

# ENVIRONMENTAL PRODUCT DECLARATION

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

Painted MDF frontal  
Nobia Ab



**EPD HUB, HUB-1060**

Published on 01.02.2024, last updated on 09.07.2024, valid until 01.02.2029.

# GENERAL INFORMATION

## MANUFACTURER

|                 |                                            |
|-----------------|--------------------------------------------|
| Manufacturer    | Nobia Ab                                   |
| Address         | Blekhölmstorget 30 E7, SE-111 64 Stockholm |
| Contact details | info@nobia.com                             |
| Website         | www.nobia.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-A5, and modules C1-C4, D                                                                                                                            |
| EPD author         | Anna Hokkanen; Nobia Ab                                                                                                                                                             |
| EPD verification   | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification |
| EPD verifier       | Haiha Nguyen, 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                      | Painted MDF frontal                                                |
| Additional labels                 | HTH, Invita, Marbodal, Novart, Sigdal, Uno Form, Norema            |
| Product reference                 | SL011 NPS                                                          |
| Place of production               | Ølgod Denmark, Tidaholm Sweden, Eggedal Norway and Nastola Finland |
| Period for data                   | Calendar year 2022                                                 |
| Averaging in EPD                  | Multiple factories                                                 |
| Variation in GWP-fossil for A1-A3 | 25 %                                                               |

## ENVIRONMENTAL DATA SUMMARY

|                                           |                                                               |
|-------------------------------------------|---------------------------------------------------------------|
| Declared unit                             | 1 frontal, size 596 mm x 700 mm x 19 mm = 0,42 m <sup>2</sup> |
| Declared unit mass                        | 6.4 kg                                                        |
| GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)   | 7,91E+00                                                      |
| GWP-total, A1-A3 (kgCO <sub>2</sub> e)    | -2,26E+00                                                     |
| Secondary material, inputs (%)            | 2.18                                                          |
| Secondary material, outputs (%)           | 97.8                                                          |
| Total energy use, A1-A3 (kWh)             | 66.5                                                          |
| Total water use, A1-A3 (m <sup>3</sup> e) | 2,02E-01                                                      |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Nobia Ab is a leading kitchen furniture specialist in Europe and one of the largest in the world.

The Science Based Targets initiative (SBTi) has approved Nobia Abs reduction targets for both direct and indirect CO2 emissions (Scope 1 and 2). The endorsement by the CDP, the UN Global Compact, the World Resources Institute (WRI) and the World Wildlife Fund (WWF) means that our targets are science-based and in line with the Paris Climate Agreement.

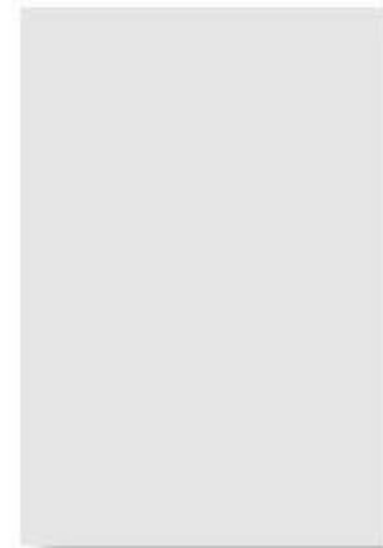
## PRODUCT DESCRIPTION

This EPD represents a painted frontal (i.e. door) that can be used with kitchen and wardrobe cabinets.

Materials are medium density particle board and paint. Frontal is painted throughout; both faces and sides. The service life for a door when used and maintained according to instructions is expected to be 25 years.

Calculation is based on commonly used frontal size 596 mm x 700 mm, respective area is 0,42 m². Knobs, handles and hinges are excluded.

Further information can be found at [www.nobia.com](http://www.nobia.com).



## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|-----------------------|-----------------|-----------------|
| Metals                | 0               |                 |
| Minerals              | 1               | EU              |
| Fossil materials      | 9               | EU              |
| Bio-based materials   | 90              | EU              |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|                                            |       |
|--------------------------------------------|-------|
| Biogenic carbon content in product, kg C   | 2.13  |
| Biogenic carbon content in packaging, kg C | 0.315 |

## FUNCTIONAL UNIT AND SERVICE LIFE

|                        |                                                               |
|------------------------|---------------------------------------------------------------|
| Declared unit          | 1 frontal, size 596 mm x 700 mm x 19 mm = 0,42 m <sup>2</sup> |
| Mass per declared unit | 6.4 kg                                                        |
| Functional unit        | m <sup>2</sup>                                                |
| Reference service life | 25                                                            |



## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm) dated 14th June 2023.

## 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 | Deconstr./demol.  | Transport | Waste processing | Disposal | Reuse                        | 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.

Manufacturing of the cabinets is done at the factories in Ølgod Denmark, Tidaholm Sweden, Eggedal Norway and Nastola Finland.

Manufacturing includes processing of wood-based boards by sawing, machining and painting. Parts and finished frontals are moved with forklifts and pallet jacks inside the factory. Manufacturing waste is from

wood processing (from cutting, drilling, and milling) and painting (sanding and overspray). Majority of wood waste is considered to go to energy use, but some is recycled for new particle boards.

The energy used and production waste have been calculated from the annual production of manufacturing sites and then allocated to one product based on annual board use and production volumes of different production sites.

All Nobio production sites have certified green electricity. Heating type varies by each location from district heating, wood and oil to biogas.

### 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.

A4: Average transportation distance of 100 km is used for calculation, which presents well the actual market situation in all Nordic markets. Frontal mass together with packaging mass represents the transported quantity.

A5: Installation is done with handheld tools containing rechargeable battery. Installation waste that is considered in module A5 includes packaging cardboard that is considered to go to incineration with energy recovery at the closest (100km) facility.



## PRODUCT USE AND MAINTENANCE (B1-B7)



This EPD does not cover the use phase.

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

## PRODUCT END OF LIFE (C1-c4, D)

C1: Energy and resources consumed for de-construction/demolition of one frontal are negligible. Frontal is usually removed manually without any electrical hand tools.

C2: Frontal is transported together with other furniture waste to the closest waste treatment facility, where it can be sorted into relevant waste material streams. 100km is considered to be distance. The figure is based on the average distance and the estimate of the dispersion in the distances of the sorting points.

C3: Even materials are recyclable, in this study MDF boards are considered to be incinerated with energy recovery.

C4: Paint is considered to be incinerated without energy recovery.

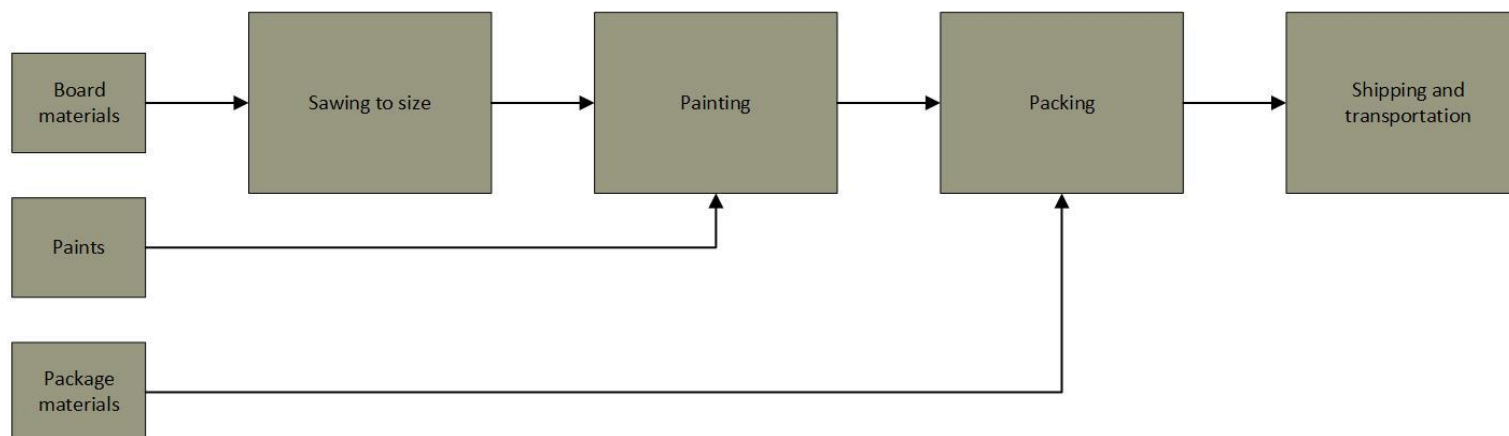
D: Benefits and loads are accounted for all materials where applicable (all except paint waste as it is modelled in C4 because the efficiency of its incineration is considered to be lower than 60%).

Recycling of wood waste is modelled with accounting the loads due to recycling process and benefits related to the avoided products of corresponding raw materials.

In the similar way - incineration loads are due to incineration process and benefits are calculated as produced electricity and heat - using the heating values of corresponding materials.

The used efficiency of the CHP plant in the calculation was approximately 73% as a whole, of which the efficiency for electricity is 11% and for heat production 62%. Source: (Eriksson, O & Finnveden, G. 2017).

## 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.

### 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            | Allocated by mass or volume |
| Ancillary materials            | Allocated by mass or volume |
| Manufacturing energy and waste | Allocated by mass or volume |

### AVERAGES AND VARIABILITY

|                                   |                                    |
|-----------------------------------|------------------------------------|
| Type of average                   | Multiple factories                 |
| Averaging method                  | Averaged by shares of total volume |
| Variation in GWP-fossil for A1-A3 | 25 %                               |

Data represents the average values when the same Nobio frontal is produced in four Nobio production locations in Ølgod Denmark, Tidaholm Sweden, Eggedal Norway and Nastola Finland.

### 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 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 <sup>1)</sup>           | kg CO <sub>2</sub> e   | -3,16E+00 | 2,32E-02 | 8,82E-01 | -2,26E+00 | 6,49E-02 | 1,19E+00 | MND | MND | MND | MND | MND | MND | MND | 1,60E-03 | 6,01E-02 | 9,61E+00 | 3,40E-01 | -4,73E+00 |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 7,07E+00  | 2,32E-02 | 8,21E-01 | 7,91E+00  | 6,49E-02 | 3,31E-02 | MND | MND | MND | MND | MND | MND | MND | 1,59E-03 | 6,00E-02 | 9,61E-02 | 3,40E-01 | -4,72E+00 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | -1,07E+01 | 0,00E+00 | 5,65E-02 | -1,07E+01 | 0,00E+00 | 1,15E+00 | MND | MND | MND | MND | MND | MND | MND | 9,97E-06 | 4,94E-07 | 9,51E+00 | 1,32E-04 | -9,82E-03 |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 4,92E-01  | 8,68E-06 | 3,79E-03 | 4,96E-01  | 2,33E-05 | 2,07E-05 | MND | MND | MND | MND | MND | MND | MND | 3,71E-06 | 2,22E-05 | 3,13E-05 | 6,70E-05 | -3,17E-03 |
| Ozone depletion pot.                | kg CFC <sub>11</sub> e | 7,84E-07  | 5,42E-09 | 9,70E-08 | 8,86E-07  | 1,55E-08 | 3,74E-09 | MND | MND | MND | MND | MND | MND | MND | 7,93E-11 | 1,38E-08 | 6,66E-09 | 4,92E-08 | -2,54E-07 |
| Acidification potential             | mol H <sup>+</sup> e   | 5,91E-02  | 9,01E-05 | 4,28E-03 | 6,34E-02  | 2,71E-04 | 2,43E-04 | MND | MND | MND | MND | MND | MND | MND | 8,60E-06 | 2,54E-04 | 1,03E-03 | 6,70E-04 | -3,65E-02 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 3,75E-04  | 1,68E-07 | 5,03E-05 | 4,26E-04  | 4,44E-07 | 3,70E-07 | MND | MND | MND | MND | MND | MND | MND | 1,69E-07 | 4,92E-07 | 1,30E-06 | 2,12E-06 | -2,61E-04 |
| EP-marine                           | kg Ne                  | 1,28E-02  | 2,56E-05 | 1,37E-03 | 1,42E-02  | 8,20E-05 | 9,97E-05 | MND | MND | MND | MND | MND | MND | MND | 1,17E-06 | 7,56E-05 | 4,86E-04 | 1,14E-04 | -4,23E-03 |
| EP-terrestrial                      | mol Ne                 | 1,33E-01  | 2,82E-04 | 1,25E-02 | 1,46E-01  | 9,03E-04 | 1,04E-03 | MND | MND | MND | MND | MND | MND | MND | 1,33E-05 | 8,34E-04 | 5,17E-03 | 1,28E-03 | -4,93E-02 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 4,05E-02  | 9,27E-05 | 3,13E-02 | 7,19E-02  | 2,91E-04 | 2,63E-04 | MND | MND | MND | MND | MND | MND | MND | 3,62E-06 | 2,67E-04 | 1,27E-03 | 3,83E-04 | -1,37E-02 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 7,30E-05  | 6,12E-08 | 4,07E-06 | 7,71E-05  | 1,52E-07 | 1,16E-07 | MND | MND | MND | MND | MND | MND | MND | 3,76E-09 | 1,41E-07 | 2,63E-07 | 1,20E-06 | -3,57E-06 |
| ADP-fossil resources                | MJ                     | 1,23E+02  | 3,51E-01 | 9,42E+00 | 1,33E+02  | 9,93E-01 | 3,07E-01 | MND | MND | MND | MND | MND | MND | MND | 3,38E-02 | 9,02E-01 | 8,21E-01 | 2,51E+00 | -5,63E+01 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 7,59E+00  | 1,60E-03 | 4,85E-01 | 8,08E+00  | 4,58E-03 | 5,36E-02 | MND | MND | MND | MND | MND | MND | MND | 8,71E-04 | 4,04E-03 | 4,18E-01 | 3,65E-02 | -8,31E-01 |

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.

## 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   | 9,54E+01 | 4,46E-03 | 1,45E+01  | 1,10E+02 | 1,29E-02 | 1,59E-02  | MND | MND | MND | MND | MND | MND | MND | 5,77E-03 | 1,02E-02 | 2,00E-02  | 5,83E-02  | -1,08E+01 |
| Renew. PER as material             | MJ   | 1,05E+02 | 0,00E+00 | 1,24E-01  | 1,05E+02 | 0,00E+00 | -1,19E+01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -9,12E+01 | -1,77E+00 | 0,00E+00  |
| Total use of renew. PER            | MJ   | 2,00E+02 | 4,46E-03 | 1,46E+01  | 2,15E+02 | 1,29E-02 | -1,19E+01 | MND | MND | MND | MND | MND | MND | MND | 5,77E-03 | 1,02E-02 | -9,12E+01 | -1,71E+00 | -1,08E+01 |
| Non-re. PER as energy              | MJ   | 1,09E+02 | 3,51E-01 | 9,40E+00  | 1,19E+02 | 9,93E-01 | 3,07E-01  | MND | MND | MND | MND | MND | MND | MND | 3,37E-02 | 9,02E-01 | 8,21E-01  | 2,51E+00  | -5,63E+01 |
| Non-re. PER as material            | MJ   | 1,39E+01 | 0,00E+00 | -1,56E+00 | 1,23E+01 | 0,00E+00 | 0,00E+00  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -1,10E+01 | -1,25E+00 | 0,00E+00  |

|                          |    |          |          |          |          |          |          |     |     |     |     |     |     |     |          |          |           |          |           |
|--------------------------|----|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|-----------|----------|-----------|
| Total use of non-re. PER | MJ | 1,23E+02 | 3,51E-01 | 7,83E+00 | 1,31E+02 | 9,93E-01 | 3,07E-01 | MND | MND | MND | MND | MND | MND | MND | 3,37E-02 | 9,02E-01 | -1,02E+01 | 1,27E+00 | -5,63E+01 |
| Secondary materials      | kg | 1,39E-01 | 1,03E-04 | 3,40E-01 | 4,79E-01 | 2,80E-04 | 2,83E-04 | MND | MND | MND | MND | MND | MND | MND | 2,57E-06 | 2,50E-04 | 1,97E-03  | 3,92E-03 | -4,72E-03 |
| Renew. secondary fuels   | MJ | 1,07E+01 | 1,02E-06 | 3,33E-01 | 1,10E+01 | 2,47E-06 | 4,59E-06 | MND | MND | MND | MND | MND | MND | MND | 1,34E-08 | 2,53E-06 | 4,63E-06  | 5,26E-06 | -2,98E-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 | 1,94E-01 | 4,55E-05 | 7,43E-03 | 2,02E-01 | 1,32E-04 | 9,72E-04 | MND | MND | MND | MND | MND | MND | MND | 2,79E-05 | 1,17E-04 | -1,32E-03 | 9,38E-04 | -4,49E-02 |

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   | 6,49E-01 | 4,07E-04 | 2,11E-01 | 8,60E-01 | 1,06E-03 | 2,11E-04 | MND | MND | MND | MND | MND | MND | MND | 1,18E-04 | 1,20E-03 | 0,00E+00 | 1,36E-01 | -3,70E-01 |
| Non-hazardous waste | kg   | 1,56E+01 | 6,91E-03 | 9,55E+00 | 2,51E+01 | 1,85E-02 | 7,54E-01 | MND | MND | MND | MND | MND | MND | MND | 7,68E-03 | 1,96E-02 | 6,26E+00 | 0,00E+00 | -1,81E+01 |
| Radioactive waste   | kg   | 3,00E-04 | 2,40E-06 | 3,40E-05 | 3,36E-04 | 6,85E-06 | 1,04E-06 | MND | MND | MND | MND | MND | MND | MND | 2,45E-07 | 6,03E-06 | 0,00E+00 | 0,00E+00 | -2,52E-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 | 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 |
| Materials for recycling  | kg   | 0,00E+00 | 0,00E+00 | 4,22E-01 | 4,22E-01 | 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 |
| Materials for energy rec | kg   | 0,00E+00 | 0,00E+00 | 1,17E+00 | 1,17E+00 | 0,00E+00 | 7,50E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 6,26E+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 | 8,71E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 5,56E+01 | 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 <sub>2</sub> e               | 7,36E+00 | 2,30E-02 | 8,32E-01 | 8,22E+00 | 6,43E-02 | 3,18E-02 | MND | MND | MND | MND | MND | MND | MND | 1,57E-03 | 5,94E-02 | 9,15E-02 | 3,39E-01 | -4,64E+00 |
| Ozone depletion Pot. | kg CFC <sub>11</sub> e             | 6,71E-07 | 4,29E-09 | 8,27E-08 | 7,58E-07 | 1,23E-08 | 3,20E-09 | MND | MND | MND | MND | MND | MND | MND | 6,86E-11 | 1,09E-08 | 5,75E-09 | 4,18E-08 | -2,08E-07 |
| Acidification        | kg SO <sub>2</sub> e               | 4,75E-02 | 7,05E-05 | 3,02E-03 | 5,06E-02 | 2,10E-04 | 1,79E-04 | MND | MND | MND | MND | MND | MND | MND | 7,28E-06 | 1,98E-04 | 7,21E-04 | 5,58E-04 | -3,12E-02 |
| Eutrophication       | kg PO <sub>4</sub> <sup>3</sup> e  | 2,24E-02 | 1,57E-05 | 3,29E-03 | 2,57E-02 | 4,69E-05 | 1,26E-04 | MND | MND | MND | MND | MND | MND | MND | 5,88E-06 | 4,50E-05 | 8,29E-04 | 1,46E-04 | -9,21E-03 |
| POCP ("smog")        | kg C <sub>2</sub> H <sub>4</sub> e | 4,02E-03 | 2,91E-06 | 2,49E-04 | 4,27E-03 | 8,25E-06 | 5,75E-06 | MND | MND | MND | MND | MND | MND | MND | 2,97E-07 | 7,71E-06 | 2,37E-05 | 2,22E-05 | -1,34E-03 |
| ADP-elements         | kg Sbe                             | 7,21E-05 | 5,96E-08 | 3,64E-06 | 7,58E-05 | 1,48E-07 | 9,56E-08 | MND | MND | MND | MND | MND | MND | MND | 3,75E-09 | 1,36E-07 | 2,32E-07 | 9,05E-07 | -3,55E-06 |
| ADP-fossil           | MJ                                 | 1,23E+02 | 3,51E-01 | 9,40E+00 | 1,33E+02 | 9,93E-01 | 3,06E-01 | MND | MND | MND | MND | MND | MND | MND | 3,37E-02 | 9,02E-01 | 8,21E-01 | 2,51E+00 | -5,62E+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 <sup>9)</sup> | kg CO <sub>2</sub> e | 7,07E+00 | 2,32E-02 | 8,21E-01 | 7,91E+00 | 6,49E-02 | 3,31E-02 | MND | MND | MND | MND | MND | MND | MND | MNR | 0,00E+00 | 0,00E+00 | 0,00E+00 | -4,72E+00 |

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.

## 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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited  
01.02.2024

