



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Rough sawn ThermoWood®
HJT-Holz Oy



EPD of multiple products
EPD registration number

Published on
Valid until



GENERAL INFORMATION

OWNER OF THE DECLARATION, MANUFACTURER

Manufacturer	HJT-Holz Oy
Address	Lahnajoentie 196, 35700 Mänttä-Vilppula
Website	https://www.thermoholz.fi/

EPD STANDARDS, SCOPE AND VERIFICATION

EPD program operator, publisher	Rakennustieto Oy Malminkatu 16 A, 00100 Helsinki http://cer.rts.fi
EPD standards	This EPD is in accordance with EN 15804:2012+A2:2019/AC:2021 and ISO 14025.
Product category rules (PCR)	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS EPD PCR 2024 (20.11.2024) and EN 16485:2014 is used. Product specific complementary category rules have not been applied in this EPD.
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4, and modules C1-C4, D
EPD author	Hanna Lento, Sweco Finland Oy
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	Sigita Židonienė, UAB Vesta Consulting
Verification date	29.10.2025

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

Products covered by this EPD	Rough sawn ThermoWood®
Product name	Thermo-D spruce & pine Thermo-S spruce & pine Thermo-D radiata
Product reference	ThermoWood® HJT-Holz is a member of Finnish Thermowood Association and entitled to use the associations's ThermoWood® trademark
Place(s) of raw material origin	Finland & New Zealand
Place of production	Mänttä-Vilppula, Finland
Place(s) of installation and use	Europe
Period for data	One year, 04/2024-03/2025
Averaging in EPD	Multiple products
GWP-fossil variation for A1-A3 between the products declared in the EPD (%)	66
Products' CPC codes	Thermo pine HS CODE 4407 111000 Thermo spruce HS CODE 4407 122000 Thermo radiatapine HS CODE 4407 111000



PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

HJT-Holz is a pioneering company in the ThermoWood industry, based in Mänttä-Vilppula, Finland. HJT-Holz has been operating in the industry since 1997. Being founded from a passion for wood and innovation, we have deep roots in the local timber industry and are dedicated to transforming ordinary wood into exceptional products through thermal treatment. This process enhances the wood’s natural beauty while significantly increasing its features like dimensional stability and resistance to decay. Today, HJT-Holz stands at the forefront of sustainable wood processing, providing high-quality, eco-friendly wood products to markets across Europe.

PRODUCT DESCRIPTION

This declaration represents the production of rough sawn ThermoWood from spruce/pine with Thermo-S and Thermo-D treatment and rough sawn ThermoWood from radiata pine with Thermo-D treatment. Rough sawn ThermoWood can be heat-treated and trademarked into two classes. ThermoWood is classified based on the level of heat treatment applied, which directly impacts its properties such as durability, stability, and color. The two primary classifications are Thermo-S (Stability) and Thermo-D (Durability). Thermo-S is treated at lower temperatures, focusing on improved dimensional stability and is ideal for indoor applications like furniture and paneling. Thermo-D, treated at higher temperatures, offers enhanced durability and resistance to decay, making it suitable for outdoor use, such as decking and cladding.

ThermoWood is known for its exceptional durability, which is a result of the heat treatment process it undergoes. This process changes the chemical structure of the wood, making it highly resistant to decay caused by fungi and insects. By eliminating the food sources that these organisms rely on, ThermoWood significantly prolongs the wood’s lifespan. This durability

makes it an excellent choice for outdoor applications, where exposure to the elements can quickly deteriorate untreated wood. The heat treatment process of ThermoWood reduces its moisture content and limits its ability to absorb water. This results in improved dimensional stability, meaning the wood is less likely to swell, shrink, or warp when exposed to varying humidity levels. Such stability is crucial in environments with frequent temperature and moisture changes, ensuring that structures made from ThermoWood retain their shape and integrity over time.

TECHNICAL SPECIFICATIONS

One of the key advantages of ThermoWood is that it does not require chemical treatments to enhance its properties. The wood is modified using only high temperatures and steam, which makes the process environmentally friendly. This lack of chemicals reduces the risk of harmful substances leaching into the environment, making ThermoWood a safer option for both people and ecosystems. Rough sawn ThermoWood is also fully recyclable product from renewable natural resources.

Further information can be found at:
<https://www.thermoholz.fi/>

Main substances of the products are presented in table below presenting raw materials of per 1 m³ of studied product. Final products are dried to approximately 5 % moisture. Wood raw materials are procured 100 % from PEFC- or FSC-certified forests.

ThermoWood, main material	Density kg/m ³	Moisture-%, raw material	Moisture-%, final product
Pine / Spruce	430	14-18 %	5 %
Radiata	470	14-18 %	5 %

PHYSICAL PROPERTIES OF THE PRODUCT

Products measurements vary: thickness 19-50mm (spruce 19-100mm), width 50-250mm and length 3000-5400 mm. Other lengths and dimensions are also possible upon request.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Amount, mass- % and material origin			
Raw material category	Thermo-D spruce & pine	Thermo-S spruce & pine	Thermo-D radiata
Metals	-	-	-
Minerals	-	-	-
Fossil materials	-	-	-
Bio-based materials	100 %, Finland	100 %, Finland	100 %, New Zealand

FUNCTIONAL UNIT AND SERVICE LIFE

Declared products			
	Thermo-D spruce & pine	Thermo-S spruce & pine	Thermo-D radiata
Declared unit	1 m ³	1 m ³	1 m ³
Mass per declared unit	430 kg	430 kg	470 kg

Reference service life of the products is typically 30 years.

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT COMPOSITION BY MATERIALS

Product	Raw materials			
	Material	Quantity %	Usability	Origin of the raw materials
Thermo-D & Thermo-S spruce/pine	Softwoods (<i>Pinus Sylvestris</i> / <i>Picea Abies</i>)	100	Renewable	Finland
Thermo-D radiata	Softwoods (<i>Pinus Radiata</i>)	100	Renewable	New Zealand

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	Thermo-D spruce & pine – 201,7 Thermo-S spruce & pine – 201,7 Thermo-D radiata – 220,4
Biogenic carbon content in packaging, kg C	The share of biogenic containing materials is less than 5% of the total mass of the packaging. Biogenic carbon in packaging has not been declared.

PACKAGING MATERIAL COMPOSITION

Material	Weight, kg	Post-consumer %	Renewable %	Material origin
Packaging film, LDPE	0,31	51 %	0	EU

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This declaration covers the life cycle stages from cradle-to-gate with options (A4), modules C1-C4, and module D. This EPD covers the life-cycle modules listed in the following table. All covered modules are marked with X. Not declared modules are marked as ND.

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	ND	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

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.

ThermoWood production process includes three main steps. At first, water is removed from the timber in high temperature drying. Secondly, thermal modification of wood takes place in the oven without any chemicals. Finally, moisture content is increased with steam and water. Raw material sawn timber is dried in the manufacturing process and mass of evaporated water is considered in the mass of transported timber.

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.

Optional A4 module is declared. The transportation distances and methods were provided by the Manufacturer. On average, the final product is transported 1 228 km by a lorry. There is no loss in transportation.

This EPD does not cover the optional A5 module.

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 period of use for Thermowood is on average 30 years according to the manufacturer. At the end of life (C1-C4) the wood product is incinerated, and energy is recovered in the process. At the end-of-life phase Thermowood is demolished (C1).

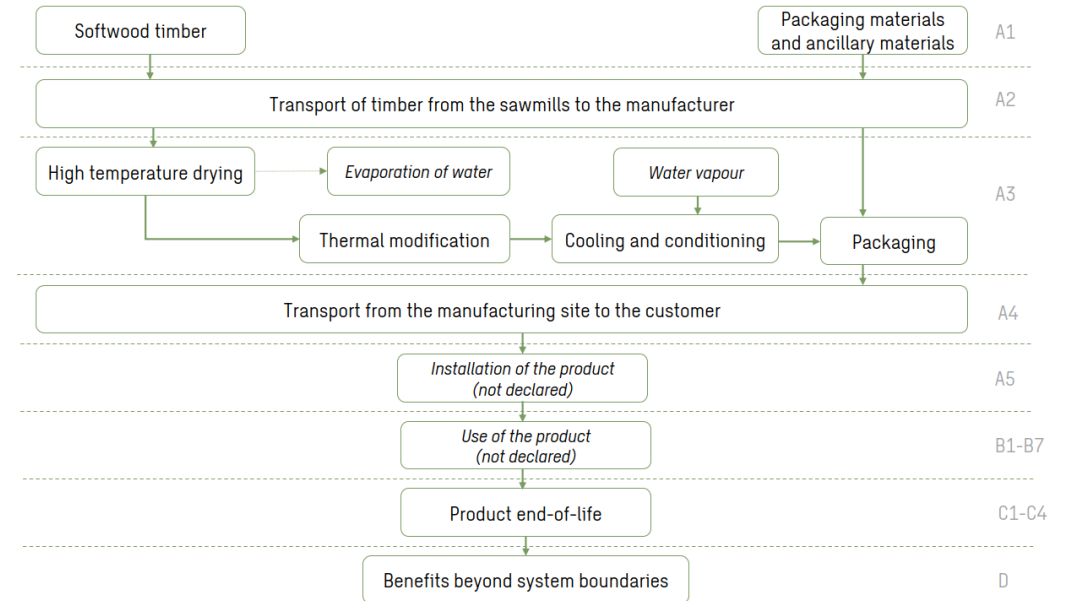
The demolished Thermowoods are transported to a waste treatment facility (C2).

At the facility, Thermowood is incinerated for energy (C3). For waste wood, the recycling as material is not considered.

No disposal on landfills (C4).

Thermowood has recovery potential (D) due to its high thermal value. Energy recovery reduces the need for alternative fuel use in energy production. The benefits of heat and electricity production from wood incineration are considered.

LIFE CYCLE FLOW 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.

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	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

KEY ASSUMPTIONS

Module A1-A3:

Pine and spruce are sourced from Finland. Radiata pine is sourced from New Zealand. Raw materials are procured as rough sawn timber. Pine and spruce are transported to the manufacturing site from sawmills by a lorry. Radiata pine is transported by a ship and a lorry. The specific transport distances of materials are used. Vehicle capacity utilization volume factor is assumed to be 1, which means full load. Empty returns are not taken into account as it is assumed that return trip is used by transportation company to serve the needs of other clients.

The thermal modification kilns are powered with light fuel oil. Light fuel oil is also used in the working machinery. The electricity used in the plant has been modelled based on Finland residual mix for electricity. Light fuel oil and electricity was allocated based on the energy consumption of the processes included in the manufacturing stage.

The products are packaged using plastic films. Half of the raw material plastics packaging can be reused for final product packaging.

Module A4:

The transportation distance is defined according to the weighted average of realized exports and delivery distances. Due to the long distances, full trailer combination truck is assumed to be used. Fill rate of 100% is used, as the transportation provider is assumed to provide their services to other customers on return trips. An assumption is that trucks are EURO 5 trucks which are the most common.

Module C1:

No energy consumption in the demolition/de-construction process is estimated.



Module C2:

After demolition the Thermowood is transported to the nearest construction waste treatment facility, which is assumed to be at 50 km distance. A lorry is assumed to be used, which is the most common. Fill rate of 50% is used, accounting for empty returns.

Module C3:

In the energy recovery scenario, the Thermowood is incinerated in combined heat and power plant (CHP). In Finland, the energy recovery by incineration is the most common waste treatment method, so it is assumed that waste processing of the wood at the end of life is 100 % energy recovery by incineration. Total efficiency of approximately 60 % is used.

Module C4:

No disposal to landfill.

Module D:

Thermowood is recovered as energy. Benefits of wood waste incineration are heat and electricity, which are taken into account in module D.

PRODUCT GROUPING AND VARIABILITY

Type of grouping	Multiple products
Grouping method	Not applicable
Variation between the declared products in GWP-fossil for A1-A3	66 %

This EPD declares 3 products results of the product group. The product group of ThermoWood includes Thermo-D classified pine and spruce, Thermo-S classified pine and spruce and Thermo-D classified radiata pine.

Sensitivity analysis was conducted for all the declared Thermowood products in this EPD. All Thermowood products are produced by the same manufacturer in the same plant in Finland.

Core environmental impact indicators according to EN 15804+A2 are declared for all products in the product group. Product-specific result tables are included regarding environmental impacts, use of natural resources, end-of-life waste, and end-of-life output flows. Additional (voluntary) environmental impact indicators are not declared in this EPD.

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.

The age of background data used in the EPD is less than 5 years old.

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

THERMO-D SPRUCE & PINE

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	-8,33E+02	1,93E+01	1,41E+02	-6,73E+02	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	7,67E+02	0,00E+00	-4,71E+02
GWP – fossil	kg CO ₂ e	1,75E+01	1,92E+01	2,99E+01	6,67E+01	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	2,75E+01	0,00E+00	-2,69E+02
GWP – biogenic	kg CO ₂ e	-8,51E+02	4,50E-06	1,11E+02	-7,40E+02	2,03E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	7,40E+02	0,00E+00	-1,34E-01
GWP – LULUC	kg CO ₂ e	5,02E-01	6,80E-03	7,72E-03	5,16E-01	3,61E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,46E-03	6,16E-02	0,00E+00	-2,02E+02
Ozone depletion pot.	kg CFC ₋₁₁ e	3,38E-07	3,83E-07	2,23E-06	2,95E-06	2,03E-06	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,06E-07	3,55E-07	0,00E+00	-2,15E-06
Acidification potential	mol H ⁺ e	8,15E-02	6,02E-02	1,26E-01	2,67E-01	3,20E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,09E-02	1,77E-01	0,00E+00	-1,99E+00
EP-freshwater ²⁾	kg Pe	9,19E-03	1,28E-03	2,64E-03	1,31E-02	6,78E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,72E-04	7,08E-03	0,00E+00	-1,09E-01
EP-marine	kg Ne	3,53E-02	2,03E-02	2,04E-02	7,59E-02	1,08E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,04E-02	7,31E-02	0,00E+00	-2,59E-01
EP-terrestrial	mol Ne	3,53E-01	2,21E-01	2,13E-01	7,86E-01	1,17E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E-01	7,41E-01	0,00E+00	-2,78E+00
POCP (“smog”) ³⁾	kg NMVOCe	2,68E-01	9,43E-02	2,29E-01	5,91E-01	5,01E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,88E-02	2,14E-01	0,00E+00	-8,64E-01
ADP-minerals & metals ⁴⁾	kg Sbe	3,09E-05	6,30E-05	2,80E-05	1,22E-04	3,34E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,38E-05	6,91E-05	0,00E+00	-7,44E-04
ADP-fossil resources	MJ	2,41E+02	2,70E+02	1,39E+03	1,90E+03	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,48E+02	0,00E+00	-3,51E+03
Water use ⁵⁾	m ³ e depr.	3,42E+00	1,33E+00	5,59E+01	6,07E+01	7,05E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,00E-01	1,69E+01	0,00E+00	-4,52E+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.

THERMO-S SPRUCE & PINE

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	-8,33E+02	1,93E+01	1,38E+02	-6,76E+02	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	7,67E+02	0,00E+00	-4,71E+02
GWP – fossil	kg CO ₂ e	1,75E+01	1,92E+01	2,70E+01	6,38E+01	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	2,75E+01	0,00E+00	-2,69E+02
GWP – biogenic	kg CO ₂ e	-8,51E+02	4,50E-06	1,11E+02	-7,40E+02	2,03E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	7,40E+02	0,00E+00	-1,34E-01
GWP – LULUC	kg CO ₂ e	5,02E-01	6,80E-03	6,97E-03	5,16E-01	3,61E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,46E-03	6,16E-02	0,00E+00	-2,02E+02
Ozone depletion pot.	kg CFC-11e	3,38E-07	3,83E-07	1,98E-06	2,70E-06	2,03E-06	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,06E-07	3,55E-07	0,00E+00	-2,15E-06
Acidification potential	mol H ⁺ e	8,15E-02	6,02E-02	1,14E-01	2,56E-01	3,20E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,09E-02	1,77E-01	0,00E+00	-1,99E+00
EP-freshwater ²⁾	kg Pe	9,19E-03	1,28E-03	2,48E-03	1,29E-02	6,78E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,72E-04	7,08E-03	0,00E+00	-1,09E-01
EP-marine	kg Ne	3,53E-02	2,03E-02	1,85E-02	7,41E-02	1,08E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,04E-02	7,31E-02	0,00E+00	-2,59E-01
EP-terrestrial	mol Ne	3,53E-01	2,21E-01	1,93E-01	7,67E-01	1,17E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E-01	7,41E-01	0,00E+00	-2,78E+00
POCP (“smog”) ³⁾	kg NMVOCe	2,68E-01	9,43E-02	2,02E-01	5,64E-01	5,01E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,88E-02	2,14E-01	0,00E+00	-8,64E-01
ADP-minerals & metals ⁴⁾	kg Sbe	3,09E-05	6,30E-05	2,60E-05	1,20E-04	3,34E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,38E-05	6,91E-05	0,00E+00	-7,44E-04
ADP-fossil resources	MJ	2,41E+02	2,70E+02	1,22E+03	1,74E+03	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,48E+02	0,00E+00	-3,51E+03
Water use ⁵⁾	m ³ e depr.	3,42E+00	1,33E+00	5,57E+01	6,04E+01	7,05E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,00E-01	1,69E+01	0,00E+00	-4,52E+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.

THERMO-D RADIATA

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	-9,09E+02	1,36E+02	1,51E+02	-6,21E+02	1,12E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E+01	8,39E+02	0,00E+00	-5,23E+02
GWP – fossil	kg CO ₂ e	2,11E+01	1,36E+02	2,99E+01	1,87E+02	1,12E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E+01	3,00E+01	0,00E+00	-3,02E+02
GWP – biogenic	kg CO ₂ e	-9,30E+02	1,61E-05	1,21E+02	-8,09E+02	2,21E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,09E+02	0,00E+00	-1,51E-01
GWP – LULUC	kg CO ₂ e	2,67E-01	6,86E-02	7,72E-03	3,43E-01	3,95E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,78E-03	6,73E-02	0,00E+00	-2,21E+02
Ozone depletion pot.	kg CFC-11e	3,13E-07	2,09E-06	2,23E-06	4,64E-06	2,22E-06	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,25E-07	3,88E-07	0,00E+00	-2,41E-06
Acidification potential	mol H ⁺ e	1,14E-01	3,31E+00	1,26E-01	3,55E+00	3,49E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,37E-02	1,94E-01	0,00E+00	-2,24E+00
EP-freshwater ²⁾	kg Pe	5,65E-03	5,17E-03	2,64E-03	1,35E-02	7,41E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,34E-04	7,73E-03	0,00E+00	-1,22E-01
EP-marine	kg Ne	4,85E-02	8,32E-01	2,04E-02	9,01E-01	1,18E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E-02	7,99E-02	0,00E+00	-2,90E-01
EP-terrestrial	mol Ne	5,12E-01	9,23E+00	2,13E-01	9,96E+00	1,28E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,23E-01	8,10E-01	0,00E+00	-3,12E+00
POCP (“smog”) ³⁾	kg NMVOCe	2,16E-01	2,55E+00	2,29E-01	2,99E+00	5,47E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,33E-02	2,34E-01	0,00E+00	-9,69E-01
ADP-minerals & metals ⁴⁾	kg Sbe	2,81E-05	1,92E-04	2,80E-05	2,48E-04	3,65E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,69E-05	7,55E-05	0,00E+00	-8,35E-04
ADP-fossil resources	MJ	2,85E+02	1,71E+03	1,39E+03	3,38E+03	1,57E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,57E+02	3,81E+02	0,00E+00	-3,94E+03
Water use ⁵⁾	m ³ e depr.	1,93E+00	5,54E+00	5,63E+01	6,37E+01	7,70E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,65E-01	1,85E+01	0,00E+00	-5,07E+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.

STANDARD 7.2.4. USE OF NATURAL RESOURCES AND OTHER INDICATORS

THERMO-D SPRUCE AND PINE

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	2,20E+03	4,67E+00	1,05E+01	2,21E+03	2,48E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,81E+00	-1,16E+04	0,00E+00	-8,11E+02
Renew. PER as material	MJ	6,36E+03	0,00E+00	-8,29E+02	5,53E+03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-5,53E+03	0,00E+00	0,00E+00
Total use of renew. PER	MJ	8,55E+03	4,67E+00	-8,18E+02	7,74E+03	2,48E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,81E+00	-1,71E+04	0,00E+00	-8,11E+02
Non-re. PER as energy	MJ	2,41E+02	2,70E+02	3,39E+02	8,51E+02	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,49E+02	0,00E+00	-3,51E+03
Non-re. PER as material	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
Total use of non-re. PER	MJ	2,41E+02	2,70E+02	3,39E+02	8,51E+02	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,49E+02	0,00E+00	-3,51E+03
Secondary materials	kg	9,72E-02	1,24E-01	2,95E-01	5,16E-01	6,57E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,31E-02	3,13E-01	0,00E+00	-3,92E-01
Renew. secondary fuels	MJ	9,60E-04	1,56E-03	1,77E-02	2,02E-02	8,30E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,41E-04	2,50E-03	0,00E+00	-1,95E-03
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	1,03E-01	3,64E-02	2,58E-01	3,98E-01	1,93E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,97E-02	1,66E-01	0,00E+00	-2,54E+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	4,64E-01	3,88E-01	5,30E-01	1,38E+00	2,06E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,87E-01	3,81E+00	0,00E+00	-2,42E+01
Non-hazardous waste	kg	1,78E+01	8,18E+00	2,08E+01	4,68E+01	4,34E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,41E+00	4,72E+02	0,00E+00	-5,32E+02
Radioactive waste	kg	9,16E-05	8,57E-05	3,57E-04	5,34E-04	4,55E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,49E-05	3,36E-04	0,00E+00	-1,48E-02

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	0,00E+00	0,00E+00	1,66E-01	1,66E-01	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 energy rec	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
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	6,16E+02	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	3,44E+03	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-8,33E+02	1,93E+01	1,41E+02	-6,73E+02	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	7,67E+02	0,00E+00	-4,71E+02
ADP-minerals & metals	kg Sbe	3,09E-05	6,30E-05	2,80E-05	1,22E-04	3,34E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,38E-05	6,91E-05	0,00E+00	-7,44E-04
ADP-fossil resources	MJ	2,41E+02	2,70E+02	1,39E+03	1,90E+03	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,48E+02	0,00E+00	-3,51E+03
Water use	m ³ e depr.	3,42E+00	1,33E+00	5,59E+01	6,07E+01	7,05E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,00E-01	1,69E+01	0,00E+00	-4,52E+01
Secondary materials	kg	9,72E-02	1,24E-01	2,95E-01	5,16E-01	6,57E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,31E-02	3,13E-01	0,00E+00	-3,92E-01
Biog. C in product	kg C*	N/A	N/A	2,02E+02	2,02E+02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* 1 kg biogenic carbon is equivalent to 44/12 kg of biogenic CO₂.

THERMO-S SPRUCE AND PINE

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	2,20E+03	4,67E+00	9,78E+00	2,21E+03	2,48E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,81E+00	-1,16E+04	0,00E+00	-8,11E+02
Renew. PER as material	MJ	6,36E+03	0,00E+00	-8,29E+02	5,53E+03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-5,53E+03	0,00E+00	0,00E+00
Total use of renew. PER	MJ	8,55E+03	4,67E+00	-8,19E+02	7,74E+03	2,48E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,81E+00	-1,71E+04	0,00E+00	-8,11E+02
Non-re. PER as energy	MJ	2,41E+02	2,70E+02	3,08E+02	8,19E+02	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,49E+02	0,00E+00	-3,51E+03
Non-re. PER as material	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
Total use of non-re. PER	MJ	2,41E+02	2,70E+02	3,08E+02	8,19E+02	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,49E+02	0,00E+00	-3,51E+03
Secondary materials	kg	9,72E-02	1,24E-01	2,80E-01	5,01E-01	6,57E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,31E-02	3,13E-01	0,00E+00	-3,92E-01
Renew. secondary fuels	MJ	9,60E-04	1,56E-03	1,76E-02	2,01E-02	8,30E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,41E-04	2,50E-03	0,00E+00	-1,95E-03
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	1,03E-01	3,64E-02	2,52E-01	3,92E-01	1,93E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,97E-02	1,66E-01	0,00E+00	-2,54E+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	4,64E-01	3,88E-01	4,76E-01	1,33E+00	2,06E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,87E-01	3,81E+00	0,00E+00	-2,42E+01
Non-hazardous waste	kg	1,78E+01	8,18E+00	1,97E+01	4,57E+01	4,34E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,41E+00	4,72E+02	0,00E+00	-5,32E+02
Radioactive waste	kg	9,16E-05	8,57E-05	3,39E-04	5,16E-04	4,55E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,49E-05	3,36E-04	0,00E+00	-1,48E-02

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	0,00E+00	0,00E+00	1,66E-01	1,66E-01	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 energy rec	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
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	6,16E+02	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	3,44E+03	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-8,33E+02	1,93E+01	1,38E+02	-6,76E+02	1,02E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,03E+01	7,67E+02	0,00E+00	-4,71E+02
ADP-minerals & metals	kg Sbe	3,09E-05	6,30E-05	2,60E-05	1,20E-04	3,34E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,38E-05	6,91E-05	0,00E+00	-7,44E-04
ADP-fossil resources	MJ	2,41E+02	2,70E+02	1,22E+03	1,74E+03	1,44E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E+02	3,48E+02	0,00E+00	-3,51E+03
Water use	m ³ e depr.	3,42E+00	1,33E+00	5,57E+01	6,04E+01	7,05E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,00E-01	1,69E+01	0,00E+00	-4,52E+01
Secondary materials	kg	9,72E-02	1,24E-01	2,80E-01	5,01E-01	6,57E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,31E-02	3,13E-01	0,00E+00	-3,92E-01
Biog. C in product	kg C*	N/A	N/A	2,02E+02	2,02E+02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* 1 kg biogenic carbon is equivalent to 44/12 kg of biogenic CO₂.

THERMO-D RADIATA

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	3,35E+03	1,66E+01	1,05E+01	3,38E+03	2,71E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,08E+00	-1,26E+04	0,00E+00	-9,10E+02
Renew. PER as material	MJ	7,13E+03	0,00E+00	-9,31E+02	6,20E+03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,20E+03	0,00E+00	0,00E+00
Total use of renew. PER	MJ	1,05E+04	1,66E+01	-9,20E+02	9,58E+03	2,71E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,08E+00	-1,88E+04	0,00E+00	-9,10E+02
Non-re. PER as energy	MJ	2,85E+02	1,71E+03	3,39E+02	2,33E+03	1,57E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,57E+02	3,81E+02	0,00E+00	-3,94E+03
Non-re. PER as material	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
Total use of non-re. PER	MJ	2,85E+02	1,71E+03	3,39E+02	2,33E+03	1,57E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,57E+02	3,81E+02	0,00E+00	-3,94E+03
Secondary materials	kg	1,13E-01	8,08E-01	2,95E-01	1,22E+00	7,18E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,90E-02	3,42E-01	0,00E+00	-4,40E-01
Renew. secondary fuels	MJ	1,15E-03	3,49E-03	1,77E-02	2,23E-02	9,07E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,00E-04	2,73E-03	0,00E+00	-2,19E-03
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	7,25E-02	1,40E-01	2,58E-01	4,71E-01	2,11E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,16E-02	1,82E-01	0,00E+00	-2,85E+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	5,98E-01	2,30E+00	5,30E-01	3,43E+00	2,25E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,05E-01	4,17E+00	0,00E+00	-2,72E+01
Non-hazardous waste	kg	1,44E+01	3,50E+01	2,08E+01	7,03E+01	4,75E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,82E+00	5,16E+02	0,00E+00	-5,97E+02
Radioactive waste	kg	6,06E-05	2,63E-04	3,57E-04	6,80E-04	4,97E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,01E-05	3,67E-04	0,00E+00	-1,66E-02

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	0,00E+00	0,00E+00	1,66E-01	1,66E-01	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 energy rec	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
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	6,92E+02	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	3,86E+03	0,00E+00	0,00E+00

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-9,09E+02	1,36E+02	1,51E+02	-6,21E+02	1,12E+02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,13E+01	8,39E+02	0,00E+00	-5,23E+02
ADP-minerals & metals	kg Sbe	2,81E-05	1,92E-04	2,80E-05	2,48E-04	3,65E-04	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,69E-05	7,55E-05	0,00E+00	-8,35E-04
ADP-fossil resources	MJ	2,85E+02	1,71E+03	1,39E+03	3,38E+03	1,57E+03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,57E+02	3,81E+02	0,00E+00	-3,94E+03
Water use	m ³ e depr.	1,93E+00	5,54E+00	5,63E+01	6,37E+01	7,70E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,65E-01	1,85E+01	0,00E+00	-5,07E+01
Secondary materials	kg	1,13E-01	8,08E-01	2,95E-01	1,22E+00	7,18E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,90E-02	3,42E-01	0,00E+00	-4,40E-01
Biog. C in product	kg C*	N/A	N/A	2,20E+02	2,20E+02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* 1 kg biogenic carbon is equivalent to 44/12 kg of biogenic CO₂.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation (A3)

Scenario parameter	Value
Electricity data source and quality (grid mix)	Electricity, Finland, residual mix, 2023 (One Click LCA)
Electricity CO ₂ e / kWh	0,78

Transport scenario documentation (A4)

Scenario parameter	Value
Type of truck	EURO5 lorry, 16-32 t
Averaged transport distance, km	1 228
Capacity utilization (including empty return), %	100
Specific transport emissions, kg CO ₂ ekv. / tn x km	0,19
Bulk density of transported products (including packaging), kg/m ³	Thermally modified pine/spruce, S class – 430,3 kg Thermally modified pine/spruce, D class – 430,3 kg Thermally modified radiata, D class – 470,3 kg
Volume capacity utilization factor	1

End of life scenario documentation (C1-C4)

Scenario parameter	ThermoPine & ThermoSpruce	ThermoRadiata
Collection process – kg collected separately	430 kg	470 kg
Collection process – kg collected with mixed waste	0	0
Recovery process – kg for re-use	0	0
Recovery process – kg for recycling	0	0
Recovery process – kg for energy recovery	430 kg	470 kg
Disposal (total) – kg for final deposition	0	0
Scenario assumptions	End-of-life product is transported 50 km by an average lorry to waste incineration facility	End-of-life product is transported 50 km by an average lorry to waste incineration facility