



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Thermally modified pine boards without surface coating
Thermory AS

EPD HUB, HUB-4211

Published on 27.10.2025, last updated on 27.10.2025, valid until 27.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (05 Dec 2023) and JRC characterization factors EF 3.1.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Thermory AS
Address	Lõõtsa tn 1A, 11415 Tallinn, Estonia
Contact details	info@thermory.com
Website	www.thermory.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 05 Dec 2023 EN 16485 Round and sawn timber
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	Anni Oviir, LCA Support
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Sergio Ballen Zamora, 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	Thermally modified pine boards without surface coating
Place of production	Loo, Estonia
Period for data	01.01.2023-31.12.2023
Averaging in EPD	No grouping
A1-A3 Specific data (%)	56,9

ENVIRONMENTAL DATA SUMMARY

Declared unit	One cubic meter of product
Declared unit mass	432 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1,47E+02
GWP-total, A1-A3 (kgCO ₂ e)	-5,88E+02
Secondary material, inputs (%)	0,16
Secondary material, outputs (%)	100
Total energy use, A1-A3 (kWh)	3620
Net freshwater use, A1-A3 (m ³)	0,4

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Thermory AS is a leading manufacturer of thermally modified wood products, specializing in environmentally responsible cladding, decking, and interior solutions. Using advanced thermal modification technology, Thermory enhances the durability, stability, and aesthetic qualities of hardwood and softwood without the use of chemicals.

PRODUCT DESCRIPTION

Thermory's pine timber boards undergo a thermal modification treatment that involves no chemicals in the process or in the final product. The main material of the product is thermally modified pine wood, accounting for 100% of the mass. The dark color and enhanced biological durability are achieved by subjecting the timber to elevated temperatures for an extended period. After thermal modification, the timber is cut to size, molded into profiles, and any defects are removed.

The thermal modification of timber enhances its biological durability, making it suitable for both indoor and outdoor use, even in contact with weather elements such as rain and sunlight. Decking and cladding are the most common applications.

Thermally modified pine timber cladding and decking boards. Heartwood, sapwood and knots may be present in the final product. Colour of thermally modified timber has homogeneously turned darker and durability against biological agents has become higher.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	N/A
Minerals	-	N/A
Fossil materials	-	N/A
Bio-based materials	100	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	201,87
Biogenic carbon content in packaging, kg C	1,507

DECLARED UNIT AND SERVICE LIFE

Declared unit	One cubic meter of product
Mass per declared unit	432 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		
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.

Pine timber is thermally modified in thermo-treatment chambers at 215 °C. Following thermal modification, the timber is planed into profiled finished products such as cladding and decking. Quality control procedures are implemented at each stage of the production process, from the receipt and storage of raw materials through to the completion of the finished products. The final product is packaged and labelled.

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 distance is defined according to the most probable scenario - from the place of manufacturing to Denmark. According to the manufacturer, transportation doesn't cause losses as products are packaged properly. The final product is transported 1390 km (990 km by lorry and 400 km by ferry). Vehicle capacity utilization volume factor is assumed to be 1, which means full load. It may vary but as the role of transportation emission in total results is small and so the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trips are used by transportation companies to serve the needs of other clients.

Fasteners have been excluded as cut-off has been applied. In addition, most of the manufacturers products can be ordered with matched tongue-and-groove ends. Matched tongue-and-groove ends allow boards of different lengths to be installed without the need to rest them on joists. Material losses during installation were not accounted for.

Environmental impacts from installation into the building (A5) cover packaging waste management at the construction site.

Based on Eurostat (2024) data for 2023, it is assumed that 72.2% of plastic packaging waste is incinerated with energy recovery and 27.8% is recycled. For wood packaging waste, 18% is assumed to be treated through energy recovery and 82% is recycled (Nordic Council of Ministers, 2022).

PRODUCT USE AND MAINTENANCE (B1-B7)

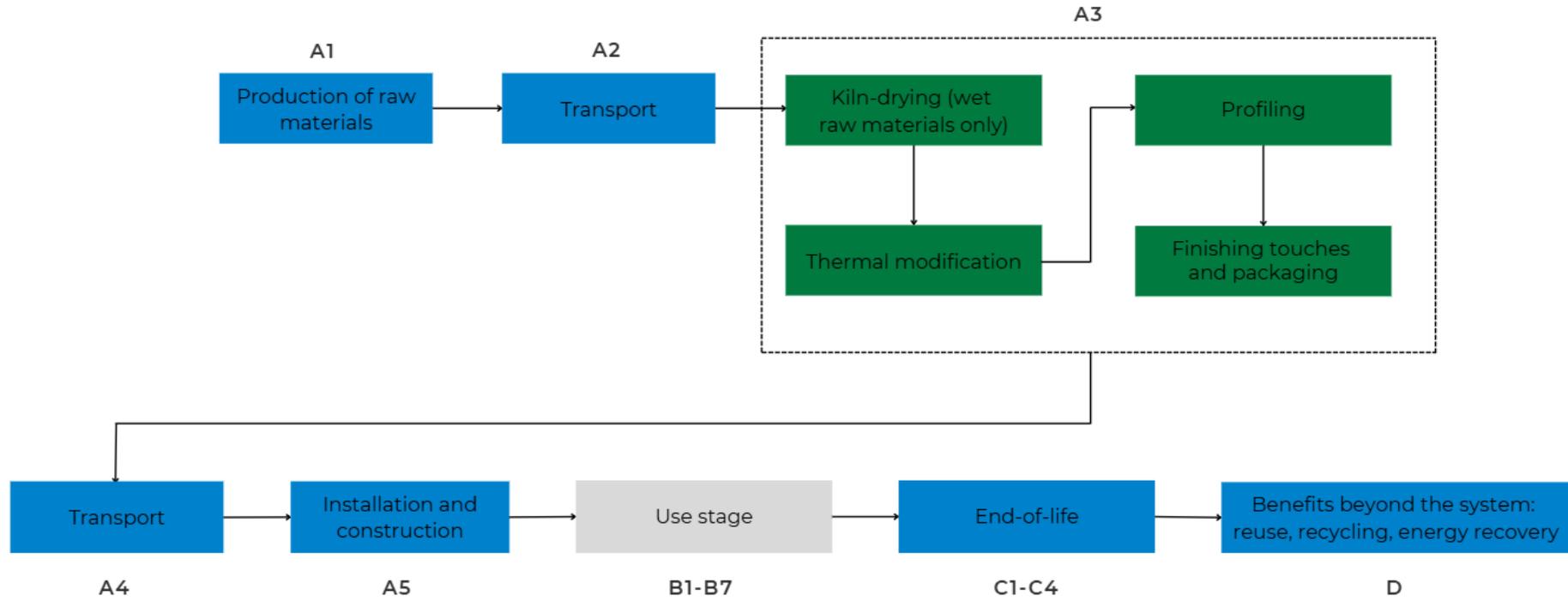
This EPD does not cover the use phase.

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

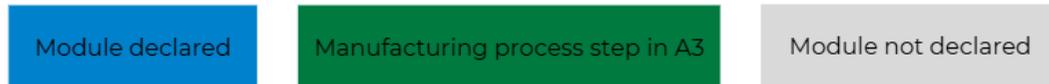
PRODUCT END OF LIFE (C1-C4, D)

The EOL scenario is representative of Denmark. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed to have the same weight as the declared product. End-of-life products are assumed to be sent to the closest facilities such as recycling or incineration. Transportation distance to the closest disposal area is estimated as 50 km (C2) and the transportation method is assumed as lorry which is the most common option. At the end-of-life, in the demolition phase, 100% of the waste is assumed to be collected as separate wood waste (C1) and is assumed to be sent to the closest facilities (C2) where 18% of wood is to be incinerated with energy recovery and 82% is to be recycled (C3). It is assumed that no waste is landfilled (C4) (Nordic Council of Ministers, 2022).

MANUFACTURING PROCESS



LEGEND:



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.

Bio-, glass, paper and cardboard waste is excluded by cut-off. The mass of these is less than 1% of the total mass of the product.

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 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	No allocation
Ancillary materials	Allocated by volume
Manufacturing energy and waste	Allocated by volume

The manufacturer has the sole ownership, liability, and responsibility for the EPD.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	N/A

This EPD is specific to thermally modified pine boards and its manufacturing facility. The environmental impact calculations are based on this product's specific characteristics.

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 ₂ e	-8,74E+02	3,16E+01	2,54E+02	-5,88E+02	6,73E+01	2,32E+00	ND	1,71E-01	2,33E+00	7,40E+02	0,00E+00	-8,37E+02						
GWP – fossil	kg CO ₂ e	5,88E+01	3,15E+01	5,66E+01	1,47E+02	6,72E+01	1,63E+00	ND	1,71E-01	2,32E+00	7,13E+00	0,00E+00	-2,25E+02						
GWP – biogenic	kg CO ₂ e	-9,33E+02	6,60E-03	1,97E+02	-7,36E+02	1,35E-02	6,86E-01	ND	1,75E-05	0,00E+00	7,33E+02	0,00E+00	-6,13E+02						
GWP – LULUC	kg CO ₂ e	9,02E-01	1,44E-02	3,97E-02	9,56E-01	3,09E-02	3,99E-04	ND	1,75E-05	1,04E-03	8,94E-03	0,00E+00	-1,66E-01						
Ozone depletion pot.	kg CFC ₋₁₁ e	1,05E-06	4,63E-07	2,08E-06	3,59E-06	9,85E-07	2,36E-09	ND	2,62E-09	3,43E-08	1,27E-07	0,00E+00	-3,18E-06						
Acidification potential	mol H ⁺ e	3,92E-01	2,80E-01	2,11E-01	8,82E-01	7,75E-01	1,03E-03	ND	1,55E-03	7,93E-03	4,12E-02	0,00E+00	-9,40E-01						
EP-freshwater ²⁾	kg Pe	2,94E-02	2,13E-03	3,32E-03	3,49E-02	4,21E-03	3,49E-05	ND	4,94E-06	1,81E-04	2,77E-03	0,00E+00	-8,33E-02						
EP-marine	kg Ne	1,52E-01	7,71E-02	7,35E-02	3,03E-01	2,08E-01	3,99E-04	ND	7,17E-04	2,60E-03	1,53E-02	0,00E+00	-2,10E-01						
EP-terrestrial	mol Ne	1,61E+00	8,50E-01	9,60E-01	3,42E+00	2,30E+00	4,05E-03	ND	7,85E-03	2,83E-02	1,53E-01	0,00E+00	-2,14E+00						
POCP (“smog”) ³⁾	kg NMVOCe	7,14E-01	2,73E-01	2,65E-01	1,25E+00	7,00E-01	1,23E-03	ND	2,34E-03	1,17E-02	4,73E-02	0,00E+00	-7,87E-01						
ADP-minerals & metals ⁴⁾	kg Sbe	1,58E-04	7,55E-05	6,05E-05	2,93E-04	1,48E-04	5,54E-07	ND	6,14E-08	6,49E-06	2,01E-05	0,00E+00	-3,94E-04						
ADP-fossil resources	MJ	9,28E+02	4,43E+02	8,75E+02	2,25E+03	9,28E+02	2,35E+00	ND	2,24E+00	3,37E+01	1,16E+02	0,00E+00	-3,23E+03						
Water use ⁵⁾	m ³ e depr.	2,65E+01	2,00E+00	5,99E+00	3,45E+01	3,99E+00	6,95E-02	ND	5,60E-03	1,67E-01	4,33E+00	0,00E+00	-3,95E+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, 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	1,96E-05	2,69E-06	3,34E-06	2,57E-05	5,25E-06	1,57E-08	ND	4,39E-08	2,33E-07	5,40E-07	0,00E+00	-1,32E-05						
Ionizing radiation ⁶⁾	kBq 11235e	9,56E+00	3,48E-01	6,64E-01	1,06E+01	6,90E-01	9,12E-03	ND	9,92E-04	2,94E-02	1,62E+00	0,00E+00	-1,72E+01						
Ecotoxicity (freshwater)	CTUe	2,26E+02	5,70E+01	9,19E+01	3,75E+02	1,13E+02	1,01E+00	ND	1,23E-01	4,77E+00	2,19E+01	0,00E+00	-5,21E+02						
Human toxicity, cancer	CTUh	4,27E-08	5,48E-09	1,64E-08	6,46E-08	1,20E-08	1,12E-10	ND	1,76E-11	3,84E-10	4,26E-09	0,00E+00	-8,49E-08						
Human tox. non-cancer	CTUh	7,04E-07	2,54E-07	4,54E-07	1,41E-06	4,96E-07	4,41E-09	ND	2,79E-10	2,18E-08	1,87E-07	0,00E+00	-1,77E-06						
SQP ⁷⁾	-	9,77E+04	3,71E+02	5,06E+03	1,03E+05	6,98E+02	1,68E+00	ND	1,57E-01	3,40E+01	5,34E+01	0,00E+00	-1,11E+04						

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	9,84E+03	5,52E+00	1,00E+03	1,08E+04	1,10E+01	-3,30E+01	ND	1,42E-02	4,62E-01	-4,84E+03	0,00E+00	-7,16E+03						
Renew. PER as material	MJ	8,30E+03	0,00E+00	-1,74E+03	6,56E+03	0,00E+00	-4,36E+01	ND	0,00E+00	0,00E+00	-6,51E+03	0,00E+00	0,00E+00						
Total use of renew. PER	MJ	1,81E+04	5,52E+00	-7,33E+02	1,74E+04	1,10E+01	-7,66E+01	ND	1,42E-02	4,62E-01	-1,14E+04	0,00E+00	-7,16E+03						
Non-re. PER as energy	MJ	9,29E+02	4,43E+02	8,14E+02	2,19E+03	9,28E+02	-2,36E+01	ND	2,24E+00	3,37E+01	1,16E+02	0,00E+00	-3,18E+03						
Non-re. PER as material	MJ	0,00E+00	0,00E+00	2,75E+01	2,75E+01	0,00E+00	-2,75E+01	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Total use of non-re. PER	MJ	9,29E+02	4,43E+02	8,42E+02	2,21E+03	9,28E+02	-5,11E+01	ND	2,24E+00	3,37E+01	1,16E+02	0,00E+00	-3,18E+03						
Secondary materials	kg	6,85E-01	1,89E-01	2,32E-01	1,11E+00	3,98E-01	2,14E-03	ND	9,30E-04	1,44E-02	8,39E-02	0,00E+00	-1,38E+00						
Renew. secondary fuels	MJ	1,75E-02	2,04E-03	2,38E-02	4,33E-02	3,89E-03	2,11E-05	ND	2,43E-06	1,82E-04	8,99E-04	0,00E+00	-9,38E+00						
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Use of net fresh water	m ³	4,34E-01	5,87E-02	-9,21E-02	4,01E-01	1,16E-01	9,39E-04	ND	1,48E-04	4,99E-03	7,06E-02	0,00E+00	-3,07E+00						

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	2,66E+00	7,12E-01	1,03E+00	4,39E+00	1,45E+00	2,31E-02	ND	2,49E-03	5,72E-02	6,39E-01	0,00E+00	-1,64E+01						
Non-hazardous waste	kg	1,04E+02	1,27E+01	2,13E+02	3,30E+02	2,53E+01	1,15E+00	ND	3,40E-02	1,06E+00	1,08E+02	0,00E+00	-4,37E+02						
Radioactive waste	kg	2,45E-03	8,52E-05	1,65E-04	2,70E-03	1,69E-04	2,28E-06	ND	2,43E-07	7,19E-06	4,17E-04	0,00E+00	-4,34E-03						

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,65E+00	ND	0,00E+00	0,00E+00	3,54E+02	0,00E+00	0,00E+00						
Materials for energy rec	kg	0,00E+00	0,00E+00	2,66E+00	2,66E+00	0,00E+00	8,58E-01	ND	0,00E+00	0,00E+00	7,78E+01	0,00E+00	0,00E+00						
Exported energy	MJ	0,00E+00	0,00E+00	3,19E+01	3,19E+01	0,00E+00	5,94E+00	ND	0,00E+00	0,00E+00	1,19E+03	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	1,98E+00	ND	0,00E+00	0,00E+00	3,97E+02	0,00E+00	0,00E+00						
Exported energy – Heat	MJ	0,00E+00	0,00E+00	3,19E+01	3,19E+01	0,00E+00	3,96E+00	ND	0,00E+00	0,00E+00	7,93E+02	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 ₂ e	5,94E+01	3,14E+01	5,64E+01	1,47E+02	6,69E+01	1,63E+00	ND	1,70E-01	2,31E+00	7,10E+00	0,00E+00	-2,24E+02						
Ozone depletion Pot.	kg CFC ₋₁₁ e	8,50E-07	3,69E-07	1,70E-06	2,92E-06	7,85E-07	1,92E-09	ND	2,08E-09	2,74E-08	1,02E-07	0,00E+00	-2,61E-06						
Acidification	kg SO ₂ e	2,89E-01	2,20E-01	1,43E-01	6,52E-01	6,13E-01	7,69E-04	ND	1,09E-03	6,05E-03	3,12E-02	0,00E+00	-7,63E-01						
Eutrophication	kg PO ₄ ³ e	1,36E-01	3,31E-02	7,15E-02	2,40E-01	8,42E-02	2,01E-04	ND	2,54E-04	1,48E-03	7,66E-03	0,00E+00	-5,45E-01						
POCP (“smog”)	kg C ₂ H ₄ e	6,88E-02	1,35E-02	1,54E-02	9,76E-02	3,52E-02	5,79E-05	ND	8,14E-05	5,40E-04	2,36E-03	0,00E+00	-5,86E-02						
ADP-elements	kg Sbe	1,55E-04	7,37E-05	5,59E-05	2,84E-04	1,44E-04	5,32E-07	ND	5,97E-08	6,32E-06	1,93E-05	0,00E+00	-3,91E-04						
ADP-fossil	MJ	7,61E+02	4,37E+02	8,64E+02	2,06E+03	9,18E+02	2,20E+00	ND	2,22E+00	3,33E+01	8,75E+01	0,00E+00	-2,93E+03						

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	1,55E-04	7,37E-05	5,59E-05	2,84E-04	1,45E-04	5,32E-07	ND	5,97E-08	6,33E-06	1,93E-05	0,00E+00	-3,91E-04						
Hazardous waste disposed	kg	2,66E+00	7,12E-01	1,03E+00	4,39E+00	1,45E+00	2,31E-02	ND	2,49E-03	5,72E-02	6,39E-01	0,00E+00	-1,64E+01						
Non-haz. waste disposed	kg	1,04E+02	1,27E+01	2,13E+02	3,30E+02	2,53E+01	1,15E+00	ND	3,40E-02	1,06E+00	1,08E+02	0,00E+00	-4,37E+02						
Air pollution	m³	2,38E+04	7,23E+03	5,65E+03	3,66E+04	1,50E+04	5,90E+01	ND	2,45E+01	5,60E+02	1,77E+03	0,00E+00	-5,40E+04						
Water pollution	m³	6,11E+02	2,06E+02	5,59E+02	1,38E+03	4,35E+02	1,12E+00	ND	1,13E+00	1,55E+01	8,02E+01	0,00E+00	-2,62E+03						

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 ₂ e	5,97E+01	3,15E+01	5,67E+01	1,48E+02	6,73E+01	1,64E+00	ND	1,71E-01	2,33E+00	7,14E+00	0,00E+00	-2,25E+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.

ENVIRONMENTAL IMPACTS – TRACI 2.1. / 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 ₂ e	5,89E+01	3,11E+01	5,59E+01	1,46E+02	6,64E+01	1,63E+00	ND	1,69E-01	2,29E+00	7,07E+00	0,00E+00	-2,22E+02						
Ozone Depletion	kg CFC ₁₁ e	1,11E-06	4,89E-07	2,18E-06	3,77E-06	1,04E-06	2,50E-09	ND	2,76E-09	3,62E-08	1,33E-07	0,00E+00	-3,34E-06						
Acidification	kg SO ₂ e	3,50E-01	2,41E-01	1,79E-01	7,69E-01	6,65E-01	9,26E-04	ND	1,43E-03	7,04E-03	3,65E-02	0,00E+00	-7,99E-01						
Eutrophication	kg Ne	2,05E-01	1,42E-02	3,54E-02	2,54E-01	3,47E-02	1,65E-04	ND	9,69E-05	7,42E-04	6,92E-03	0,00E+00	-2,93E-01						
POCP (“smog”)	kg O ₃ e	1,03E+01	5,10E+00	4,62E+00	2,00E+01	1,37E+01	2,41E-02	ND	4,72E-02	1,79E-01	9,13E-01	0,00E+00	-1,24E+01						
ADP-fossil	MJ	9,30E+02	4,43E+02	8,15E+02	2,19E+03	9,30E+02	-2,36E+01	ND	2,24E+00	3,38E+01	1,16E+02	0,00E+00	-3,18E+03						

ENVIRONMENTAL IMPACTS – BEPALINGSMETODE, NETHERLANDS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Shadow price	€	1,22E+01	4,77E+00	6,64E+00	2,36E+01	1,10E+01	1,54E-01	ND	2,55E-02	2,93E-01	1,09E+00	0,00E+00	-3,54E+01						
Terrestrial ecotoxicity	DCB eq	8,29E-01	1,38E-01	4,15E-01	1,38E+00	3,19E-01	1,61E-02	ND	2,99E-04	8,32E-03	5,23E-02	0,00E+00	-8,35E-01						
Seawater ecotoxicity	DCB eq	1,31E+04	4,73E+03	3,54E+03	2,13E+04	9,95E+03	3,55E+02	ND	1,05E+01	3,59E+02	2,31E+03	0,00E+00	-9,18E+04						
Freshwater ecotoxicity	DCB eq	1,70E+00	4,09E-01	4,67E-01	2,58E+00	8,41E-01	5,89E-02	ND	1,12E-03	3,24E-02	1,10E-01	0,00E+00	-2,92E+00						
Human ecotoxicity	DCB eq	5,82E+01	1,63E+01	2,36E+01	9,81E+01	3,62E+01	3,16E-01	ND	9,86E-02	1,10E+00	3,25E+00	0,00E+00	-7,32E+01						
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,98E+00	ND	0,00E+00	0,00E+00	3,97E+02	0,00E+00	0,00E+00						
ETE	MJ	0,00E+00	0,00E+00	3,19E+01	3,19E+01	0,00E+00	3,96E+00	ND	0,00E+00	0,00E+00	7,93E+02	0,00E+00	0,00E+00						
ADP Fossil Fuels	kg Sbe	3,66E-01	2,10E-01	4,15E-01	9,92E-01	4,41E-01	1,06E-03	ND	1,07E-03	1,60E-02	4,21E-02	0,00E+00	-1,41E+00						

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wood, future (Reference product: electricity, high voltage, ecoinvent 3.10.1, world); Electricity production, photovoltaic, 3kWp flat-roof installation, multi-Si, world
Electricity CO2e / kWh	0,1199
District heating data source and quality	Heat production, natural gas, at industrial furnace >100kW (Reference product: heat, district or industrial, natural gas, Ecoinvent 3.10.1, Unit: MJ, Europe)
District heating CO2e / kWh	0,0773

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	0,10
Average transport distance, km	1390
Capacity utilization (including empty return) %	100
Bulk density of transported products	432
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	0
Water use / m ³	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	3,88
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	3,88
Direct emissions to ambient air, soil and water / kg	0

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	432
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	354,24
Recovery process – kg for energy recovery	77,76
Disposal (total) – kg for final deposition	0
Scenario assumptions e.g. transportation	Transport to treatment or landfill is assumed to be 50 km.

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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

Sergio Ballen Zamora, as an authorised verifier acting for EPD Hub Limited

27.10.2025

