN RESIDUAL MIXES VERSION 1.0, 2023-06-01 (AIB: ASSOCIATION OF ISSUING BODIES
- GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 3.01
- ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES
- ISO 14044 ENVIRONMENTAL MANAGEMENT – LIFE CYCLE ASSESSMENT – REQUIREMENTS AND GUIDELINES
- PCR 2019:14 CONSTRUCTION PRODUCTS (EN 15804: A2), UN CPC CODE 54; VERSION 1.11

# CONTACT INFORMATION

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# ANNEX 1

# ANNEX 1: Self declaration from EPD owner

## Specific requirements

### 1 Applied electricity data set used in the manufacturing phase

The electricity mix for the electricity used in manufacturing (A3) is the electricity grid mix

<0,562 kg $CO_2$ eqv/MJ>

### 2 Transport from the place of manufacture to a central warehouse

Transport distance, and $CO_2$-eqv./DU from transport of the product from factory gate to central warehouse in Oslo shall be given. The following table shall be included in the EPD:

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy use | Unit | Value (l/t) | Kg CO2-eqv./DU |
|---|---|---|---|---|---|---|---|
| Boat | | | | | | | |
| Truck | <85> | <Truck 27 tonn, EURO6> | <95> | <0,0160> | l/tkm | <1,52> | 4,59E-03 |
| Railway | | | | | | | |
| Rail | | | | | | | |
| Air | | | | | | | |
| Total | <85> | <Truck 27 tonn, EURO6> | <95> | <0,0160> | l/tkm | <1,52> | 4,59E-03 |

# 3 Impact on the indoor environment

☐ Indoor air emission testing has been performed; specify test method and reference; M1, _____

☒ No test has being performed

☐ Not relevant; specify _____