

## ENVIRONMENTAL PRODUCT DECLARATION

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

### SWEDOOR ADVANCE-LINE

EXTERIOR DOORSETS 70 MM, GLAZED

### JELD-WEN



EPD HUB, HUB-1515

Published on 29.06.2024, last updated on 29.06.2024, valid until 29.06.2029

## GENERAL INFORMATION

### MANUFACTURER

|                        |   |
|------------------------|---|
| <b>Manufacturer</b>    | JELD-WEN  |
| <b>Address</b>         | Retford Road, Woodhouse Mill, Sheffield, South Yorkshire, S13 9WH |
| <b>Contact details</b> | EU_Sustainability@jeldwen.com                                     |
| <b>Website</b>         | www.jeld-wen.biz  |

### EPD STANDARDS, SCOPE AND VERIFICATION

|                           |  |
|---------------------------|--|
| <b>Program operator</b>   | EPD Hub, hub@epdhub.com  |
| <b>Reference standard</b> | EN 15804+A2:2019 and ISO 14025   |
| <b>PCR</b>                | EPD Hub Core PCR version 1.0, 1 Feb 2022<br>EN 17213 Windows and doors   |
| <b>Sector</b>             | Construction product   |
| <b>Category of EPD</b>    | Third party verified EPD   |
| <b>Scope of the EPD</b>   | Cradle to gate with options, A4-A5, and modules C1-C4, D   |
| <b>EPD author</b>         | Susanna Käsnänen   |
| <b>EPD verification</b>   | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification |
| <b>EPD verifier</b>       | Imane Uald lamkaddam, 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

|  |  |
|--|--|
| <b>Product name</b>                      | SWEDOOR ADVANCE-line Exterior doorsets 70 mm, glazed   |
| <b>Additional labels</b>                 | ADVANCE-LINE Character, ADVANCE-LINE Classic, ADVANCE-LINE Function, ADVANCE-LINE custom designs |
| <b>Product reference</b>                 |  |
| <b>Place of production</b>               | Aizkraukle, Latvia   |
| <b>Period for data</b>                   | 2021   |
| <b>Averaging in EPD</b>                  | No averaging   |
| <b>Variation in GWP-fossil for A1-A3</b> | 0 %  |

### ENVIRONMENTAL DATA SUMMARY

|   |                  |
|---|------------------|
| <b>Declared unit</b>                              | one square meter |
| <b>Declared unit mass</b>                         | 29.17 kg         |
| <b>GWP-fossil, A1-A3 (kgCO<sub>2</sub>e)</b>      | 8,65E+01         |
| <b>GWP-total, A1-A3 (kgCO<sub>2</sub>e)</b>       | 5,56E+01         |
| <b>Secondary material, inputs (%)</b>             | 3.52             |
| <b>Secondary material, outputs (%)</b>            | 63.5             |
| <b>Total energy use, A1-A3 (kWh)</b>              | 513              |
| <b>Net fresh water use, A1-A3 (m<sup>3</sup>)</b> | 27.1             |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Headquartered in Charlotte, N.C., USA, JELD-WEN is a leading global manufacturer of high-performance interior and exterior building products, offering one of the broadest selections of windows, interior and exterior doors, and wall systems. JELD-WEN delivers a differentiated customer experience, providing construction professionals with durable, energy-efficient products and labor-saving services that help them maximize productivity and create beautiful, secure spaces for all to enjoy. The JELD-WEN team is driven by innovation and committed to creating safe, sustainable environments for customers, associates, and local communities. The JELD-WEN family of brands includes JELD-WEN® worldwide; LaCantina™ and VPI™ in North America; Swedoor® and DANA® in Europe. Visit JELD-WEN.com for more information.

## PRODUCT DESCRIPTION

Advance-line exterior doorset including glazed doorleaf, wooden frame and standard hardware for installation. Doorleaf has 70 mm sandwich construction with EPS core, and it is installed together as a doorset with the average Swedoor frameset for exterior doors.

The scope of this EPD is the full doorset for module size of 9X21, depth of frame 210 mm. The reference size of 0,988 m x 2,080 m is used in the LCA to calculate the results for the declared unit (one square meter of the doorset). Product is suitable for use in both private and commercial buildings, with main area of use residential houses (1+2 dwellings).

The specific technical standards and additional product information for the designs and available classification options can be found on Swedoor website, [www.jeld-wen.biz](http://www.jeld-wen.biz).

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass- % | Material origin |
|-----------------------|-----------------|-----------------|
| Bio-based materials   | 59              | EU              |
| Minerals              | 18              | EU              |
| Fossil materials      | 13              | EU              |
| Metals                | 10              | EU              |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|  |      |
|--|------|
| Biogenic carbon content in product, kg C   | 7.97 |
| Biogenic carbon content in packaging, kg C | 1.40 |

## FUNCTIONAL UNIT AND SERVICE LIFE

|                        |                  |
|------------------------|------------------|
| Declared unit          | one square meter |
| Mass per declared unit | 29.17 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 |          |           |  |
|---------------|-----------|----------------|-----------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|-------------------|-----------|------------------|----------|------------------------------|----------|-----------|--|
| A 1           | A 2       | A 3            | A 4       | A5       | B 1       | B 2         | B 3    | B 4         | B 5           | B 6                    | B 7                   | C1                | C2        | C3               | C4       | D                            |          |           |  |
| x             | x         | x              | x         | x        | 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.

The manufacturing process begins by gluing and pressing the components of the doorleaf together. This is followed then by different milling phases, where the product components are made

to meet the correct dimensions, as well as the holes for the hardware installations and chosen edge profiles are made. Next, the door undergoes the surface treatment. After the painting process, the door is ready for installing the hardware (lock & hinges). Lastly, before leaving the factory, the door is stacked onto pallets along other doors (max. 20 doors per pallet) and to shield the finished product during transportation phase, the stack is protected with cardboard and plastic packaging materials.

### 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.

When considering this phase of the life-cycle, there is not only one place where the transportation from us would end, as our customers can have multiple locations between each other, thus causing variance to the transport distance and the needed vehicles. The travel distances used on the transportation data is then a theoretical value, a weighted average value for this product, which is calculated based on its previous transportation history. The assumed vehicle for the transportation is a lorry, with the vehicle capacity value of 1, meaning that the lorry is carrying a full load all around while transporting the goods, causing distortion to the results. However, when considering the overall results of the product life-cycle, the impact of the old variance among transportation can be considered negligible due having a low impact to the overall results. Empty returns are considered to be out of scope, as the transportation company is considered to be out of our use, when they are not having our goods on board, and

serving their other customers or routes. Material loss is not expected to take place during transportation phase due to sufficient protective packaging of our products.

Upon installing the products, the packaging materials are removed, leading to generating packaging waste. As the final product is only installed, there is no material loss expected to happen during installing phase nor such construction practices that would lead to material loss are needed. The installing work consists of mounting and fastening, which can be done with hand tools. There are no extra materials needed to be used for the installing purposes. The energy consumption for installing is then considered to be zero, due to the small size of the consumption and the impact it has on this life-cycle stage.

## PRODUCT USE AND MAINTENANCE (B1-B7)

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

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

The energy and use of natural resources upon demolition process are considered negligible. The waste collecting vehicle is assumed to a lorry and the waste is assumed to be part of the mixed construction waste- fraction. The travel distance of the lorry carrying the waste from the demolition site to the waste handling site is assumed to be 50 kilometres.

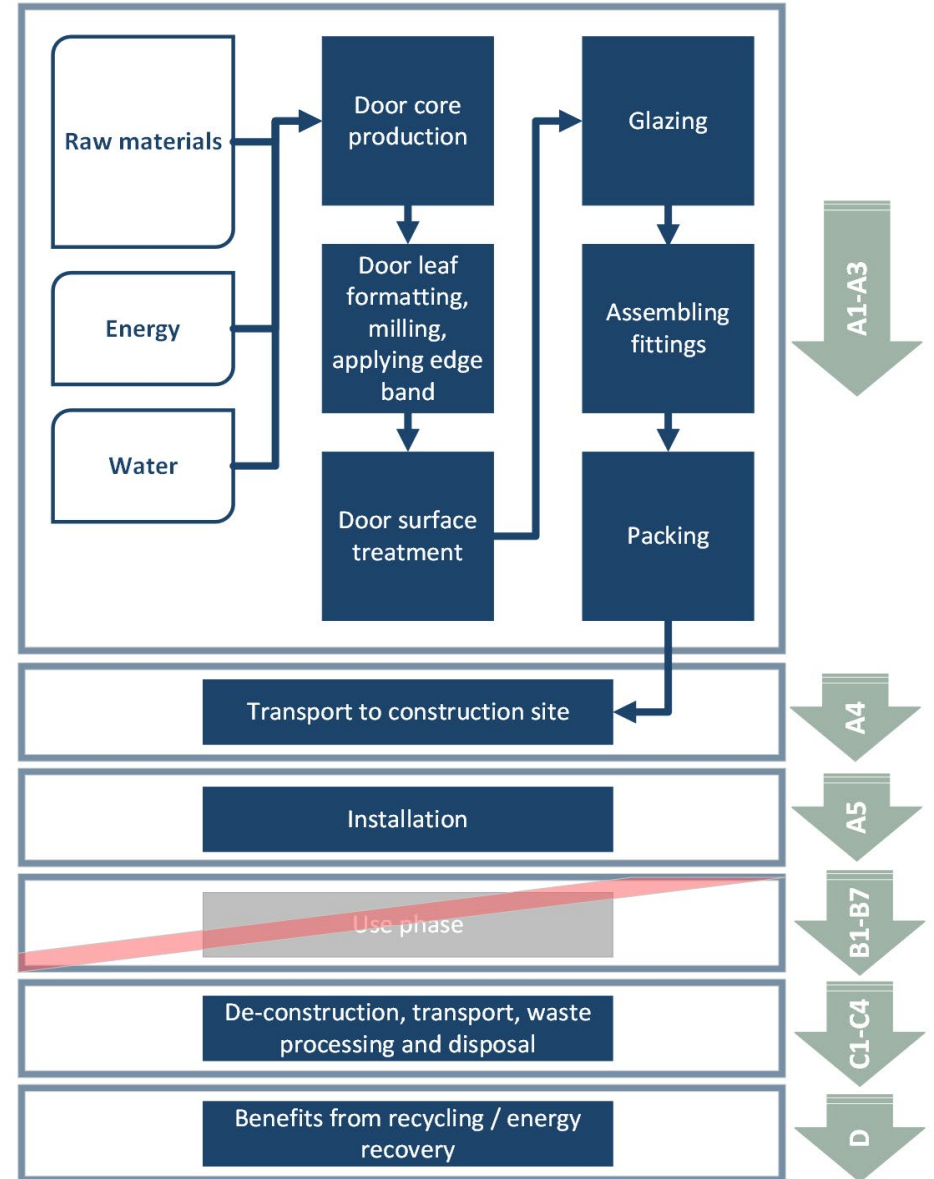
Per the end of life scenario of timber windows and doorsets (EN17213 Annex B), the wood, metal, plastic, paint and glue are sorted. Module C3 accounts for energy and resource inputs for

sorting and treating these waste streams for recycling and incineration with energy recovery.

Per the end of life scenario of timber windows and doorsets (EN17213 Annex B), 5% of wood, 5% of metal, 5% of plastic and 5% of paint and glue waste goes to landfill. Additionally, hazardous waste that is incinerated is included in Module C4 while the flow is not included in Module D for benefits. As specific national data is not used for timber / wooden products, then according to the end of life scenario of timber windows and doorsets (EN17213 Annex B), 100% of sorted timber materials goes to incineration. The wooden pallet, wooden board, cardboard packaging and plastic packaging used during transportation are also incinerated for energy recovery or recycled.

The benefits and loads of incineration and recycling are included in Module D. Plastic and steel parts hold potential for recycling and material recovery for secondary material production purposes, that reduce the need for virgin raw materials. (D) The fibreboards and wooden content of the doorleaf have great heating value and are applicable for energy production upon used as a fuel in the incineration process (D), decreasing the demand for virgin fuel production and use.

# MANUFACTURING PROCESS AND SYSTEM BOUNDARY



# 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                   | No averaging   |
| Averaging method                  | Not applicable |
| Variation in GWP-fossil for A1-A3 | 0 %            |

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 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   | 1,36E+01  | 3,56E+00 | 3,85E+01 | 5,56E+01  | 4,01E+00 | 2,21E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,37E-01 | 2,96E+01 | 5,95E+00 | 1,39E+01  |
| GWP – fossil                        | kg CO <sub>2</sub> e   | 5,15E+01  | 3,56E+00 | 3,15E+01 | 8,65E+01  | 4,01E+00 | 7,32E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,37E-01 | 1,79E+00 | 4,49E+00 | -1,38E+01 |
| GWP – biogenic                      | kg CO <sub>2</sub> e   | -3,84E+01 | 6,40E-04 | 7,01E+00 | -3,14E+01 | 0,00E+00 | 2,14E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,15E-05 | 2,78E+01 | 1,46E+00 | 2,78E+01  |
| GWP – LULUC                         | kg CO <sub>2</sub> e   | 5,26E-01  | 1,28E-03 | 6,37E-03 | 5,34E-01  | 1,59E-03 | 2,59E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,05E-05 | 7,98E-04 | 2,75E-04 | -1,23E-02 |
| Ozone depletion                     | kg CFC <sub>11</sub> e | 1,05E-05  | 8,36E-07 | 2,43E-06 | 1,38E-05  | 9,39E-07 | 7,43E-09 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,15E-08 | 6,07E-08 | 3,40E-07 | -6,22E-07 |
| Acidification potential             | mol H <sup>+</sup> e   | 4,11E-01  | 1,71E-02 | 1,77E-01 | 6,05E-01  | 3,10E-02 | 6,34E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,79E-04 | 3,37E-03 | 4,53E-03 | -8,71E-02 |
| EP-freshwater <sup>2)</sup>         | kg Pe                  | 2,49E-03  | 2,45E-05 | 1,06E-04 | 2,62E-03  | 2,57E-05 | 9,03E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,12E-06 | 2,87E-05 | 5,28E-06 | -3,78E-04 |
| EP-marine                           | kg Ne                  | 5,80E-02  | 5,34E-03 | 2,94E-02 | 9,27E-02  | 8,51E-03 | 2,87E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,72E-04 | 5,91E-04 | 7,74E-04 | -1,35E-02 |
| EP-terrestrial                      | mol Ne                 | 6,96E-01  | 5,88E-02 | 3,23E-01 | 1,08E+00  | 9,42E-02 | 3,06E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,90E-03 | 6,63E-03 | 8,24E-03 | -1,44E-01 |
| POCP (“smog”) <sup>3)</sup>         | kg NMVOCe              | 2,09E-01  | 1,81E-02 | 9,26E-02 | 3,20E-01  | 2,74E-02 | 7,71E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 6,08E-04 | 1,95E-03 | 2,66E-03 | -4,42E-02 |
| ADP-minerals & metals <sup>4)</sup> | kg Sbe                 | 4,06E-04  | 8,78E-06 | 2,81E-05 | 4,43E-04  | 8,87E-06 | 2,09E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,21E-07 | 2,23E-05 | 2,64E-06 | -6,88E-05 |
| ADP-fossil                          | MJ                     | 4,96E+02  | 5,37E+01 | 1,35E+02 | 6,85E+02  | 6,00E+01 | 7,03E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,05E+00 | 8,27E+00 | 2,05E+01 | -1,25E+02 |
| Water use <sup>5)</sup>             | m <sup>3</sup> e depr. | 2,50E+02  | 2,42E-01 | 1,48E+01 | 2,65E+02  | 2,66E-01 | 2,29E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,20E-03 | 2,03E-01 | 9,31E-02 | -3,38E+00 |

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               | Incidenc  | 4,26E-06 | 4,17E-07 | 5,34E-07 | 5,22E-06 | 4,29E-07 | 8,03E-09 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,58E-08 | 4,88E-08 | 4,33E-08 | -7,94E-07 |
| Ionizing radiation <sup>6)</sup> | kBq U235e | 4,07E+00 | 2,73E-01 | 4,94E+00 | 9,28E+00 | 3,06E-01 | 2,28E-03 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 9,79E-03 | 1,24E-01 | 9,93E-02 | -2,80E+00 |
| Ecotoxicity (freshwater)         | CTUe      | 1,02E+03 | 4,46E+01 | 3,20E+02 | 1,38E+03 | 4,86E+01 | 1,09E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,85E+00 | 1,67E+01 | 7,30E+01 | -2,91E+02 |
| Human toxicity, cancer           | CTUh      | 1,06E-07 | 1,23E-09 | 1,52E-08 | 1,23E-07 | 1,46E-09 | 1,60E-10 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,54E-11 | 2,18E-09 | 8,73E-09 | 5,27E-09  |
| Human tox. non-cancer            | CTUh      | 1,31E-06 | 4,59E-08 | 1,81E-07 | 1,53E-06 | 4,98E-08 | 7,40E-09 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,83E-09 | 2,13E-08 | 1,63E-08 | -1,07E-07 |
| SQP <sup>7)</sup>                | -         | 4,03E+03 | 5,59E+01 | 3,31E+02 | 4,42E+03 | 6,35E+01 | 4,50E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,37E+00 | 6,13E+00 | 4,64E+00 | -7,95E+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 <sup>8)</sup> | MJ   | 5,93E+02 | 6,79E-01 | 5,78E+01  | 6,52E+02 | 7,37E-01 | 1,53E-02  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,32E-02 | 1,01E+00  | 1,53E-01  | -2,50E+01 |
| Renew. PER as material             | MJ   | 3,11E+02 | 0,00E+00 | -3,01E+01 | 2,81E+02 | 0,00E+00 | -4,33E+01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -2,26E+02 | -1,19E+01 | -6,83E-01 |
| Total use of renew. PER            | MJ   | 9,04E+02 | 6,79E-01 | 2,77E+01  | 9,33E+02 | 7,37E-01 | -4,33E+01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,32E-02 | -2,25E+02 | -1,17E+01 | -2,56E+01 |
| Non-re. PER as energy              | MJ   | 6,55E+02 | 5,37E+01 | 4,82E+02  | 1,19E+03 | 6,00E+01 | 7,03E-01  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,06E+00 | 8,26E+00  | 2,05E+01  | -1,81E+02 |
| Non-re. PER as material            | MJ   | 1,37E+02 | 0,00E+00 | -1,62E+01 | 1,20E+02 | 0,00E+00 | -4,72E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | -1,10E+02 | -5,79E+00 | -6,46E+00 |
| Total use of non-re. PER           | MJ   | 7,92E+02 | 5,37E+01 | 4,66E+02  | 1,31E+03 | 6,00E+01 | -4,01E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,06E+00 | -1,02E+02 | 1,47E+01  | -1,87E+02 |
| Secondary materials                | kg   | 1,03E+00 | 1,59E-02 | 3,29E-01  | 1,37E+00 | 1,77E-02 | 1,23E-03  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,71E-04 | 1,08E-02  | 7,63E-03  | 2,02E+00  |
| Renew. secondary fuels             | MJ   | 2,81E+00 | 1,44E-04 | 3,06E+00  | 5,87E+00 | 1,41E-04 | 3,97E-06  | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 5,76E-06 | 1,36E-04  | 2,21E-05  | -2,17E-04 |
| Non-ren. secondary fuels           | MJ   | 4,50E-02 | 0,00E+00 | 0,00E+00  | 4,50E-02 | 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   | 2,66E+01 | 6,87E-03 | 4,43E-01  | 2,71E+01 | 7,51E-03 | -6,72E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,66E-04 | 5,75E-03  | 3,04E-03  | -2,25E+01 |

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   | 9,02E+00 | 6,04E-02 | 1,70E+00 | 1,08E+01 | 6,56E-02 | 6,32E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,73E-03 | 1,81E-01 | 1,26E+00 | -1,34E+00 |
| Non-hazardous     | kg   | 7,72E+01 | 1,01E+00 | 4,06E+01 | 1,19E+02 | 1,07E+00 | 3,41E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,48E-02 | 2,94E+00 | 1,20E+00 | -4,53E+01 |
| Radioactive waste | kg   | 3,59E-03 | 3,69E-04 | 1,98E-03 | 5,94E-03 | 4,15E-04 | 1,69E-06 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,37E-05 | 4,87E-05 | 4,72E-06 | -6,41E-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   | 1,40E+00 | 0,00E+00 | 8,30E-03 | 1,41E+00 | 0,00E+00 | 2,89E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 6,53E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery | kg   | 9,43E-04 | 0,00E+00 | 5,74E+00 | 5,74E+00 | 0,00E+00 | 3,40E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 0,00E+00 | 1,20E+01 | 0,00E+00 | 0,00E+00 |
| Exported energy               | MJ   | 5,77E-03 | 0,00E+00 | 9,30E+00 | 9,31E+00 | 0,00E+00 | 3,11E+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 – 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               | 5,36E+01 | 3,52E+00 | 3,08E+01 | 8,79E+01 | 3,98E+00 | 7,04E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,35E-01 | 1,77E+00 | 4,53E+00 | -1,34E+01 |
| Ozone depletion Pot. | kg CFC <sub>11</sub> e             | 1,02E-05 | 6,63E-07 | 1,97E-06 | 1,28E-05 | 7,43E-07 | 6,15E-09 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,49E-08 | 5,02E-08 | 2,71E-07 | -5,84E-07 |
| Acidification        | kg SO <sub>2</sub> e               | 3,27E-01 | 1,32E-02 | 1,49E-01 | 4,90E-01 | 2,44E-02 | 4,51E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,50E-04 | 2,79E-03 | 3,79E-03 | -7,34E-02 |
| Eutrophication       | kg PO <sub>4</sub> <sup>3</sup> e  | 8,80E-02 | 2,85E-03 | 3,63E-02 | 1,27E-01 | 4,01E-03 | 4,79E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,03E-04 | 4,71E-03 | 4,02E-03 | -1,82E-02 |
| POCP ("smog")        | kg C <sub>2</sub> H <sub>4</sub> e | 2,37E-02 | 4,82E-04 | 6,31E-03 | 3,05E-02 | 7,78E-04 | 1,54E-05 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,76E-05 | 1,47E-04 | 1,63E-04 | -5,03E-03 |
| ADP-elements         | kg Sbe                             | 4,77E-04 | 8,55E-06 | 6,34E-05 | 5,49E-04 | 8,63E-06 | 1,91E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,11E-07 | 2,22E-05 | 2,48E-06 | -7,04E-05 |
| ADP-fossil           | MJ                                 | 8,03E+02 | 5,37E+01 | 4,86E+02 | 1,34E+03 | 6,00E+01 | 7,03E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,05E+00 | 8,26E+00 | 2,05E+01 | -2,37E+02 |

### ENVIRONMENTAL IMPACTS – FRENCH NATIONAL COMPLEMENTS

| Impact category          | Unit   | A1       | A2       | A3       | A1-A3    | A4       | A5       | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1       | C2       | C3       | C4       | D         |
|--------------------------|--------|----------|----------|----------|----------|----------|----------|-----|-----|-----|-----|-----|-----|-----|----------|----------|----------|----------|-----------|
| ADP-elements             | kg Sbe | 2,65E-04 | 8,55E-06 | 6,33E-05 | 3,36E-04 | 8,63E-06 | 1,91E-07 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 3,11E-07 | 2,22E-05 | 2,48E-06 | -7,04E-05 |
| Hazardous waste disposed | kg     | 8,09E+00 | 6,04E-02 | 2,39E+00 | 1,05E+01 | 6,56E-02 | 6,32E-04 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,73E-03 | 1,81E-01 | 1,26E+00 | -1,33E+00 |
| Non-haz. waste disposed  | kg     | 6,16E+01 | 1,01E+00 | 8,86E+00 | 7,15E+01 | 1,07E+00 | 3,41E+00 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 4,48E-02 | 2,94E+00 | 1,20E+00 | -4,47E+01 |
| Air pollution            | m3     | 1,05E+04 | 5,77E+02 | 1,92E+03 | 1,30E+04 | 6,79E+02 | 1,63E+01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 2,45E+01 | 1,48E+02 | 7,06E+01 | -3,83E+03 |
| Water pollution          | m3     | 1,63E+02 | 4,14E+00 | 1,21E+02 | 2,88E+02 | 4,47E+00 | 6,89E-01 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,45E-01 | 2,44E+02 | 2,56E+01 | -1,64E+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 | 5,15E+01 | 3,56E+00 | 3,15E+01 | 8,65E+01 | 4,01E+00 | 7,32E-02 | MND | MND | MND | MND | MND | MND | MND | 0,00E+00 | 1,37E-01 | 1,79E+00 | 4,49E+00 | -1,38E+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.

## 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.

Imane Uald lamkaddam, as an authorized verifier acting for EPD Hub Limited  
29.06.2024

