

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

# Actulum™



Varier.

The Norwegian EPD Foundation

## Owner of the declaration:

Varier Furniture AS

# **Product:**

Actulum™

### **Declared unit:**

1 kg

# This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core

NPCR 026:2022 Part B for Furniture

# Program operator:

The Norwegian EPD Foundation

# **Declaration number:**

NEPD-4881-4133-EN

# Registration number:

NEPD-4881-4133-EN

Issue date: 31.08.2023

Valid to: 31.08.2028

### **EPD Software:**

LCA.no EPD generator ID: 67876



# **General information**

**Product** 

Actulum™

**Program operator:** 

Post Box 5250 Majorstuen, 0303 Oslo, Norway The Norwegian EPD Foundation Phone: +47 23 08 80 00

web: post@epd-norge.no

**Declaration number:** NEPD-4881-4133-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012 + A2:2019 serves as core PCR NPCR 026:2022 Part B for Furniture

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

**Declared unit:** 

1 kg Actulum™

Declared unit (cradle to gate) with option:

A1-A3,A4,A5,B2,B3,B4,C1,C2,C3,C4,D

Functional unit:

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i integrated into the company's environmental management system, ii the procedures for use of the EPD tool are approved by EPD-Norway, and iii the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

**Verification of EPD tool:** 

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Elisabet Amat, GREENIZE projects (no signature required

Owner of the declaration:

Varier Furniture AS
Contact person: Michal Klecz
Phone: +47 70 24 43 50
e-mail: info@varierfurniture.com

Manufacturer:

Varier Furniture AS

Place of production:

Varier Furniture AS Drammensveien 130 0277 Oslo, Norway

**Management system:** 

Organisation no: NO 989 804 804

**Issue date:** 31.08.2023

**Valid to:** 31.08.2028

Year of study:

2022

Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

**Development and verification of EPD:** 

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Michal Klecz

Reviewer of company-specific input data and EPD: Bo Quist

Approved:

Håkon Hauan, CEO EPD-Norge



### **Product**

#### **Product description:**

Actulum™ is an all-rounder that enables effortless movement in any situation where you might find yourself seated at a table. It is comfortable, versatile, and suitable for individual workstations and conference and dining rooms alike. Tilt forward or lean back while the curved wooden runners create a pendulum movement responding to your body's natural inclinations. The chair features a slim backrest with a flexible joint, which purpose is to accommodate the largest possible number of sitting positions.

Actulum™ is available in a natural or black finish and a wide range of upholstery fabrics and colors. The floor runner and armrest are built from a single piece of pressed plywood, made

#### **Product specification**

Designed by Peter Opsvik in 1995. More information on Actulum here: www.varierfurniture.com/collection/actulum

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Powder coating	0,00	0,04	0,00	0,00
Rubber, synthetic	0,10	1,29	0,00	0,00
Metal - Steel	0,77	9,91	0,00	0,00
Chemical	0,17	2,19	0,00	0,00
Plastic - Polyethylene (HDPE)	0,02	0,26	0,00	0,00
Plastic - Polypropylene (PP)	0,08	1,03	0,00	0,00
Plastic - Polyurethane (PUR)	0,08	1,03	0,00	0,00
Wood - Plywood	6,40	82,34	0,00	0,00
Textile - Cotton	0,15	1,93	0,00	0,00
Total	7,77		0,00	

Packaging	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Packaging - Cardboard	3,26	77,72	1,17	36,00
Packaging - Plastic	0,93	22,28	0,00	0,00
Total incl. packaging	11,97		1,17	

#### **Technical data:**

Chair Measurement:

W 55 cm x D 66 cm x H 90 cm, Seat height 46 cm

Box Measurement:

H 10,6cm x L 95,6 cm x W 76,3cm

Weight incl box:

11 kg

#### Market:

Global, mainly Europe.

# Reference service life, product

Longevity is incorporated into Varier's core values. Upholstery and cushions can be replaced over time and Varier products can be passed on to the next generation. Varier offers an extended warranty of 7 years on wooden parts and 5 years on mechanisms. Lifetime is usually longer than 15 years.

#### Reference service life, building

#### LCA: Calculation rules

## **Declared unit:**

1 kg Actulum™

#### **Cut-off criteria:**

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

#### **Allocation:**

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

# Data quality:



Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

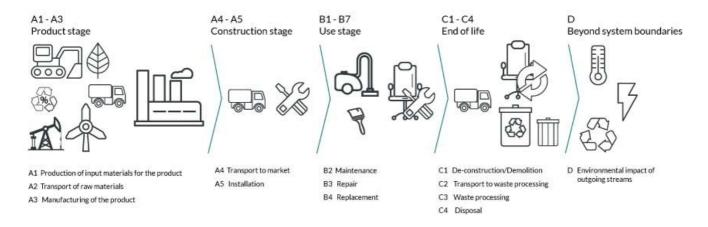
Materials	Source	Data quality	Year
Chemical	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Packaging - Cardboard	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Plastic - Polyethylene (HDPE)	ecoinvent 3.6	Database	2019
Plastic - Polypropylene (PP)	ecoinvent 3.6	Database	2019
Plastic - Polyurethane (PUR)	ecoinvent 3.6	Database	2019
Powder coating	Ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019
Textile - Cotton	ecoinvent 3.6	Database	2019
Wood - Plywood	modified ecoinvent 3.6	Database	2019



# System boundaries (X=included, MND=module not declared, MNR=module not relevant)

	Product sta	ge		uction on stage		Use stage End of life stage				Beyond the system boundaries						
Raw materials	Transport	Manufacturing	Transport	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	В3	B4	B5	В6	В7	C1	C2	C3	C4	D
X	X	X	X	X	MND	Χ	Χ	X	MND	MND	MND	X	Χ	X	X	X

# System boundary:



# Additional technical information:



# LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	1250	0,043	l/tkm	53,75
Assembly (A5)	Unit	Value			
Waste, packaging, corrugated board box, to average treatment (kg)	kg	3,00			
Waste, packaging, plastic film (LDPE), to average treatment - A5 (kg)	kg	0,13			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	55	0,043	l/tkm	2,37
Waste processing (C3)	Unit	Value			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	0,17			
Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction - C3 (kg)	kg	0,00			
Waste treatment per kg Polyethylene, PE, incineration with fly ash extraction - C3 (kg)	kg	0,02			
Waste treatment per kg Polypropylene (PP), incineration with fly ash extraction - C3 (kg)	kg	0,08			
Waste treatment per kg Polyurethane (PU), incineration (kg)	kg	0,08			
Waste treatment per kg Rubber, municipal incineration with fly ash extraction (kg)	kg	0,10			
Waste treatment per kg Scrap steel, incineration with fly ash extraction (kg)	kg	0,77			
Waste treatment per kg Textile, incineration with fly ash extraction (kg)	kg	0,15			
Waste treatment per kg Wood, incineration with fly ash extraction (kg)	kg	6,40			
Waste, materials to recycling (kg)	kg	0,26			
Disposal (C4)	Unit	Value			
Landfilling of ashes and residues from incineration of Scrap steel (kg)	kg	0,51			
Landfilling of ashes from incineration of Hazardous waste, from incineration (kg)	kg	0,03			
Landfilling of ashes from incineration of Non- hazardous waste, process per kg ashes and residues - C4 (kg)	kg	0,00			
Landfilling of ashes from incineration of Polyethylene, PE, process per kg ashes and residues - C4 (kg)	kg	0,00			
Landfilling of ashes from incineration of Polypropylene, PP, process per kg ashes and residues - C4 (kg)	kg	0,00			
Landfilling of ashes from incineration of Polyurethane (PU), process per kg ashes and residues - C4 (kg)	kg	0,00			
Landfilling of ashes from incineration of Rubber, process per kg ashes and residues - C4 (kg)	kg	0,01			
Landfilling of ashes from incineration of Textile, soiled, process per kg ashes and residues (kg)	kg	0,01			
Landfilling of ashes from incineration of Wood, process per kg ashes and residues (kg)	kg	0,07			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	5,01			
Substitution of primary steel with net scrap (kg)	kg	0,26			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	75,75			



#### **LCA: Results**

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environme	ental impact								
	Indicator		Unit		A1-A3	A4	A5	B2	В3
	GWP-total		kg CO <sub>2</sub> - 6	eq	5,79E+00	1,55E+00	5,15E+00	0	0
	GWP-fossil	GWP-fossil		kg CO <sub>2</sub> -eq		1,55E+00	5,92E-02	0	0
	GWP-biogenic		kg CO <sub>2</sub> -e	eq	-1,61E+01	6,42E-04	5,09E+00	0	0
	GWP-Iuluc		kg CO <sub>2</sub> -	eq	1,77E-01	5,52E-04	1,69E-05	0	0
(3)	ODP		kg CFC11	-eq	1,91E-06	3,52E-07	1,09E-08	0	0
C.	AP		mol H+ -	eq	1,51E-01	4,46E-03	2,43E-04	0	0
<del></del>	EP-FreshWater		kg P -ec	7	2,19E-03	1,24E-05	4,20E-07	0	0
<del></del>	EP-Marine		kg N -ed	q	5,61E-02	8,82E-04	8,80E-05	0	0
<del>2</del>	EP-Terrestial		mol N -e	eq	3,40E-01	9,87E-03	8,70E-04	0	0
	POCP		kg NMVOC	:-eq	9,14E-02	3,78E-03	2,52E-04	0	0
	ADP-minerals&metals <sup>1</sup>		kg Sb -e	q	4,80E-04	4,29E-05	1,24E-06	0	0
	ADP-fossil <sup>1</sup>		MJ		3,43E+02	2,35E+01	7,23E-01	0	0
<b>%</b>	WDP <sup>1</sup>		$m^3$		1 205 - 02	2.275 - 01	1 025 : 00	0	0
(%)	MDb.		m <sup>3</sup>		1,30E+03	2,27E+01	1,02E+00	0	U
(%)	MDP.		Unit m <sup>3</sup>	B4	1,30E+03	C2	C3	C4	D
				B4 0					
	Indicator		Unit		C1	C2	C3	C4	D
	<b>Indicator</b> GWP-total		<b>Unit</b> kg CO <sub>2</sub> -eq	0	C1 0	C2 6,83E-02	C3 1,24E+01	C4 2,37E-02	D -7,43E-01
	Indicator  GWP-total  GWP-fossil		Unit kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq	0	C1 0	C2 6,83E-02 6,83E-02	C3 1,24E+01 1,26E+00	C4 2,37E-02 2,36E-02	D -7,43E-01 -7,27E-01
	Indicator  GWP-total  GWP-fossil  GWP-biogenic		Unit kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq	0 0	C1 0 0	C2 6,83E-02 6,83E-02 2,83E-05	C3 1,24E+01 1,26E+00 1,11E+01	C4 2,37E-02 2,36E-02 1,29E-05	D -7,43E-01 -7,27E-01 -1,07E-03
<b>P P P P P P P P P P</b>	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc		Unit  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq	0 0 0 0	0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP		Unit  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq  kg CO <sub>2</sub> -eq	0 0 0 0	0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP		Wnit  kg CO <sub>2</sub> -eq  mol H+ -eq	0 0 0 0 0	0 0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08 1,96E-04	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08 1,87E-03	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09 8,22E-05	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02 -5,05E-03
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP  EP-FreshWater		kg CO <sub>2</sub> -eq kg CFC11 -eq mol H+ -eq kg P -eq	0 0 0 0 0 0	0 0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08 1,96E-04 5,45E-07	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08 1,87E-03 1,06E-05	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09 8,22E-05 2,45E-07	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02 -5,05E-03 -5,67E-05
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP  EP-FreshWater  EP-Marine		kg CO <sub>2</sub> -eq kg CFC11 -eq mol H+ -eq kg P -eq kg N -eq	0 0 0 0 0 0	0 0 0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08 1,96E-04 5,45E-07 3,88E-05	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08 1,87E-03 1,06E-05 7,52E-04	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09 8,22E-05 2,45E-07 2,60E-05	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02 -5,05E-03 -5,67E-05 -1,48E-03
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP  EP-FreshWater  EP-Marine  EP-Terrestial		kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CFC11 -eq mol H+ -eq kg P -eq kg N -eq mol N -eq	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08 1,96E-04 5,45E-07 3,88E-05 4,34E-04	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08 1,87E-03 1,06E-05 7,52E-04 7,97E-03	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09 8,22E-05 2,45E-07 2,60E-05 2,94E-04	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02 -5,05E-03 -5,67E-05 -1,48E-03 -1,58E-02
	Indicator  GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP  EP-FreshWater  EP-Marine  EP-Terrestial  POCP		kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CFC11 -eq mol H+ -eq kg P -eq kg N -eq mol N -eq g NMVOC -eq	0 0 0 0 0 0 0	C1 0 0 0 0 0 0 0 0	C2 6,83E-02 6,83E-02 2,83E-05 2,43E-05 1,55E-08 1,96E-04 5,45E-07 3,88E-05 4,34E-04 1,66E-04	C3 1,24E+01 1,26E+00 1,11E+01 1,11E-04 5,21E-08 1,87E-03 1,06E-05 7,52E-04 7,97E-03 2,00E-03	C4 2,37E-02 2,36E-02 1,29E-05 3,69E-06 2,88E-09 8,22E-05 2,45E-07 2,60E-05 2,94E-04 8,33E-05	D -7,43E-01 -7,27E-01 -1,07E-03 -1,53E-02 -3,20E-02 -5,05E-03 -5,67E-05 -1,48E-03 -1,58E-02 -4,97E-03

GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

#### Remarks to environmental impacts

<sup>&</sup>quot;Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009"

<sup>\*</sup>INA Indicator Not Assessed

<sup>1.</sup> 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 experienced with the indicator



Additional er	nvironmental impac	t indicators						
	Indicator	Unit		A1-A3	A4	A5	B2	В3
	PM	Disease incidence	Disease incidence		9,50E-08	3,63E-09	0	0
()··()	IRP <sup>2</sup>	kgBq U235 -eq		9,56E-01	1,03E-01	3,10E-03	0	0
	ETP-fw <sup>1</sup>	CTUe		1,14E+03	1,74E+01	9,47E-01	0	0
46. * ***** <u>\$</u>	HTP-c <sup>1</sup>	CTUh		6,10E-08	0,00E+00	2,80E-11	0	0
48 <u>B</u>	HTP-nc <sup>1</sup>	CTUh	CTUh		1,90E-08	1,18E-09	0	0
	SQP <sup>1</sup>	dimensionless		1,69E+03	1,64E+01	5,32E-01	0	0
li li	ndicator	Unit	B4	C1	C2	C3	C4	D
	PM	Disease incidence	0	0	4,18E-09	2,15E-08	1,10E-09	-2,43E-07
	IRP <sup>2</sup>	kgBq U235 -eq	0	0	4,51E-03	8,80E-03	1,06E-03	-3,91E-02
	ETP-fw <sup>1</sup>	CTUe	0	0	7,65E-01	1,04E+01	3,33E-01	-5,02E+01

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)

CTUh

CTUh

dimensionless

0

0

0,00E+00

8,36E-10

7,22E-01

6,52E-10

1,47E-08

7,46E-01

1,30E-11

5,66E-10

5,84E-01

-2,01E-09

-2,69E-09

-4,22E+01

HTP-c<sup>1</sup>

HTP-nc<sup>1</sup>

SQP<sup>1</sup>

<sup>&</sup>quot;Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009"

<sup>\*</sup>INA Indicator Not Assessed

<sup>1.</sup> 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 experienced with the indicator

<sup>2.</sup> 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.



Resource use								
	Indicator		Unit	A1-A3	A4	A5	B2	В3
	PERE		MJ		3,36E-01	1,23E-02	0	0
	PERM		MJ	1,19E+02	0,00E+00	-2,46E+01	0	0
Ţ,	PERT		MJ	3,73E+02	3,36E-01	-2,46E+01	0	0
	PENRE		MJ	2,98E+02	2,35E+01	7,23E-01	0	0
42	PENRM		MJ	4,83E+01	0,00E+00	-5,70E+00	0	0
<b>IA</b>	PENRT		MJ	3,44E+02	2,35E+01	-4,97E+00	0	0
<u></u>	SM		kg	1,17E+00	0,00E+00	0,00E+00	0	0
2	RSF		MJ	5,01E-01	1,20E-02	4,00E-04	0	0
	NRSF		MJ	5,42E-01	4,30E-02	1,60E-03	0	0
(%)	FW		$m^3$	1,27E+00	2,51E-03	3,43E-04	0	0
	ndicator	Unit	B4	C1	C2	C3	C4	D
i i	PERE	MJ	0	0	1,48E-02	3,13E-01	1,25E-02	-3,90E+01
	PERM	МЈ	0	0	0,00E+00	-9,22E+01	0,00E+00	0,00E+00
i.	PERT	МЈ	0	0	1,48E-02	-9,19E+01	1,25E-02	-3,90E+01
<b>3</b>	PENRE	МЈ	0	0	1,03E+00	2,39E+00	2,33E-01	-8,70E+00
Å	PENRM	МЈ	0	0	0,00E+00	-8,64E+00	0,00E+00	0,00E+00
<b>IA</b>	PENRT	МЈ	0	0	1,03E+00	-6,25E+00	2,33E-01	-8,70E+00
<u></u>	SM	kg	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
2	RSF	МЈ	0	0	5,29E-04	6,95E-03	2,61E-04	3,59E-03
	NRSF	МЈ	0	0	1,89E-03	0,00E+00	2,80E-02	-2,00E+00
<b>⊗</b>	FW	m <sup>3</sup>	0	0	1,10E-04	3,52E-03	2,68E-04	-4,73E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary 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; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed



End of life - Waste								
	Indicator	Uı	nit	A1-A3	A4	A5	B2	В3
	HWD	k	g	1,13E-01	1,21E-03	0,00E+00	0	0
Ū	NHWD	kg		4,25E+00	1,14E+00	3,13E+00	0	0
₩	RWD	k	g	9,86E-04	1,60E-04	0,00E+00	0	0
In	dicator	Unit	B4	C1	C2	C3	C4	D
â	HWD	kg	0	0	5,32E-05	0,00E+00	5,69E-01	-1,79E-03
Ū	NHWD	kg	0	0	5,02E-02	1,73E-01	6,42E-02	-2,66E-01
	RWD	kg	0	0	7,03E-06	0,00E+00	9,90E-07	-3,21E-05

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

End of life - Output flow								
Ind	Indicator		Unit		A4	A5	B2	В3
<b>®</b>	CRU	kg		0,00E+00	0,00E+00	0,00E+00	0	0
&▷	MFR	kç	ı	8,77E-01	0,00E+00	2,86E+00	0	0
DF	MER	kç	J	2,03E-06	0,00E+00	2,10E-01	0	0
5D	EEE	М	J	2,52E-01	0,00E+00	1,72E-01	0	0
D	EET	М	J	3,81E+00	0,00E+00	2,60E+00	0	0
Indicato	or	Unit	B4	C1	C2	C3	C4	D
<b>∅&gt;</b>	CRU	kg	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
\$>	MFR	kg	0	0	0,00E+00	2,61E-01	0,00E+00	0,00E+00
DV	MER	kg	0	0	0,00E+00	7,77E+00	0,00E+00	0,00E+00
50	EEE	MJ	0	0	0,00E+00	4,99E+00	0,00E+00	0,00E+00
	EET	МЈ	0	0	0,00E+00	7,56E+01	0,00E+00	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0\*10-3 = 0,009" \*INA Indicator Not Assessed

Unit	At the factory gate
kg C	2,97E+00
kg C	1,51E+00
	kg C

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2



# **Additional requirements**

# Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Electricity, Poland (kWh)	ecoinvent 3.6	1060,47	g CO2-eg/kWh

#### **Dangerous substances**

The product contains no substances on the REACH Candidate list or the Norwegian priority list at or above 100 ppm, 0,01 % by weight.

#### **Indoor environment**

# **Additional Environmental Information**

Additional environmental impact indicators required in NPCR Part A for construction products									
Indicator	Unit		A1-A3	A4	A5	B2	В3		
GWPIOBC	kg CO <sub>2</sub> -eq	kg CO <sub>2</sub> -eq		1,55E+00	0,00E+00	0	0		
Indicator	Unit	B4	C1	C2	C3	C4	D		
GWPIOBC	kg CO <sub>2</sub> -eq	0	0	6,83E-02	1,50E+00	2,43E-02	-8,79E-01		

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

#### **Key Environmental Indicators**

Indicator	Unit	A1-A3	A4	A1-C4	A1-D
GWPtotal	kg CO <sub>2</sub> -eq	5,79	1,55	24,97	24,23
Total energy consumption	MJ	575,63	23,85	604,26	554,58
Amount of recycled materials	%	9,80			



# **Bibliography**

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.

EN 15804:2012 + A2:2019 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.

ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.

Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21 Ruud et al., (2023) EPD generator for NPCR026 Part B for Furniture - Background information for EPD generator application and LCA data, LCA.no report number 01.23

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