



# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

# **Bollo Armchair**



# **FOGIA**

The Norwegian EPD Foundation

# Owner of the declaration:

Fogia Collection AB

# Product:

Bollo Armchair

## **Declared unit:**

1 pc

# 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-8586-8250-EN

# Registration number:

NEPD-8586-8250-EN

**Issue date:** 20.12.2024

Valid to: 20.12.2029

## **EPD** software:

LCAno EPD generator ID: 325717



# **General information**

## **Product**

Bollo Armchair

## **Program operator:**

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway

Phone: +47 977 22 020 web: www.epd-norge.no

# **Declaration number:**

NEPD-8586-8250-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 pcs Bollo Armchair

#### Declared unit (cradle to gate) with option:

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

#### **Functional unit:**

Armchair

#### 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:

Fogia Collection AB Contact person: Gabriel Follonier Phone: +46 73 565 87 33 e-mail: gabriel.follonier@fogia.se

#### Manufacturer:

Fogia Collection AB

#### Place of production:

Fogia Collection AB

, Sweden

#### Management system:

ISO 9001, ISO 14001 (Fogia Furniture Sp. Z o.o.)

## Organisation no:

SE556204621801

#### Issue date:

20.12.2024

#### Valid to:

20.12.2029

# Year of study:

2023

# **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: Gabriel Follonier

Reviewer of company-specific input data and EPD: Bashir Momeni

#### Approved:

Håkon Hauan

Managing Director of EPD-Norway

## **Product**

# **Product description:**

The iconic Bollo combines deep comfort with clean lines. Inspired by the distinct tubular frames of mid-century lounge chairs, its generous cushioning wraps and softens the metal frame.

Bollo is a result of cleverly blending of comfort and economic use of material. Its spacious proportions mean it is a seat you can get properly comfortable in; prefer to tuck your feet under yourself for cosy positioning? There is plenty of space for that.

## **Product specification**

Both the frame and upholstery can be customised so you can choose matching or contrasting colourways and cushioning in fabric, leather or velvet

The model analysed in this declaration is a Bollo Armchair with Smooth III by Kirkby Design and a powder coated metal base, including packaging. The standard leather is Vintage Cognac by Nevotex.

This product is Möbelfakta certified.

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Plastic - Polypropylene (PP)	0,28	2,03	0,00	0,00
Plastic - Polyurethane (PUR)	4,64	34,15	0,00	0,00
Powder coating	0,05	0,37	0,00	0,00
Rubber, synthetic	0,22	1,65	0,00	0,00
Wood - High Density Fibreboard (HDF)	0,33	2,47	0,00	0,00
Wood - Medium Density Fibreboard (MDF)	0,42	3,11	0,00	0,00
Metal - Steel	5,41	39,82	0,00	0,00
Textile - Polyester	1,26	9,26	0,00	0,00
Wood - Plywood	0,97	7,15	0,00	0,00
Total	13,58	100,00	0,00	

Packaging	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Packaging - Plastic	0,20	3,30	0,00	0,00
Packaging - Wood	1,56	25,74	0,00	0,00
Recycled cardboard	4,30	70,96	4,30	100,00
Total incl. packaging	19,64	100,00	4,30	

# **Technical data:**

Dimensions:

Width: 81cm Depth: 81cm Height: 71cm Seat Height: 43cm Seat Depth: 54cm Volume: 0.5m<sup>3</sup>

Finishes:

Customisable, list available on request

# Market:

Worldwide

A4 Transport: Calculated with an average distance of 1'000 km from factory to market.

# Reference service life, product

15 years, designed to last longer

Reference service life, building

# LCA: Calculation rules

**Declared unit:** 

1 pcs Bollo Armchair

#### **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.

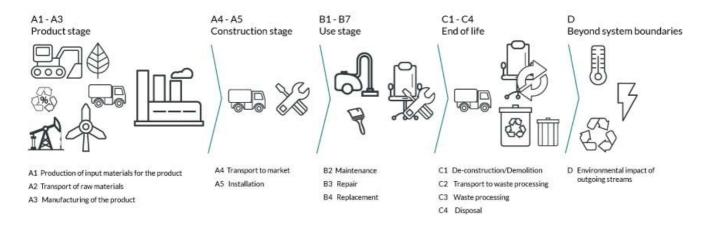
Materials	Source	Data quality	Year
Metal - Steel	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Wood	ecoinvent 3.6	Database	2019
Plastic - Polypropylene (PP)	ecoinvent 3.6	Database	2019
Plastic - Polyurethane (PUR)	ecoinvent 3.6	Database	2019
Powder coating	Ecoinvent 3.6	Database	2019
Recycled cardboard	Modified ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019
Textile - Polyester	ecoinvent 3.6	Database	2019
Wood - High Density Fibreboard (HDF)	ecoinvent 3.6	Database	2019
Wood - Medium Density Fibreboard (MDF)	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)

Р	roduct stag	ge		uction on stage		Use stage End of life stage					Beyond the system boundaries					
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurb ishment	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
Χ	Χ	Χ	Χ	Χ	MND	Χ	Χ	Χ	MND	MND	MND	Χ	Χ	Χ	Χ	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.

A4 Transport: Calculated with an average distance of 1'000 km from factory to market.

 $\ensuremath{\mathsf{B2}}$  Maintenance: No specific maintenance is required.

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 %	1000	0,043	l/tkm	43,00
Assembly (A5)	Unit	Value			
Waste, packaging, cardboard, 100 % recycled, to average treatment (kg)	kg	4,30			
Waste, packaging, plastic film (LDPE), to average treatment - A5 (kg)	kg	0,20			
Waste, Wood, average treatment (kg) - A5, inkl. 85 km transp.	kg	1,56			
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 %	85	0,043	l/tkm	3,66
Waste processing (C3)	Unit	Value			
Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction - C3 (kg)	kg	0,05			
Waste, materials to recycling (kg)	kg	1,83			
Waste treatment per kg Scrap steel, incineration with fly ash extraction (kg)	kg	5,41			
Waste treatment per kg Rubber, municipal incineration with fly ash extraction (kg)	kg	0,22			
Waste treatment per kg Wood, incineration with fly ash extraction (kg)	kg	1,73			
Waste treatment per kg Textile, incineration with fly ash extraction (kg)	kg	1,26			
Waste treatment per kg Polyurethane (PU), incineration (kg)	kg	4,64			
Waste treatment per kg Polypropylene (PP), incineration with fly ash extraction - C3 (kg)	kg	0,28			
Disposal (C4)	Unit	Value			
Landfilling of ashes from incineration of Non- hazardous waste, process per kg ashes and residues - C4 (kg)	kg	0,01			
Landfilling of ashes and residues from incineration of Scrap steel (kg)	kg	3,57			
Landfilling of ashes from incineration of Rubber, process per kg ashes and residues - C4 (kg)	kg	0,01			
Landfilling of ashes from incineration of Wood, process per kg ashes and residues (kg)	kg	0,02			
Landfilling of ashes from incineration of Textile, soiled, process per kg ashes and residues (kg)	kg	0,06			
Landfilling of ashes from incineration of Polyurethane (PU), process per kg ashes and residues - C4 (kg)	kg	0,18			
andfilling of ashes from incineration of Polypropylene, PP, process per kg ashes and residues - C4 (kg)	kg	0,01			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity, in Norway (MJ)	MJ	9,64			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	145,92			
Substitution of primary steel with net scrap (kg)	kg	1,83			



## **LCA: Results**

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

Environme	ntal impact								
	Indicator		Unit		A1-A3	A4	A5	B2	В3
	GWP-total		kg CO <sub>2</sub> -e	eq	7,02E+01	3,21E+00	1,01E+01	0	0
	GWP-fossil		kg CO <sub>2</sub> -	eq	8,25E+01	3,21E+00	1,27E-01	0	0
	GWP-biogenic		kg CO <sub>2</sub> -eq		-1,24E+01	1,33E-03	9,95E+00	0	0
	GWP-Iuluc		kg CO <sub>2</sub> - 6	eq	1,26E-01	1,14E-03	3,50E-05	0	0
٨	ODP		kg CFC11	-eq	5,54E-06	7,27E-07	2,23E-08	0	0
Œ	AP		mol H+ -	eq	5,12E-01	9,22E-03	6,86E-04	0	0
<del></del>	EP-FreshWater		kg P -ec	1	4,95E-03	2,56E-05	1,11E-06	0	0
<del></del>	EP-Marine		kg N -ed	7	1,10E-01	1,82E-03	2,72E-04	0	0
<b>*</b>	EP-Terrestial		mol N -e	eq	1,11E+00	2,04E-02	2,80E-03	0	0
	POCP		kg NMVOC	-eq	3,58E-01	7,82E-03	7,61E-04	0	0
	ADP-minerals&metals <sup>1</sup>		kg Sb-ed	9	2,18E-03	8,86E-05	2,46E-06	0	0
	ADP-fossil <sup>1</sup>		MJ		1,25E+03	4,85E+01	1,53E+00	0	0
<b>%</b>	WDP <sup>1</sup>		$m^3$		4,41E+03	4,69E+01	2,22E+00	0	0
	Indicator		Unit	B4	C1	C2	C3	C4	D
	<b>Indicator</b> GWP-total		<b>Unit</b> kg CO <sub>2</sub> -eq	B4 0	C1 0	C2 2,73E-01	C3 1,88E+01	C4 5,60E-02	D -2,89E+00
6									
-	GWP-total		kg CO <sub>2</sub> -eq	0	0	2,73E-01	1,88E+01	5,60E-02	-2,89E+00
	GWP-total GWP-fossil		kg CO <sub>2</sub> -eq	0	0	2,73E-01 2,73E-01	1,88E+01 1,41E+01	5,60E-02 5,59E-02	-2,89E+00 -2,86E+00
	GWP-total GWP-fossil GWP-biogenic	1	kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq kg CO <sub>2</sub> -eq	0 0	0 0 0	2,73E-01 2,73E-01 1,13E-04	1,88E+01 1,41E+01 4,75E+00	5,60E-02 5,59E-02 4,58E-05	-2,89E+00 -2,86E+00 -2,86E-03
<b>P</b>	GWP-total GWP-fossil GWP-biogenic GWP-Iuluc		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	2,73E-01 2,73E-01 1,13E-04 9,71E-05	1,88E+01 1,41E+01 4,75E+00 8,64E-05	5,60E-02 5,59E-02 4,58E-05 1,43E-05	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02
	GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP		kg CO <sub>2</sub> -eq	0 0 0 0	0 0 0 0	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02
	GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP		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	0 0 0 0 0	0 0 0 0 0	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08 7,84E-04	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08 1,15E-02	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08 3,34E-04	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02 -1,70E-02
	GWP-total  GWP-fossil  GWP-biogenic  GWP-luluc  ODP  AP  EP-FreshWater		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	0 0 0 0 0 0	0 0 0 0 0 0	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08 7,84E-04 2,18E-06	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08 1,15E-02 5,07E-06	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08 3,34E-04 6,19E-07	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02 -1,70E-02 -1,99E-04
	GWP-total GWP-fossil GWP-biogenic GWP-luluc ODP AP EP-FreshWater EP-Marine		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	0 0 0 0 0 0	0 0 0 0 0 0	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08 7,84E-04 2,18E-06 1,55E-04	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08 1,15E-02 5,07E-06 6,37E-03	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08 3,34E-04 6,19E-07 1,16E-04	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02 -1,70E-02 -1,99E-04 -4,35E-03
	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	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08 7,84E-04 2,18E-06 1,55E-04 1,73E-03	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08 1,15E-02 5,07E-06 6,37E-03 6,12E-02	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08 3,34E-04 6,19E-07 1,16E-04 1,29E-03	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02 -1,70E-02 -1,99E-04 -4,35E-03 -4,58E-02
	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	0 0 0 0 0 0 0	2,73E-01 2,73E-01 1,13E-04 9,71E-05 6,18E-08 7,84E-04 2,18E-06 1,55E-04 1,73E-03 6,64E-04	1,88E+01 1,41E+01 4,75E+00 8,64E-05 6,84E-08 1,15E-02 5,07E-06 6,37E-03 6,12E-02 1,46E-02	5,60E-02 5,59E-02 4,58E-05 1,43E-05 1,38E-08 3,34E-04 6,19E-07 1,16E-04 1,29E-03 3,69E-04	-2,89E+00 -2,86E+00 -2,86E-03 -3,00E-02 -6,16E-02 -1,70E-02 -1,99E-04 -4,35E-03 -4,58E-02 -1,69E-02

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 env	ironmental impact ind	licators					
	Indicator	Unit	A1-A3	A4	A5	B2	В3
	PM	Disease incidence	7,24E-06	1,96E-07	9,34E-09	0	0
	IRP <sup>2</sup>	kgBq U235 -eq	2,60E+00	2,12E-01	6,25E-03	0	0
	ETP-fw <sup>1</sup>	CTUe	4,41E+03	3,60E+01	1,92E+00	0	0
40 x x x x x x x x x x x x x x x x x x x	HTP-c <sup>1</sup>	CTUh	1,94E-07	0,00E+00	1,03E-10	0	0
₩ ₽	HTP-nc <sup>1</sup>	CTUh	2,54E-06	3,93E-08	4,69E-09	0	0
	SQP <sup>1</sup>	dimensionless	6,58E+02	3,39E+01	1,04E+00	0	0

li li	ndicator	Unit	B4	C1	C2	C3	C4	D
	PM	Disease incidence	0	0	1,67E-08	4,76E-08	5,75E-09	-5,90E-07
	IRP <sup>2</sup>	kgBq U235 -eq	0	0	1,80E-02	8,92E-03	4,28E-03	-7,00E-02
<i>(2)</i>	ETP-fw <sup>1</sup>	CTUe	0	0	3,06E+00	3,60E+01	8,12E-01	-1,78E+02
44. *** <u>\$</u>	HTP-c <sup>1</sup>	CTUh	0	0	0,00E+00	1,16E-09	3,20E-11	-1,09E-08
<del>28</del>	HTP-nc <sup>1</sup>	CTUh	0	0	3,34E-09	4,12E-08	1,03E-09	1,48E-07
	SQP <sup>1</sup>	dimensionless	0	0	2,88E+00	6,46E-01	2,37E+00	-8,22E+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)

<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.

esource use									
	Indicator		U	nit	A1-A3	A4	A5	B2	В3
Ē	PERE		N	MJ	2,65E+02	6,94E-01	2,78E-02	0	0
	PERM		N	MJ	5,52E+01	0,00E+00	-3,51E+01	0	0
Ţ,	PERT		N	N۱	3,20E+02	6,94E-01	-3,51E+01	0	0
	PENRE		N	MJ	1,06E+03	4,85E+01	1,53E+00	0	0
<u>An</u>	PENRM		N	MJ	1,95E+02	0,00E+00	-8,49E+00	0	0
<b>IA</b>	PENRT		N	MJ	1,25E+03	4,85E+01	-6,96E+00	0	0
<u></u>	SM		k	кg	4,30E+00	0,00E+00	0,00E+00	0	0
	RSF		N	WJ	9,76E-01	2,48E-02	8,70E-04	0	0
	NRSF		N	ΜJ	2,49E+00	8,88E-02	5,67E-03	0	0
(%)	FW		n	m <sup>3</sup>	1,18E+00	5,19E-03	8,53E-04	0	0
	ndicator	ι	Jnit	B4	C1	C2	C3	C4	D
Ţ	ndicator PERE		<b>Unit</b> MJ	B4 0	C1 0	C2 5,90E-02	C3 1,61E-01	C4 2,56E-02	D -7,61E+01
Ö	PERE		MJ	0	0	5,90E-02	1,61E-01	2,56E-02	-7,61E+01
<u>.</u> 2	PERE PERM		M)	0	0	5,90E-02 0,00E+00	1,61E-01 -1,96E+01	2,56E-02 0,00E+00	-7,61E+01 0,00E+00
.€ <b>2</b> .⊊.	PERE PERM PERT		M1 M1	0 0	0 0	5,90E-02 0,00E+00 5,90E-02	1,61E-01 -1,96E+01 -1,94E+01	2,56E-02 0,00E+00 2,56E-02	-7,61E+01 0,00E+00 -7,61E+01
€ <b>3</b> ~£.	PERE PERM PERT PENRE		M1 M1 M1	0 0 0	0 0 0	5,90E-02 0,00E+00 5,90E-02 4,12E+00	1,61E-01 -1,96E+01 -1,94E+01 5,61E+00	2,56E-02 0,00E+00 2,56E-02 1,04E+00	-7,61E+01 0,00E+00 -7,61E+01 -2,90E+01
	PERE PERM PERT PENRE PENRM		мл мл мл мл	0 0 0 0	0 0 0 0	5,90E-02 0,00E+00 5,90E-02 4,12E+00 0,00E+00	1,61E-01 -1,96E+01 -1,94E+01 5,61E+00 -1,87E+02	2,56E-02 0,00E+00 2,56E-02 1,04E+00 0,00E+00	-7,61E+01 0,00E+00 -7,61E+01 -2,90E+01 0,00E+00
	PERE PERM PERT PENRE PENRM PENRT		мл мл мл мл мл	0 0 0 0 0	0 0 0 0 0	5,90E-02 0,00E+00 5,90E-02 4,12E+00 0,00E+00 4,12E+00	1,61E-01 -1,96E+01 -1,94E+01 5,61E+00 -1,87E+02 -1,81E+02	2,56E-02 0,00E+00 2,56E-02 1,04E+00 0,00E+00 1,04E+00	-7,61E+01 0,00E+00 -7,61E+01 -2,90E+01 0,00E+00 -2,90E+01
	PERE PERM PERT PENRE PENRM PENRT SM		MJ MJ MJ MJ MJ kg	0 0 0 0 0 0	0 0 0 0 0 0	5,90E-02 0,00E+00 5,90E-02 4,12E+00 0,00E+00 4,12E+00 0,00E+00	1,61E-01 -1,96E+01 -1,94E+01 5,61E+00 -1,87E+02 -1,81E+02 0,00E+00	2,56E-02 0,00E+00 2,56E-02 1,04E+00 0,00E+00 1,04E+00 0,00E+00	-7,61E+01 0,00E+00 -7,61E+01 -2,90E+01 0,00E+00 -2,90E+01 0,00E+00

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 excluding non-renewable primary energy resources used as raw materials; PENRM = 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		Unit		A1-A3	A4	A5	B2	В3		
	HWD		kg		kg		3,22E-01	2,50E-03	0,00E+00	0	0
Ī	NHWD		k	g	1,22E+01	2,36E+00	6,06E+00	0	0		
₩	RWD		k	g	2,71E-03	3,30E-04	0,00E+00	0	0		
In	dicator		Unit	B4	C1	C2	C3	C4	D		
ā	HWD		kg	0	0	2,13E-04	0,00E+00	3,73E+00	-1,10E-02		
Ū	NHWD		kg	0	0	2,01E-01	5,00E-02	1,77E-01	-1,11E+00		
æ	RWD		kg	0	0	2,81E-05	0,00E+00	6,37E-06	-5,78E-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	icator	Unit	1	A1-A3	A4	A5	B2	В3
<b>@▷</b>	CRU	kg		0,00E+00	0,00E+00	0,00E+00	0	0
&>	MFR	kg		2,37E+00	0,00E+00	4,10E+00	0	0
Þ₹	MER	kg		4,20E-01	0,00E+00	1,56E+00	0	0
50	EEE	MJ		5,19E-01	0,00E+00	1,33E+00	0	0
D	EET	MJ		7,86E+00	0,00E+00	2,01E+01	0	0
Indicato	or	Unit	B4	C1	C2	C3	C4	D
<b>∅</b> >	CRU	kg	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
&▷	MFR	kg	0	0	0,00E+00	1,83E+00	0,00E+00	0,00E+00
DF	MER	kg	0	0	0,00E+00	1,36E+01	0,00E+00	0,00E+00
<b>₹</b> D	EEE	MJ	0	0	0,00E+00	9,50E+00	0,00E+00	0,00E+00
DØ	EET	MJ	0	0	0,00E+00	1,44E+02	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

Biogenic Carbon Content							
Indicator	Unit	At the factory gate					
Biogenic carbon content in product	kg C	8,32E-01					
Biogenic carbon content in accompanying packaging	kg C	2,75E+00					

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	Source	Amount	Unit
Electricity, low voltage, wind, solar and hydro based, with Guarantee of origin, 01.01.2023-31.12.2023, Poland (kWh) - FOGIA	Modified ecoinvent 3.6	89,07	g CO2- eg/kWh

## **Dangerous substances**

The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.

#### **Indoor environment**

No impact on indoor environment

# **Additional Environmental Information**

# **Key Environmental Indicators**

Key environmental indicators	Unit	A1-A3	A4	A1-C4	A1-D
GWPtotal	kg CO <sub>2</sub> -eq	70,23	3,21	102,64	99,75
Total energy consumption	MJ	1327,86	49,32	1389,81	1282,42
Amount of recycled materials	%	21,89			

Additional environmental impact indicators required in NPCR Part A for construction products							
Indicator	Unit	Unit		A4	A5	B2	В3
GWPIOBC	kg CO <sub>2</sub> -eq		8,20E+01	3,21E+00	1,27E-01	0	0
Indicator	Unit	B4	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	0	0	2,73E-01	1,60E+01	6,06E-02	-3,88E+00

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.

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