Environmental
Product
Declaration

According to EN15804+A2

This declaration is for:
ThermoWood® Spruce

Provided by:
LDCwood N.V.

MRPI® registration
1.1.00821.2025

program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

date of first issue
10-4-2025
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COMPANY INFORMATION

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PRODUCT

ThermoWood® Spruce

DECLARED UNIT / FUNCTIONAL UNIT

1 Volume (m3)

DESCRIPTION OF PRODUCT

ThermoWood® Spruce for cladding, interior, decking, etc

MRPI® REGISTRATION

1.1.00821.2025

DATE OF THIS ISSUE

10-4-2025

VISUAL PRODUCT

EXPIRY DATE

10-4-2030

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco Intelligence. The LCA study has been done by Steven Simons, SGS INTRON B.V.. The certificate is based on an LCA-dossier according to EN15804+A2. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®

Kingsfordweg 151

1043 GR

Amsterdam

MORE INFORMATION

https://www.ldcwood.com/en/products?in_woodtype%5B%5D=Spruce

Ing. L. L. Oosterveen MSc. MBA **Managing Director MRPI**	DEMONSTRATION OF VERIFICATION CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration an data according to EN15804+A2 internal: external: X
	Third party verifier: Gert-Jan Vroege, Eco Intelligence
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION (PART 1)

Product: ThermoWood® Spruce for cladding, interior, decking, etc.
Production (A1-A3): The product is produced using Jartek kilns (these are large ovens in which wood is dried). After modification, the rough sawn product can also be planed (optional).
Reference service life: class 2 (15-25 years).

DETAILED PRODUCT DESCRIPTION (PART 2)

The energy processes used in the calculation are listed in the table below. The process used for the energy: 63% Electricity, low voltage {BE}| market for electricity, low voltage | Cut-off, U; 37% Electricity, low voltage {BE}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U (LDC Wood has solar panels on the roof).

Global warming potential of 1 kWh energy	Process	kg CO2eq
Belgium grid mix	Electricity, low voltage {BE}| market for electricity, low voltage | Cut-off, U	0,205
Belgium photovoltaic	Electricity, low voltage {BE}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U	0,123

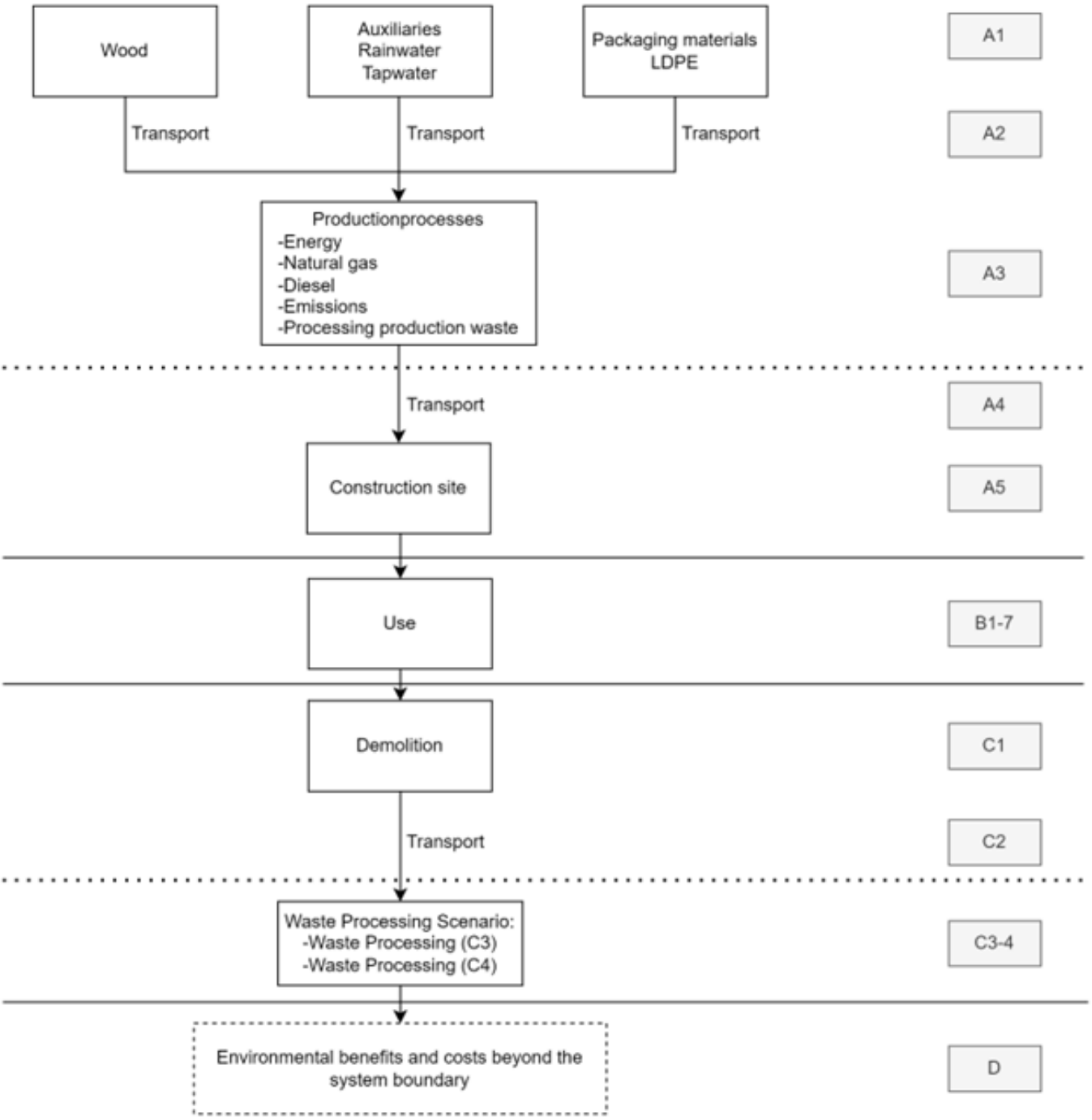
SCOPE AND TYPE

The LCA for ThermoWood® Spruce includes the entire life cycle. All major steps from the extraction of raw materials to the end-of-life of the product are included in the scope of the study. This EPD is for ThermoWood® Spruce which is used for cladding, interior, decking, etc. The ThermoWood® is produced by LDCwood®. The production location is Ostend Belgium. The end-of-life scenario is according to the standard NMD waste processing (5% landfill and 95% incineration). The LCA is produced with SimaPro v10 software and background database is Ecoinvent 3.9.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USER STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	ND	ND	X	X	X	X	X

X = Modules Assessed

ND = Not Declared



REPRESENTATIVENESS

The EPD is representative for ThermoWood® Spruce for cladding, interior, decking, etc which is manufactured in Antwerp, Belgium.

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	-7,14E+02	1,74E+02	2,23E+02	-3,17E+02	1,63E+01	2,33E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	9,26E+00	5,58E+00	7,67E+02	-2,03E+01
GWP-fossil	kg CO2 eq	4,86E+01	1,74E+02	2,22E+02	4,45E+02	1,63E+01	2,32E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	9,22E+00	5,44E+00	3,94E+00	-2,01E+01
GWP-biogenic	kg CO2 eq	-7,63E+02	1,48E-01	2,76E-01	-7,63E+02	1,39E-02	2,72E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,44E-02	1,34E-01	7,63E+02	2,26E-07
GWP-luluc	kg CO2 eq	8,70E-01	8,68E-02	8,21E-02	1,04E+00	8,14E-03	5,42E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	3,29E-02	1,12E-02	1,44E-03	-2,22E-01
ODP	kg CFC11 eq	9,18E-07	3,86E-06	9,87E-06	1,46E-05	3,62E-07	7,52E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,64E-07	4,41E-08	1,87E-07	-3,29E-06
AP	mol H+ eq.	3,36E-01	3,98E-01	4,01E-01	1,14E+00	3,73E-02	6,66E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	4,41E-02	2,66E-02	1,25E-01	-7,65E-01
EP-fresh water	kg PO4 eq.	1,23E-02	1,46E-03	1,56E-03	1,53E-02	1,37E-04	7,88E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	9,17E-05	3,02E-04	7,65E-05	-3,71E-03
EP-marine	kg N eq.	1,26E-01	1,01E-01	1,24E-01	3,51E-01	9,43E-03	2,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,68E-02	4,73E-03	5,93E-02	-2,23E-01
EP-terrestrial	mol N eq.	1,36E+00	1,05E+00	1,44E+00	3,85E+00	9,86E-02	2,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,79E-01	5,28E-02	6,73E-01	-3,72E+00
POCP	kg NMVOC eq.	5,86E-01	6,29E-01	5,67E-01	1,78E+00	5,90E-02	1,02E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	6,11E-02	1,59E-02	1,79E-01	-6,48E-01
ADP-minerals & metals	kg Sb eq.	1,26E-04	5,56E-04	1,04E-03	1,72E-03	5,21E-05	8,83E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	2,89E-05	6,48E-06	9,37E-06	-5,43E-05
ADP-fossil	MJ, net calorific value	7,93E+02	2,54E+03	3,81E+03	7,14E+03	2,38E+02	3,69E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,32E+02	7,58E+01	4,23E+01	-2,39E+02
WDP	m3 world eq. Deprived	6,89E+00	1,11E+01	1,91E+01	3,71E+01	1,04E+00	2,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	7,21E-01	9,41E-01	1,25E+00	-1,91E+00

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenictotal

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment

EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment

EP-terrestrial = Eutrophication Potential, Accumulated Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	1,72E-05	1,41E-05	3,54E-06	3,48E-05	1,32E-06	1,85E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	9,10E-07	2,25E-07	1,04E-06	-1,06E-05
IRP	kBq U235 eq.	2,76E+00	1,33E+00	1,16E+01	1,57E+01	1,25E-01	8,08E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	5,15E-02	3,77E-01	4,36E-02	-5,10E-01
ETP-fw	CTUe	3,50E+02	1,25E+03	3,33E+02	1,94E+03	1,17E+02	1,05E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	9,74E+01	1,44E+01	5,37E+01	-2,56E+02
HTP-c	CTUh	5,70E-08	7,89E-08	6,52E-08	2,01E-07	7,40E-09	1,63E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	4,88E-09	2,24E-09	1,18E-07	-7,27E-08
HTP-nc	CTUh	6,34E-07	1,79E-06	1,21E-06	3,64E-06	1,68E-07	2,01E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,06E-07	4,69E-08	2,34E-07	-2,16E-06
SQP	-	7,68E+04	1,91E+03	3,80E+02	7,91E+04	1,79E+02	3,96E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	1,04E+02	1,21E+01	2,28E+01	-1,60E+04

PM = Potential incidence of disease due to PM emissions

IRP = Potential Human exposure efficiency relative to U235 [1]

ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]

HTP-c = Potential Comparative Toxic Unit for humans [2]

HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]

SQP = Potential soil quality index [2]

Disclaimer [1]:

- 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.

Disclaimer [2]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	3,55E-03	1,60E-02	1,78E-02	3,73E-02	1,50E-03	1,92E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	8,42E-04	1,18E-04	2,26E-04	-1,31E-03
NHWD	kg	1,64E+01	1,60E+02	1,20E+01	1,89E+02	1,50E+01	1,11E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	8,72E+00	5,12E-01	2,38E+01	-9,26E+00
RWD	kg	2,17E-03	8,70E-04	9,79E-03	1,28E-02	8,15E-05	6,58E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	3,02E-05	2,67E-04	2,79E-05	-3,70E-04
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,04E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,01E+03	0,00E+00
ETE	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,67E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,73E+03	0,00E+00

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,43E+04	4,08E+01	3,93E+02	1,47E+04	3,82E+00	7,35E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	1,87E+00	1,04E+01	1,82E+00	-3,80E+03
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,43E+04	4,08E+01	3,93E+02	1,47E+04	3,82E+00	7,35E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	1,87E+00	1,04E+01	1,82E+00	-3,80E+03
PENRE	MJ	7,94E+02	2,54E+03	3,81E+03	7,14E+03	2,38E+02	3,69E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	1,32E+02	7,58E+01	4,23E+01	-2,39E+02
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,94E+02	2,54E+03	3,81E+03	7,14E+03	2,38E+02	3,69E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	1,32E+02	7,58E+01	4,23E+01	-2,39E+02
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	3,51E-01	3,85E-01	6,29E-01	1,36E+00	3,61E-02	8,18E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	INA	INA	0,00E+00	3,19E-02	4,26E-02	1,97E-01	-9,20E-02

PERE = Use of renewable energy excluding renewable primary energy resources
PERM = Use of renewable energy resources used as raw materials
PERT = Total use of renewable primary energy resources
PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials
PENRM = Use of non-renewable primary energy resources used as raw materials
PENRT = Total use of non-renewable primary energy resources
SM = Use of secondary materials
RSF = Use of renewable secondary fuels
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	2,08E+02	0,00E+00	0,00E+00	2,08E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES (PART 1)

Data quality requirements follow EN15804+A2:2019. Data is of reference period 2023, representing data for the production of one m3 ThermoWood® Spruce. Processes used in the background modelling are referring to Ecoinvent 3.9. The technological and geographical coverage reflects the physical reality as far as possible. Data quality is assessed as good on average and adequate to the goal and scope of the study. No cut-offs or allocation procedures were intentionally applied to inputs and outputs within the system boundaries in the models.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

The product stage, A1-A3, includes the extraction and processing of raw materials for the product, their transportation to the production site by truck and ship. Electricity consumption is modelled using primary data on the amount and a dataset for 63% normal belgium grid mix and 37% photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted {BE}.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 2)

The installation stage (A4-A5) includes transport of the ThermoWood® to the installation site, and including treatment of waste from installation.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 3)

The use phase (B): no impacts are present during the usage stage.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 4)

The end-of-life stage (C) is according to the standard NMD waste processing (5% landfill and 95% incineration). Default waste transport distance is 100 km for landfill waste and 150 km for incineration.

DECLARATION OF SVHC

No substances that are listed in the latest “Candidate List of Substances of Very High Concern for authorisation” are included in the product that exceed the limit for registration.

REFERENCES

Stichting Nationale Milieudatabase, Bepalingsmethode Milieuprestatie Bouwwerken versie 1.2.

EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products, 2019.

ISO, ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures, 2006.

SGS INTRON report: A143940/R20241978, April 2025