ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

NORFLAM® product family
Nordtreat Oy

EPD HUB, EPD number HUB-4230
Published on 24.10.2025, last updated on 24.10.2025, valid until 23.10.2025

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Nordtreat Oy
Address	Mestarintie 11 E, 01730 Vantaa, Finland
Contact details	info@nordtreat.com
Website	www.nordtreat.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2 & ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Hanna Kämäräinen, Greenstep Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Sarah Curpen, as an authorised verifier acting for EPD Hub Limited

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	NORFLAM® product family
Additional labels	NORFLAM® TP, NORFLAM® W212, NORFLAM® W312, NORFLAM® W313, NORFLAM® W314
Product reference	-
Place(s) of raw material origin	Europe, Asia
Place of production	Finland
Place(s) of installation and use	Global
Period for data	01.01.2024 – 31.12.2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	-6%/+9%
A1-A3 Specific data (%)	24,5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 litre
Declared unit mass	1,20 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,44E+00
GWP-total, A1-A3 ($kgCO_2e$)	2,09E+00
Secondary material, inputs (%)	0,64
Secondary material, outputs (%)	38,6
Total energy use, A1-A3 (kWh)	11,2
Net freshwater use, A1-A3 (m^3)	0,08

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The increasing popularity of sustainable timber construction is accompanied by strong demand for durable, low-VOC flame retardants that meet the demands of the latest fire safety regulations, enable industrial fire protection of wood and are easy to maintain. At Nordtreat, we develop and produce bio-based flame retardants for the global wood construction sector.

PRODUCT DESCRIPTION

NORFLAM® product family is a pH-neutral, water-based and low-VOC flame retardant product series for wood products. It provides up to Euroclass B-s1, d0 reaction to fire performance with a clear or semi-translucent toned finish. The products are available in thousands of translucent tones for interior and exterior use. NORFLAM® product family is typically used for fire protection of cladding, bearing elements and interior wood products in multistorey buildings.

To ensure lasting fire protection, our solutions include clear guidance for maintenance treatments, helping maintain compliance and safety throughout the building's lifecycle.

Further information can be found at:
www.nordtreat.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	17	South Korea
Fossil materials	5	EU
Bio-based materials	21	EU
Water	57	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,004

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 litre
Mass per declared unit	1,20 kg
Reference service life	-

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	x	x	ND	ND	ND	ND	ND	ND	ND	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 = ND. 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.

A market-based approach is used in modelling the electricity mix utilized in the factory. 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.

The production of the flame retardant product consists of four steps: mixing in two reactors, tinting and packing in canisters. During the first two steps, water and flame retardant components are added and mixed. At tinting the product is made specially based on customer order. The calculations are done for an untinted product. After that the flame retardant product is packed in canisters and put onto pallets for storage. These calculations are made with the most typical canister size 25 litres. The manufacturing process requires electricity and the facilities are heated. A production loss of under 0,1 % is included in the study. For electricity modelling, a market-based approach is used.

Eventually, the product is moved out and transported to the wood treatment facilities.

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. In this case the A4, Transport to the building site, represents the transportation to the wood treatment facility and the A5, Installation into the building represents here the treatment of the wood.

The transportation distance is defined according to the PCR. Average distance of transportation from production plant to the treatment site is calculated with three different groups: 52 % of the deliveries go to average of 150 km

distance with smaller lorry, 39 % of the deliveries go to Europe, in average 2100 km by lorry and 7 % go to in average 5000 km by container ship. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality, they may vary, but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product is packaged properly. Also, volume capacity utilization factor is assumed to be 100 % for the nested packaged products.

Installation includes the treatment of the wood products (electricity used by the vacuum coating machine) and the packaging waste generated. The treatment is calculated on the basis that a piece of wood is treated four times and 90 g/m2 of the flame retardant is inserted on one layer. After the wood products are treated with the flame retardant product the wood is transported to the building site. Calculations have been made with an average 145 km transportation distance with lorry of 32 ton.

PRODUCT USE AND MAINTENANCE (B1-B7)

Modules B1-B7 are not declared in this EPD.

When NORFLAM® product series is used indoors, there is no need for retreatment or maintenance. Only if the wood is damaged mechanically more than 3 mm deep, the damaged area should be treated with recommended application amount of the same NORFLAM® product.

In outdoor use the treatment with exterior product will last at least three years. After that the need for maintenance treatment should be checked and damaged surfaces should be treated with 50 % of the original application amount of the same NORFLAM® product. These calculations are made for indoor application where no retreatment is needed.
Air, soil, and water impacts during the use phase have not been studied.

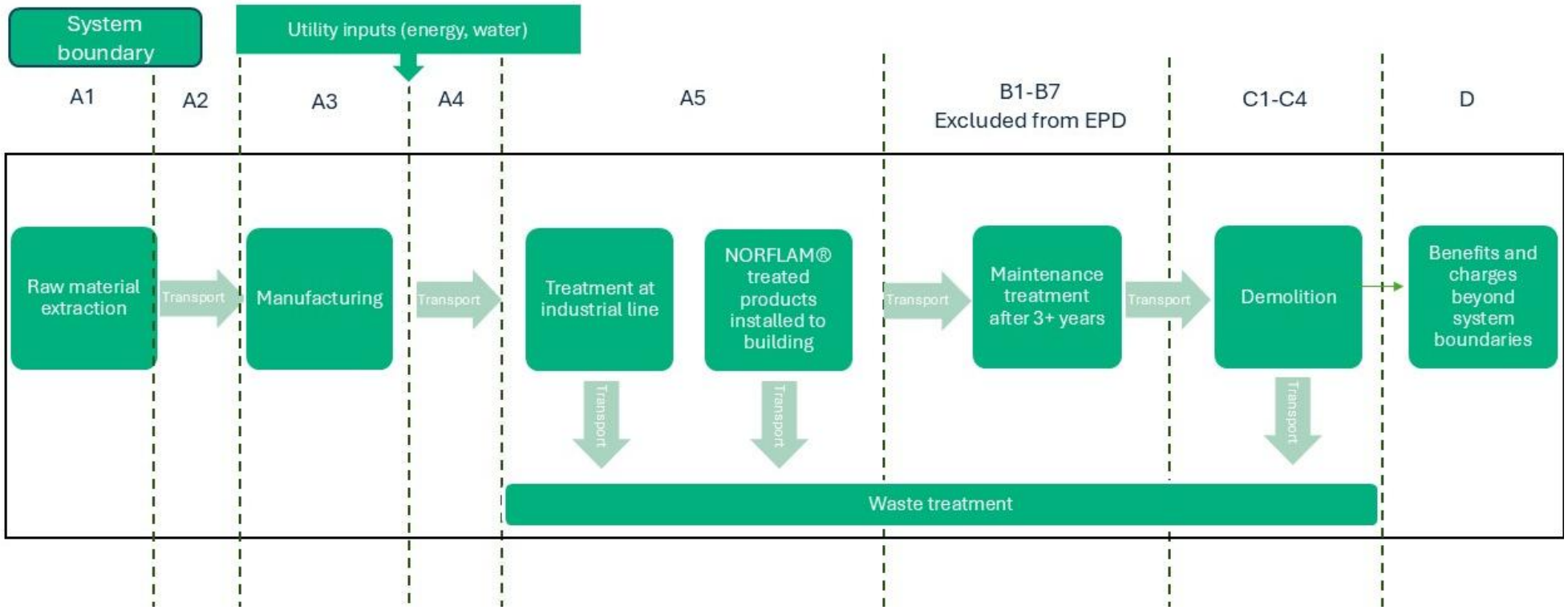
PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 100% the waste is assumed to be collected as wood waste. It is assumed that the water present in product is lost as evaporation after flame retardant product application, therefore the end-of-life product has a lower weight than the declared product.

The consumption of energy and natural resources is negligible for disassembling of the end-of-life product since the flame retardant product becomes a part of another product. So, the impacts of demolition are assumed to be zero (C1).

The dismantled structure on which the flame retardant product is applied to is delivered to the nearest construction waste treatment plant (C2). At the waste treatment plant, waste that can be reused, recycled or recovered for energy is separated and diverted for further use. (C3). The heating value of dried flame retardant product is assumed negligible and accordingly, no benefits are included (D).

SYSTEM DIAGRAM



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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

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/AC:2021 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 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	Allocated by mass or volume
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	-6%/+9%

This EPD is product and factory specific.

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

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	1,40E+00	1,84E-01	5,14E-01	2,09E+00	2,87E-01	8,54E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,61E-03	3,57E-01	0,00E+00	4,17E-02
GWP – fossil	kg CO_2e	1,73E+00	1,84E-01	5,26E-01	2,44E+00	2,87E-01	7,24E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,61E-03	7,25E-03	0,00E+00	4,17E-02
GWP – biogenic	kg CO_2e	-3,50E-01	0,00E+00	-1,18E-02	-3,62E-01	0,00E+00	1,18E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,50E-01	0,00E+00	-3,62E-06
GWP – LULUC	kg CO_2e	1,56E-02	7,49E-05	1,81E-04	1,59E-02	1,01E-04	1,18E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,88E-06	2,00E-06	0,00E+00	-6,20E-05
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	3,50E-08	3,36E-09	1,22E-08	5,06E-08	5,70E-09	1,33E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,12E-10	8,14E-11	0,00E+00	-4,01E-10
Acidification potential	mol H^+e	1,11E-02	1,86E-03	1,20E-03	1,42E-02	9,66E-04	3,46E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,68E-05	7,53E-05	0,00E+00	-2,35E-04
EP-freshwater[2)]	kg Pe	6,30E-04	1,05E-05	1,74E-04	8,14E-04	1,93E-05	2,43E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,65E-07	3,14E-06	0,00E+00	-2,20E-05
EP-marine	kg Ne	2,72E-03	4,93E-04	2,84E-04	3,49E-03	3,10E-04	6,80E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,62E-06	4,00E-05	0,00E+00	-2,92E-05
EP-terrestrial	mol Ne	2,59E-02	5,44E-03	3,01E-03	3,44E-02	3,38E-03	7,04E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,12E-05	3,84E-04	0,00E+00	-2,90E-04
POCP ("smog")[3)]	kg NMVOCe	5,86E-03	1,72E-03	1,29E-03	8,87E-03	1,42E-03	2,22E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,65E-05	9,65E-05	0,00E+00	-9,63E-05
ADP-minerals & metals[4)]	kg Sbe	2,59E-05	4,83E-07	2,07E-06	2,85E-05	9,91E-07	1,66E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,83E-08	1,48E-08	0,00E+00	-3,80E-08
ADP-fossil resources	MJ	2,36E+01	2,50E+00	6,40E+00	3,25E+01	4,00E+00	2,80E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,82E-02	6,42E-02	0,00E+00	-5,80E-01
Water use[5)]	m^3e depr.	1,63E+00	1,10E-02	8,66E-02	1,73E+00	1,99E-02	7,54E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,80E-04	1,52E-02	0,00E+00	-8,76E-03

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, EF 3.1

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	9,97E-08	1,21E-08	9,51E-09	1,21E-07	1,88E-08	2,94E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,79E-10	8,43E-10	0,00E+00	-2,08E-09
Ionizing radiation[6)]	kBq U235e	1,91E-01	2,65E-03	1,69E-02	2,10E-01	6,29E-03	1,53E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,19E-04	7,32E-05	0,00E+00	-1,15E-02
Ecotoxicity (freshwater)	CTUe	4,05E+01	2,93E-01	1,43E+00	4,22E+01	5,94E-01	3,28E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,12E-02	4,92E-02	0,00E+00	-5,46E-02
Human toxicity, cancer	CTUh	3,66E-09	3,33E-11	1,27E-10	3,82E-09	4,75E-11	3,57E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,99E-13	1,35E-11	0,00E+00	-4,85E-12
Human tox. non-cancer	CTUh	5,12E-08	1,34E-09	3,86E-09	5,64E-08	2,35E-09	1,77E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,60E-11	9,09E-10	0,00E+00	-1,83E-10
SQP[7)]	-	3,00E+01	1,23E+00	4,42E+00	3,56E+01	1,97E+00	1,03E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,03E-02	1,80E-02	0,00E+00	-2,31E-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[8)]	MJ	9,94E+00	3,70E-02	2,99E+00	1,30E+01	8,09E-02	7,92E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,53E-03	-7,91E+00	0,00E+00	-2,95E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,04E-01	1,04E-01	0,00E+00	-1,04E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	9,94E+00	3,70E-02	3,09E+00	1,31E+01	8,09E-02	6,89E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,53E-03	-7,91E+00	0,00E+00	-2,95E-01
Non-re. PER as energy	MJ	2,03E+01	2,50E+00	4,36E+00	2,72E+01	4,00E+00	1,71E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,82E-02	6,42E-02	0,00E+00	-1,58E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	1,09E+00	1,09E+00	0,00E+00	-1,09E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,03E+01	2,50E+00	5,45E+00	2,83E+01	4,00E+00	6,25E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,82E-02	6,42E-02	0,00E+00	-1,58E+00
Secondary materials	kg	7,76E-03	1,15E-03	2,16E-03	1,11E-02	1,83E-03	5,44E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,43E-05	1,50E-04	0,00E+00	-4,48E-05
Renew. secondary fuels	MJ	1,12E-04	1,15E-05	3,91E-03	4,04E-03	1,87E-05	2,85E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,48E-07	3,56E-07	0,00E+00	-2,18E-07
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,83E-02	2,98E-04	7,33E-03	7,59E-02	5,59E-04	2,37E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-05	9,37E-05	0,00E+00	-4,35E-04

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	9,39E-01	3,54E-03	3,20E-02	9,74E-01	5,39E-03	4,60E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,02E-04	3,02E-03	0,00E+00	-2,18E-03
Non-hazardous waste	kg	1,36E+01	6,81E-02	1,32E+00	1,50E+01	1,27E-01	1,39E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,39E-03	4,79E-01	0,00E+00	-7,13E-02
Radioactive waste	kg	5,12E-05	6,58E-07	4,32E-06	5,62E-05	1,57E-06	3,29E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,98E-08	1,82E-08	0,00E+00	-2,89E-06

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	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,33E-06	0,00E+00	0,00E+00	1,33E-06	0,00E+00	1,86E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	4,67E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	2,39E-04	0,00E+00	2,23E-03	2,47E-03	0,00E+00	9,87E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+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	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	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_2e	1,69E+00	1,83E-01	5,23E-01	2,40E+00	2,86E-01	7,34E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,58E-03	7,18E-03	0,00E+00	4,18E-02
Ozone depletion Pot.	kg CFC_{-11}e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acidification	kg SO_2e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Eutrophication	kg PO_4^3e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP (“smog”)	kg C_2H_4e	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-elements	kg Sbe	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

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	1,75E+00	1,84E-01	5,26E-01	2,45E+00	2,87E-01	7,36E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,61E-03	7,25E-03	0,00E+00	4,17E-02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	- Electricity production, hydro, run-of-river (Reference product: electricity, high voltage) - Electricity production, wind, >3MW turbine, onshore (Reference product: electricity, high voltage) - Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted (Reference product: electricity, low voltage)
Electricity CO2e / kWh	0.0044, 0.0316 and 0.0802
District heating data source and quality	- Heat and power co-generation, hard coal (Reference product: electricity, high voltage) - Heat production, lignite briquette, at stove 5-15kW (Reference product: heat, central or small-scale, other than natural gas) - Heat, from municipal waste incineration to generic market for heat district or industrial, other than natural gas (Reference product: heat, district or industrial, other than natural gas) - Heat and power co-generation, natural gas, conventional power plant, 100MW electrical (Reference product: electricity, high voltage) - Heat and power co-generation, natural gas, conventional power plant, 100MW electrical (Reference product: electricity, high voltage)
District heating CO2e / kWh	1.03, 0.18, 0.62 and 0.0025 kg CO2e / MJ

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	EURO 5 diesel powered truck, heavy oil powered container ship
Average transport distance, km	52 % of the deliveries go to average of 150 km distance with smaller lorry, 39 % of the deliveries go to Europe, in average 2100 km by lorry and 7 % go to in average 5000 km by container ship
Capacity utilization (including empty return) %	100
Bulk density of transported products	1210
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m^3	-
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	Market for electricity, low voltage (Reference product: electricity, low voltage) Consumption: 0,4 kWh
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wooden pallet / 0,00987 kg Plastic can / 0,0250 kg Packaging film / 0,0005 kg
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	-
Direct emissions to ambient air, soil and water / kg	-

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed construction waste	-
Recovery process – kg for re-use	-
Recovery process – kg for recycling	0,0186 kg
Recovery process – kg for energy recovery	0,47902 kg
Disposal (total) – kg for final deposition	0,0499 kg
Scenario assumptions e.g. transportation	Transportation distance to waste processing is 50 km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Sarah Curpen, as an authorised verifier acting for EPD Hub Limited

24.10.2025