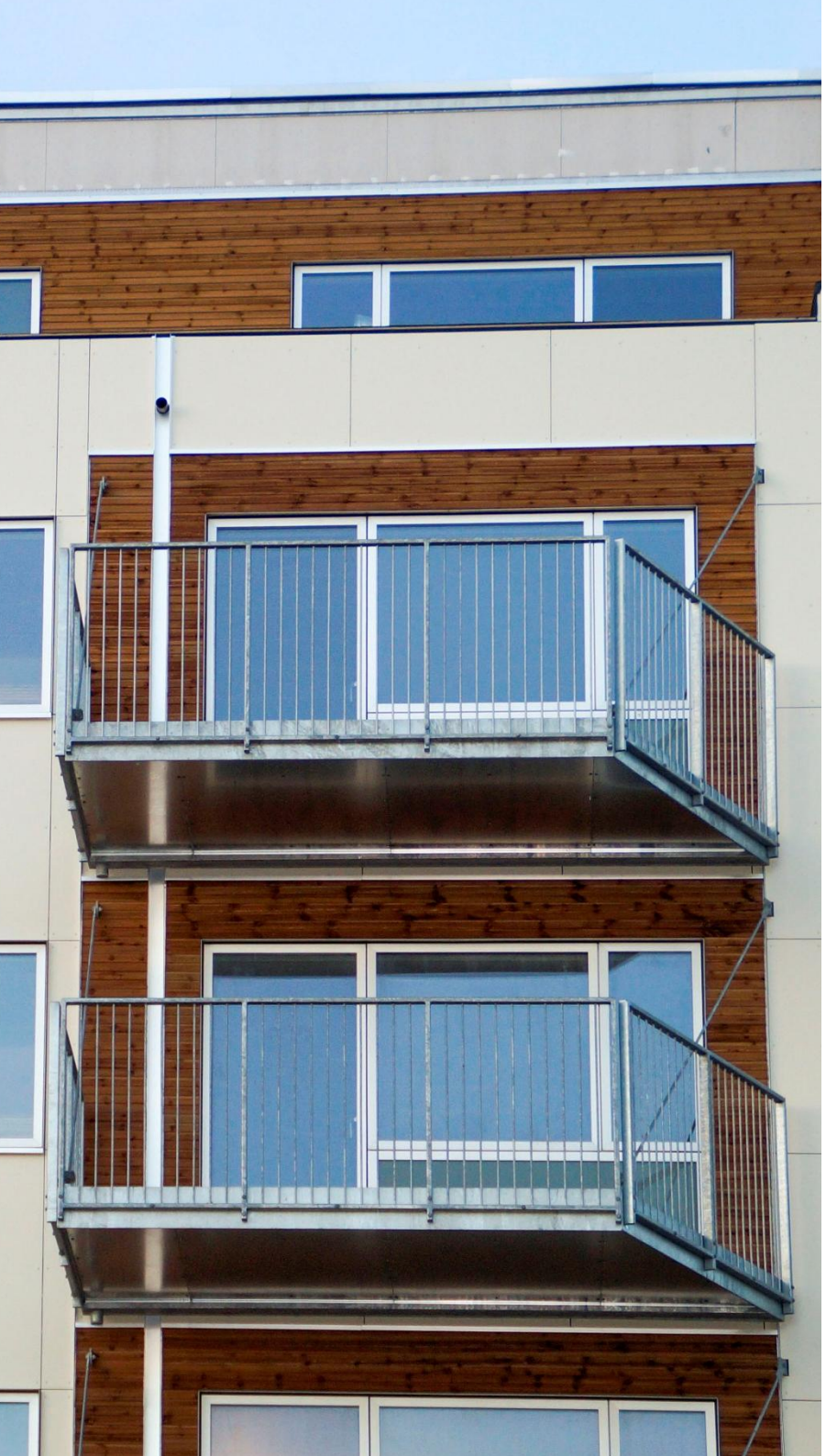


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

NTR AB

Frøslev Træ A/S

EPD HUB, HUB-3583

Published on 03.07.2025, last updated on 03.07.2030

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.

FRØSLEV

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Frøslev Træ A/S
Address	Jens P. L. Petersens Vej 1 DK-6330 Padborg
Contact details	info@froeslev.dk
Website	www.frøslev.dk

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
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Martin Oddershede
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

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	NTR AB
Place of production	Padborg, Denmark
Period for data	2023
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 cubic meter of NTR AB
Declared unit mass	520 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3,50E+01
GWP-total, A1-A3 ($kgCO_2e$)	-7,83E+02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

In Frøslev, we know wood. But not out of the blue. Since 1931, we have produced and delivered quality wood for everything from large constructions to private homes.
With Denmark's largest range of innovative, high-quality wood products and generations of knowledge, Frøslev offers the complete package – ensuring that any construction involving wood gets off to the right start and lasts for many years.

PRODUCT DESCRIPTION

NTR AB is pressure-treated pine wood, certified and treated in accordance with the standards of the Nordic Wood Protection Council. The wood is impregnated to the core and classified in biological durability class 1 as very durable. It is used for outdoor constructions without soil contact, including terraces, façade cladding, and load-bearing timber structures. NTR AB is available in green or brown impregnation.

Further information can be found at www.frøslev.dk.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0,7	EU
Fossil materials	0	-
Bio-based materials	99,3	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	222,55
Biogenic carbon content in packaging, kg C	0,74

DECLARED UNIT AND SERVICE LIFE

Declared unit	1 cubic meter of NTR AB
Mass per declared unit	520 kg
Reference service life	Depends on the specific application context and maintenance scenario.

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	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.

The environmental impacts evaluated in the product stage for impregnated spruce include the extraction and processing of raw materials—such as pine timber—as well as the production of packaging and ancillary materials. A conservative approach has been applied to account for the transport of round timber to the sawmill (module A2), using economic allocation factors relevant to the Danish context. This stage also considers fuel consumed by machinery and the handling of production waste at manufacturing facilities. Additionally, it includes material losses during processing and energy losses associated with electricity transmission.

The manufacturing process for impregnated pine involves several essential steps: sawing and preparing pine planks, producing packaging materials, transporting materials internally, planing, applying fire retardant or preservative treatments, drying, and final packaging.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation impacts associated with the delivery of the impregnated pine product to the construction site (module A4) include emissions from direct fuel combustion, environmental burdens from fuel production, and emissions related to the use and maintenance of transport infrastructure.

Although module A4 falls outside the system boundaries, the analysis incorporates packaging materials (addressed under module A3) and accounts for waste generation during the product's end-of-life phase (modules C3–C4).

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)

At the end-of-life stage, it is assumed that 100% of the impregnated pine waste generated during demolition is collected as separated construction waste. The demolition phase (module C1) involves energy consumption from diesel fuel used by construction equipment (Bozdağ & Seçer, 2007).

Following dismantling, the Frøslev wood material is transported 150 km to a nearby construction waste treatment facility (module C2), where it is managed according to standard Scandinavian practices. The scenario assumes 100% energy recovery of the waste wood, with the end-of-waste status reached in module C3. It is further assumed that the material is used as fuel in a district heating plant, thereby replacing the average energy mix. Allocation is performed using energy efficiencies of 16% for electricity and 22% for heat.

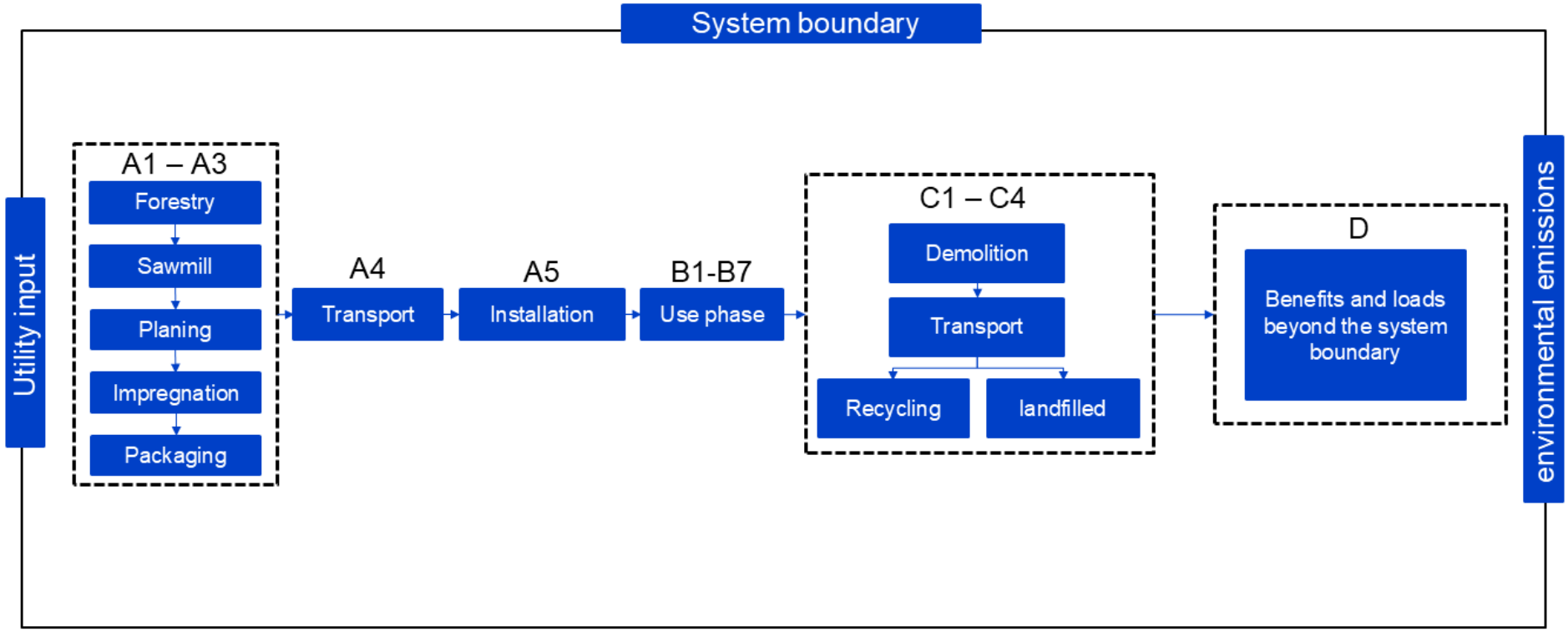
If a recycling rate below 100% is required, the results from modules C and D should be adjusted using a scaling factor that reflects the actual recycling rate. In this scenario, a 100% rate is applied to support the modular approach and ensure consistency when aggregating results at the building level.

Regarding packaging materials, the following end-of-life treatments are assumed:

Wood packaging: 26% recycled, 50% energy recovery, 24% landfilled.

Plastic packaging: 100% recycled.

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 that is 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.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC2021 and JRC EF 3.1.

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 made according to the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging material	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

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

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

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	-7,84E+02	3,78E-01	-1,98E-01	-7,83E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,87E+00	8,45E+00	8,26E+02	6,98E-01	-7,99E-01
GWP – fossil	kg CO_2e	3,21E+01	3,78E-01	2,50E+00	3,50E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,87E+00	8,45E+00	8,80E+00	5,14E-02	-8,19E-01
GWP – biogenic	kg CO_2e	-8,16E+02	8,34E-05	-2,70E+00	-8,19E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,91E-04	5,12E-06	8,18E+02	6,47E-01	2,04E-02
GWP – LULUC	kg CO_2e	2,90E-01	1,69E-04	7,70E-04	2,91E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,92E-04	3,78E-03	1,32E-03	5,80E-06	-4,33E-04
Ozone depletion pot.	kg CFC_{-11}e	9,40E-07	5,57E-09	2,09E-09	9,47E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,87E-08	1,25E-07	9,61E-08	2,31E-10	-4,31E-08
Acidification potential	mol H^+e	5,66E-01	1,29E-03	9,72E-03	5,77E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,69E-02	2,88E-02	8,04E-02	6,34E-05	-2,33E-03
EP-freshwater[2)]	kg Pe	3,84E-03	2,94E-05	5,06E-05	3,92E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,41E-05	6,58E-04	2,49E-03	4,01E-06	-1,63E-04
EP-marine	kg Ne	1,93E-01	4,23E-04	1,11E-02	2,05E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,85E-03	9,46E-03	4,38E-02	2,54E-04	-4,71E-04
EP-terrestrial	mol Ne	1,74E+00	4,60E-03	6,70E-03	1,75E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,59E-02	1,03E-01	4,20E-01	2,60E-04	-5,02E-03
POCP ("smog")[3)]	kg NMVOCe	3,70E-01	1,90E-03	2,83E-03	3,75E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,56E-02	4,24E-02	1,05E-01	1,09E-04	-4,80E-03
ADP-minerals & metals[4)]	kg Sbe	1,12E-03	1,05E-06	3,37E-07	1,12E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,72E-07	2,36E-05	1,39E-05	2,01E-08	-7,52E-06
ADP-fossil resources	MJ	7,55E+02	5,48E+00	7,33E+01	8,34E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E+01	1,23E+02	5,62E+01	1,98E-01	-2,92E+01
Water use[5)]	m^3e depr.	3,26E+02	2,71E-02	1,12E+00	3,27E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,13E-02	6,05E-01	1,71E+01	9,61E-04	-2,12E-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 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

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	2,73E-06	3,78E-08	3,73E-07	3,14E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,81E-07	8,46E-07	8,76E-07	1,44E-09	-1,54E-08
Ionizing radiation[6)]	kBq	1,24E+01	4,77E-03	6,16E-02	1,25E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,09E-02	1,07E-01	1,10E-01	1,96E-04	-1,05E-01
Ecotoxicity (freshwater)	CTUe	2,63E+03	7,75E-01	1,20E+01	2,64E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,35E+00	1,73E+01	5,55E+01	1,93E-01	-1,52E+00
Human toxicity, cancer	CTUh	6,07E-08	6,23E-11	2,07E-10	6,10E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,93E-10	1,39E-09	1,20E-08	3,67E-12	-1,15E-10
Human tox. non-cancer	CTUh	3,88E-06	3,55E-09	1,62E-08	3,90E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,05E-09	7,94E-08	8,37E-07	5,59E-10	-6,64E-09
SQP[7)]	-	6,90E+04	5,52E+00	2,28E+02	6,92E+04	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,72E+00	1,23E+02	1,48E+01	4,64E-01	-4,02E+00

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	1,32E+03	7,51E-02	3,85E+01	1,36E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,55E-01	1,68E+00	-8,82E+03	-6,94E+00	-1,81E+00
Renew. PER as material	MJ	8,55E+03	0,00E+00	2,83E+01	8,58E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-8,57E+03	-6,78E+00	0,00E+00
Total use of renew. PER	MJ	9,87E+03	7,51E-02	6,68E+01	9,94E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,55E-01	1,68E+00	-1,74E+04	-1,37E+01	-1,81E+00
Non-re. PER as energy	MJ	7,35E+02	5,48E+00	3,98E+01	7,80E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E+01	1,23E+02	1,42E+01	-1,51E+01	-3,30E+01
Non-re. PER as material	MJ	2,04E+01	0,00E+00	6,83E+01	8,87E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-8,87E+01	0,00E+00	1,66E+01
Total use of non-re. PER	MJ	7,55E+02	5,48E+00	1,08E+02	8,69E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,45E+01	1,23E+02	-7,44E+01	-1,51E+01	-1,65E+01
Secondary materials	kg	1,87E-01	2,33E-03	1,56E-03	1,90E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,02E-02	5,22E-02	1,68E-01	7,18E-05	4,10E-01
Renew. secondary fuels	MJ	0,00E+00	2,96E-05	1,92E-06	3,15E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,66E-05	6,63E-04	3,20E-04	1,35E-06	-3,45E-05
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	8,79E+00	8,10E-04	3,98E+01	4,86E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,62E-03	1,81E-02	1,06E-01	-2,96E-03	-5,84E-03

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	7,93E-01	9,28E-03	8,79E-03	8,11E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,73E-02	2,08E-01	2,49E+00	3,47E-04	-2,20E-02
Non-hazardous waste	kg	1,04E+02	1,72E-01	6,48E+01	1,69E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,72E-01	3,84E+00	5,42E+02	3,97E+00	-7,48E+00
Radioactive waste	kg	9,90E-02	1,17E-06	3,38E-04	9,94E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,66E-06	2,61E-05	2,74E-05	4,79E-08	-2,67E-05

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	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,11E+00	0,00E+00	3,67E-03	1,11E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	7,70E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	9,61E-02	0,00E+00	3,18E-04	9,65E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	5,20E+02	0,00E+00	0,00E+00
Exported energy	MJ	3,95E-03	0,00E+00	1,31E-05	3,97E-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	1,04E+03	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	1,43E+03	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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	3,11E+01	3,75E-01	2,68E+00	3,41E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,86E+00	8,40E+00	8,72E+00	7,29E-02	-7,86E-01
Ozone depletion Pot.	kg $CFC_{-11}e$	8,47E-07	4,45E-09	2,28E-08	8,75E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,27E-08	9,95E-08	7,94E-08	1,85E-10	-3,50E-08
Acidification	kg SO_2e	4,37E-01	9,83E-04	9,74E-03	4,47E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,19E-02	2,20E-02	5,59E-02	4,71E-05	-1,91E-03
Eutrophication	kg PO_4^3e	8,20E-02	2,40E-04	7,17E-03	8,94E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,78E-03	5,36E-03	2,02E-02	3,39E-05	-7,13E-04
POCP (“smog”)	kg C_2H_4e	1,06E-02	8,76E-05	9,32E-04	1,17E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	8,92E-04	1,96E-03	4,55E-03	1,57E-05	-2,48E-04
ADP-elements	kg Sbe	1,12E-03	1,03E-06	3,29E-07	1,12E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	6,53E-07	2,30E-05	1,11E-05	1,95E-08	-7,43E-06
ADP-fossil	MJ	5,10E+02	5,40E+00	1,15E+02	6,31E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,43E+01	1,21E+02	5,43E+01	1,95E-01	-2,74E+01

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 03.07.2025