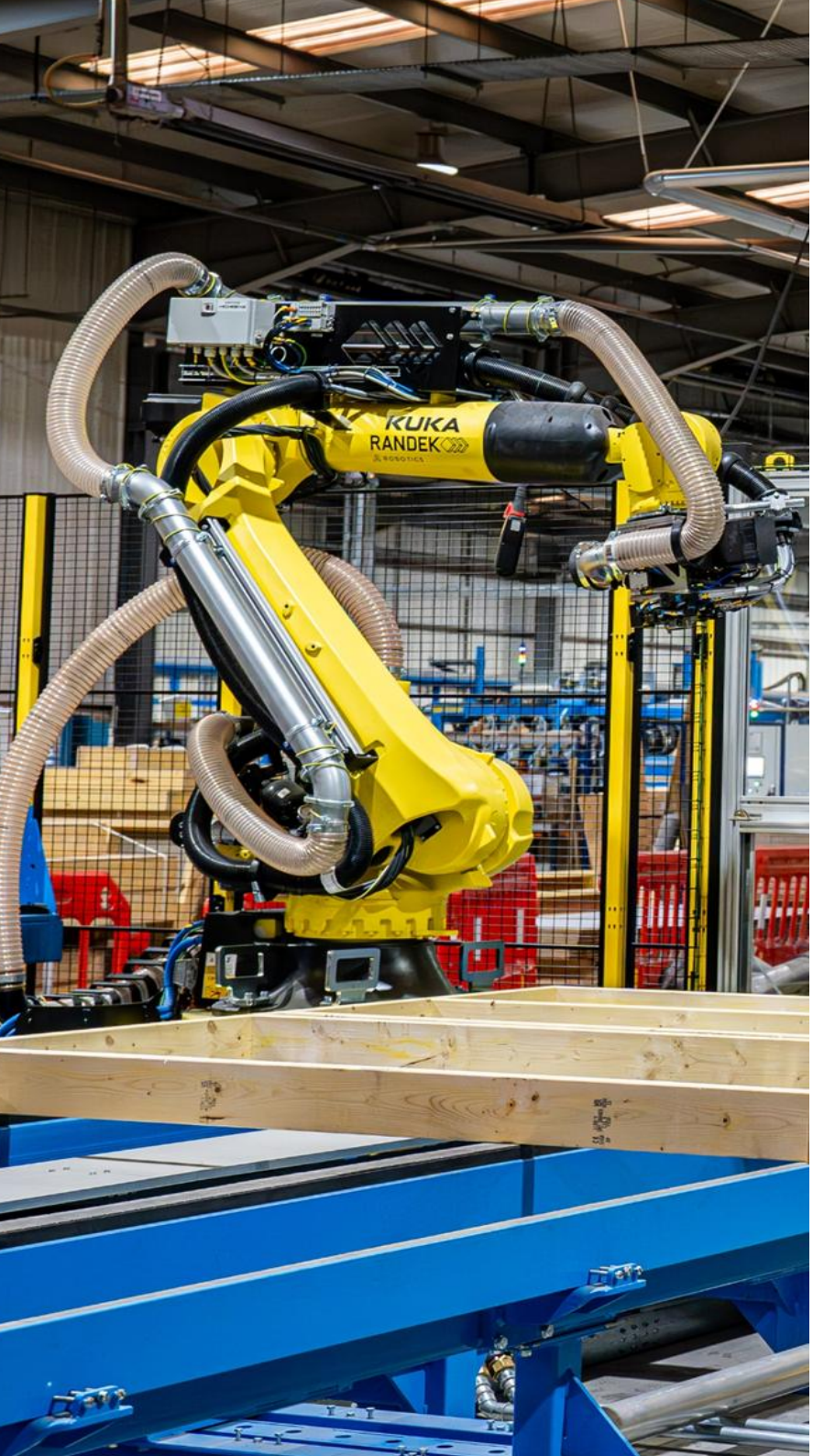

ENVIRONMENTAL PRODUCT DECLARATION

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

SIGMA II C-Studs Closed Panel
Donaldson Timber Systems

EPD HUB, HUB-3059
Published on 14.03.2025, last updated on 14.03.2030

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

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Donaldson Timber Systems
Address	Falcon House Curbridge Business Park Downs Road, Witney Oxon OX29 7WJ
Contact details	timber@donaldsontimbersystems.com
Website	www.donaldsontimbersystems.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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Ada Parratt
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

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	SIGMA II C-Studs Closed Panel
Additional labels	
Product reference	Sigma II C-studs 195mm / 235mm
Place of production	Witney, United Kingdom
Period for data	01/08/2022-31/07/2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	4.6 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1m2 of Sigma II panel
Declared unit mass	31.66 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2.78E+01
GWP-total, A1-A3 ($kgCO_2e$)	-1.28E+01
Secondary material, inputs (%)	10.4
Secondary material, outputs (%)	82.6
Total energy use, A1-A3 (kWh)	175
Net freshwater use, A1-A3 (m^3)	1.68

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Donaldson Timber Systems Ltd (DTS) are the UK's leading offsite timber systems manufacturer, supplying sites across the UK and with over 45-years of experience.

DTS design, manufacture, deliver and install panelised timber frame build systems for the low-to-medium-rise housing, education, health, and accommodation markets, to a wide range of customers from national housebuilders to local developers and contractors. As a family owned and run business, DTS has strong traditional and family values, and pride ourselves on providing a national scale at a local level.

PRODUCT DESCRIPTION

Our highest level of prefabrication offering improved levels of assured performance. Our award-winning, BOPAS, BBA and NHBC Accepts approved, closed panel Sigma® II C-Stud Build System is the robust and effective solution to achieving high levels of fabric performance.

The Sigma® II C-Stud Build System is designed to achieve the highest possible levels of fabric performance, suitable for projects which are seeking to achieve the very highest fabric efficiency standards. With excellent thermal performance and air tightness, the Sigma® II C-Stud Build System offers reduced material and labour costs by using conventional materials in a more innovative manner.

Our Sigma® II C-Stud build system is designed to meet the needs of low and medium rise house buildings. It provides our clients with a high performing, high quality, factory-made system that has BOPAS, BBA and NHBC Accepts third party certification. It is a market leading system that is utilised on large volume housing projects and comes with the options of further enhancements such as factory fitted windows, chipboard clad floor cassettes and insulated roof cassettes.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0.94	Asia, Europe
Minerals	15.96	Europe
Fossil materials	0.56	Europe
Bio-based materials	82.54	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	11.65
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1m2 of Sigma II panel
Mass per declared unit	31.66 kg
Functional unit	
Reference service life	60

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		
×	×	×	MND	MND	MND	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

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

We maintain long-standing relationships with our supply chain to ensure we have market leading production technology and machinery, as well as sustainable supply of raw materials at the required specification, quality, and quantity to maintain an efficient manufacturing process.

Using timber as a building material is a truly renewable material when properly managed and maintained. 100% of our timber materials are purchased from sustainable sources in accordance with the PEFC management system. Our structural timber is sourced from Scandinavia to ensure the highest level of quality for our build systems, with other timber-based sheathing materials and non-structural timber sourced from within the UK and Ireland.

Our raw materials are transported by ship into ports in the east of the UK from Scandinavia, and then by road to our manufacturing sites in Westhill, Aberdeen, and Witney, Oxford.

Waste is minimised across the manufacturing process by utilising the optimum lengths and sizes of raw materials from our supply-chain, and the use of optimising software on our saws, where multiple projects can be processed at the same time, and then automatically split into individual work packages. 99% of waste generated through our manufacturing process is recycled, and only 1% going to landfill.

We have held ISO-9001 (quality), ISO-14001 (environmental) and ISO-45001 (health and safety) systems for a number of years, as well as a full range of 3rd party Product Certifications, including BBA, BOPAS and NHBC Accepts, all of which are 3rd party audited annually across our design and manufacturing processes.

Temporary packaging is limited to safety banding for transport, and temporary lifting straps for heavy panels.

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.

This EPD does not cover the transportation and installation stages, however we can highlight benefits of using Sigma II panel.
Transport (A4) from our manufacturing locations to the building sites are by road and plan all deliveries with our site teams to maximise the materials on each delivery to site. The product is lightweight and as such the constraints for haulage are driven height and width of the overall load, and not maximum weights. Transporting a lighter load uses less fuel than the majority of road haulage, and we record fuel usage and distance travelled for deliveries to site.
Our build system has been optimised to reduce the use of cranes on site, with typically a detached low-rise housing using being completed with one crane day (A5).

PRODUCT USE AND MAINTENANCE (B1-B7)

Although this EPD does not cover the use phase, and air, soil, and water impacts during the use phase have not been studied, we can comment on the impact of using our timber frame system during product use and maintenance stages.
Our timber frame build systems are designed to min 60-years working life, in-line with the overall building. There are no direct emissions to the environment attributable to the use of timber frame (B1). Once installed, the timber frame build system is fully enclosed within the finished fabric of the building, and requires no maintenance, repair replacement or refurbishment during the lifetime of the building (B2-B5). Our timber frame build system provides as a minimum the same fabric performance as other build methods to comply with the relevant building regulations and technical standards. Timber frame is however commonly utilised to improve the fabric performance of the building and reduce the level of energy used for space heating within the operational stage (B6). The timber frame build system has no impact on water use during the operational stage of the building (B7).
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Product end-of-life scenario assumptions are based on the latest statistics and information published by UK Government, RICS and Timber Development UK. Along with data obtained from our suppliers and customers.
We have assumed that the timber frame will be deconstructed / dismantled at the same time as the rest of the building (C1) with the emphasis on manual disassemble to enable exhaustive recovery of materials. The dismantled elements will be transported to the nearest waste processing plant (C2), at assumed distance of maximum 50km.
Based on current waste statistics we estimate that 30% of timber will be recycled (C3) and 69% of timber will be incinerated (C4) with fuel efficiency of the power plant estimated at 80%, which will improve over the next 60 years. 1% of timber will be landfilled (C4), with expected improvement over the next 60 years.
The loads and benefits were modelled for all components, including avoiding the extra energy and heat production from the average grid-mix of Europe due to incineration of timber; along with avoiding the extraction and beneficiation of virgin wood by recycling timber.

MANUFACTURING PROCESS


1 – Delivery of raw materials


2 – Quality check


3 – Machining


4 – Assembly


5 – Finished goods


6 – Loading for delivery


7 – Delivery to site

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 material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	4.6 %

This EPD is averaged between our Sigma II C-studs 195mm and C-studs 235mm panels.

LCA SOFTWARE AND BIBLIOGRAPHY

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

ENVIRONMENTAL IMPACT DATA

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_2e	-2.41E+01	1.64E+00	9.65E+00	-1.28E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.75E-01	4.12E+01	4.50E-01	-3.63E+01
GWP – fossil	kg CO_2e	1.91E+01	1.64E+00	7.02E+00	2.78E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.75E-01	8.83E-01	4.35E-02	-8.76E+00
GWP – biogenic	kg CO_2e	-4.33E+01	0.00E+00	2.62E+00	-4.07E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	4.03E+01	4.07E-01	0.00E+00
GWP – LULUC	kg CO_2e	4.01E-02	7.55E-04	5.47E-03	4.63E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.81E-05	3.90E-04	2.22E-05	-2.75E+01
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	1.25E-06	2.47E-08	1.23E-05	1.36E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.58E-09	3.71E-09	1.28E-09	-2.09E-07
Acidification potential	mol H^+e	1.24E-01	1.84E-02	2.92E-02	1.72E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.95E-04	2.20E-03	3.38E-04	-4.73E-02
EP-freshwater[2)]	kg Pe	3.77E-03	1.02E-04	1.25E-03	5.12E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.36E-05	1.64E-04	1.81E-05	-2.69E-03
EP-marine	kg Ne	3.42E-02	4.86E-03	8.27E-03	4.74E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.96E-04	9.28E-04	2.05E-04	-8.53E-03
EP-terrestrial	mol Ne	3.72E-01	5.37E-02	8.68E-02	5.13E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.13E-03	8.90E-03	1.28E-03	-9.27E-02
POCP ("smog")[3)]	kg NMVOCe	1.76E-01	1.65E-02	3.73E-02	2.30E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.77E-04	2.32E-03	4.67E-04	-3.32E-02
ADP-minerals & metals[4)]	kg Sbe	1.53E-04	3.74E-06	3.37E-05	1.90E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.87E-07	1.06E-06	7.38E-08	-1.71E-05
ADP-fossil resources	MJ	3.23E+02	2.26E+01	1.37E+02	4.82E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.53E+00	4.01E+00	1.05E+00	-1.48E+02
Water use[5)]	m^3e depr.	9.89E+00	9.77E-02	1.58E+00	1.16E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.25E-02	3.78E-01	3.78E-03	-1.49E+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	Incidence	2.08E-05	1.24E-07	4.35E-07	2.14E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.75E-08	2.03E-08	7.06E-09	-5.11E-07
Ionizing radiation[6]	kBq U235e	1.30E+00	1.78E-02	1.50E+00	2.82E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.21E-03	7.39E-02	8.26E-04	-3.35E+00
Ecotoxicity (freshwater)	CTUe	4.51E+03	2.76E+00	1.98E+01	4.54E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.58E-01	4.29E+00	2.10E-01	-1.54E+01
Human toxicity, cancer	CTUh	3.00E-07	2.93E-10	1.33E-09	3.01E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.88E-11	2.35E-08	1.02E-11	-2.14E-09
Human tox. non-cancer	CTUh	5.64E-07	1.21E-08	4.88E-08	6.25E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.64E-09	1.96E-08	4.17E-10	-6.33E-08
SQP[7]	-	1.97E+03	1.60E+01	2.97E+01	2.02E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.55E+00	1.01E+00	2.18E+00	-2.27E+03

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	1.64E+02	2.78E-01	1.39E+01	1.78E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.47E-02	-1.51E+02	-4.39E+00	-4.36E+02
Renew. PER as material	MJ	5.74E+02	0.00E+00	-2.66E+01	5.47E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-5.40E+02	-7.17E+00	2.80E+02
Total use of renew. PER	MJ	7.38E+02	2.78E-01	-1.26E+01	7.25E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.47E-02	-6.91E+02	-1.16E+01	-1.56E+02
Non-re. PER as energy	MJ	3.06E+02	2.26E+01	1.22E+02	4.51E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.53E+00	-3.82E+00	1.05E+00	-1.48E+02
Non-re. PER as material	MJ	1.78E+01	0.00E+00	1.47E+01	3.25E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.47E+01	-2.76E+00	1.31E+01
Total use of non-re. PER	MJ	3.24E+02	2.26E+01	1.36E+02	4.83E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.53E+00	-1.85E+01	-1.71E+00	-1.35E+02
Secondary materials	kg	3.30E+00	9.91E-03	2.80E-02	3.34E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.08E-03	4.24E-03	2.87E-04	2.45E-01
Renew. secondary fuels	MJ	3.44E-03	9.62E-05	1.93E-04	3.73E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.37E-05	1.41E-05	5.72E-06	-4.34E-04
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	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	1.64E+00	2.80E-03	3.65E-02	1.68E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.75E-04	4.17E-03	-2.44E-03	-5.01E-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	2.36E+00	3.52E-02	2.87E-01	2.68E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.29E-03	8.78E-02	1.30E-03	-7.07E-01
Non-hazardous waste	kg	3.68E+01	6.20E-01	1.87E+01	5.61E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.94E-02	9.97E+00	4.23E+00	-1.20E+01
Radioactive waste	kg	3.05E-03	4.37E-06	3.35E-04	3.39E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.40E-07	1.90E-05	2.01E-07	-7.32E-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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.20E-02	0.00E+00	0.00E+00
Materials for recycling	kg	3.18E-02	0.00E+00	1.63E+00	1.66E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.70E+01	0.00E+00	0.00E+00
Materials for energy rec	kg	5.41E-02	0.00E+00	0.00E+00	5.41E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	9.17E+00	0.00E+00	0.00E+00
Exported energy	MJ	6.16E-03	0.00E+00	0.00E+00	6.16E-03	MND	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 – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	4.68E+01	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	6.09E+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_2e	1.88E+01	1.63E+00	6.98E+00	2.74E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.74E-01	8.81E-01	5.81E-02	-3.62E+01
Ozone depletion Pot.	kg $CFC_{-11}e$	7.84E-07	1.97E-08	8.25E-06	9.06E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.06E-09	3.06E-09	1.02E-09	-1.72E-07
Acidification	kg SO_2e	7.14E-02	1.46E-02	2.30E-02	1.09E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.55E-04	1.63E-03	2.56E-04	-3.90E-02
Eutrophication	kg PO_4^3e	1.86E-02	1.99E-03	2.06E-02	4.12E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.11E-04	4.83E-04	8.36E-05	-5.94E-03
POCP (“smog”)	kg C_2H_4e	5.96E-03	8.38E-04	1.82E-03	8.62E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.05E-05	1.17E-04	2.52E-05	-3.47E-03
ADP-elements	kg Sbe	2.50E-02	3.65E-06	3.32E-05	2.51E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.75E-07	9.97E-07	7.21E-08	-1.69E-05
ADP-fossil	MJ	3.10E+02	2.23E+01	1.16E+02	4.48E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.50E+00	2.71E+00	1.04E+00	-1.03E+02

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_2e	1.92E+01	1.64E+00	7.03E+00	2.78E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.75E-01	8.83E-01	4.35E-02	-3.63E+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 - 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.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
14.03.2025