

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## Spira chair



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**LAMMHULTS**

The Norwegian EPD Foundation

**Owner of the declaration:**

Lammhults Möbel AB

**Product:**

Spira chair

**Declared unit:**

1 pcs

**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

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-7377-6767-EN

**Registration number:**

NEPD-7377-6767-EN

**Issue date:** 02.09.2024

**Valid to:** 02.09.2029

**EPD software:**

LCAno EPD generator ID: 400596

## General information

### Product

Spira chair

### Program operator:

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-norge.no](http://www.epd-norge.no)

### Declaration number:

NEPD-7377-6767-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 Spira chair

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

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

### Functional unit:

Spira, 4 legs, with upholstered seat and back

### 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 EPD-Norway'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:

Lammhults Möbel AB  
Contact person: Helena Kumlin  
Phone: +46 472 26 95 00  
e-mail: [Helena.kumlin@lammhults.se](mailto:Helena.kumlin@lammhults.se)

### Manufacturer:

Lammhults Möbel AB

### Place of production:

Lammhults Möbel AB  
Växjövägen 41  
SE-363 45 Lammhult, Sweden

### Management system:

ISO 14001, 9001, 45001

### Organisation no:

556058-2602

### Issue date:

02.09.2024

### Valid to:

02.09.2029

### 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: Helena Kumlin

Reviewer of company-specific input data and EPD: Lovisa Aiff

### Approved:

Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Spira is about comfort in a chair for larger installations. An upholstered chair, usable as a volume chair, with features like linking and stacking. Spira adds flexibility to its comfort performance. The separate back connects to the seat frame with two spring steel inserts that allow seven degrees of back deflection. Design Johannes Foersom and Peter Hiort-Lorenzen

### Product specification

Spira is available fully upholstered, as a chair or armchair, with a stackable and linkable four-leg base, or with a five-star swivel base with casters. Frame of Ø18 mm powder coated or chromium plated steel tubing. Upholstered seat with high resilient polyurethane foam incl. stacking protection. Upholstered back on wooden frame of ash. Spring steel in back. Armrests in dark or light woodfibre.

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Kraft paper - Unbleached	0,06	1,07	0,00	0,88
Metal - Steel	2,57	43,14	0,00	0,00
Plastic - Nylon (PA)	0,01	0,13	0,00	0,00
Plastic - Polypropylene (PP)	1,34	22,51	0,67	50,00
Plastic - Polyurethane (PUR)	0,41	6,81	0,00	0,00
Powder coating	0,06	1,01	0,00	0,00
Textile - Wool	0,24	4,03	0,00	0,00
Thermoplastic elastomers (TPE)	0,02	0,34	0,00	0,00
Wood - Plywood	1,25	20,97	0,00	0,00
Total	5,96	100,00	0,67	

Packaging	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Packaging - Cardboard	0,10	27,42	0,00	0,00
Packaging - foam	0,00	0,54	0,00	0,00
Packaging - Plastic	0,02	4,30	0,00	0,00
Packaging - Plastic straps	0,01	3,49	0,00	0,00
Recycled cardboard	0,24	64,25	0,24	100,00
Total incl. packaging	6,33	100,00	0,91	

### Technical data:

Width 51cm  
Height 83cm  
Depth 56cm  
Seat height 45cm

Spira meets the requirements of EN 16139:2013 level 1 and Möbelfakta.

### Market:

Available world wide

### Reference service life, product

15 years (warranty 10 years)

### Reference service life, building

## LCA: Calculation rules

### Declared unit:

1 pcs Spira chair

### 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.

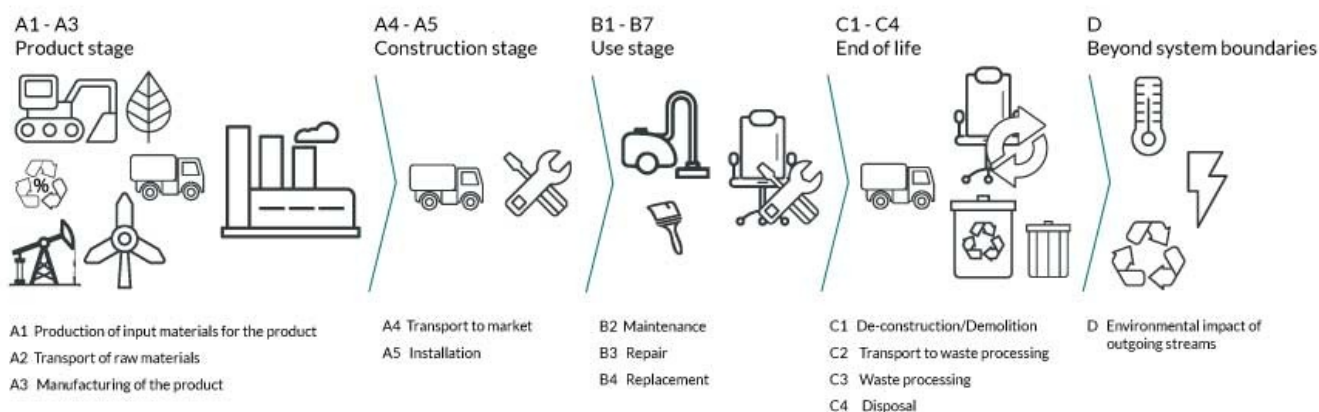
Materials	Source	Data quality	Year
Kraft paper - Unbleached	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Packaging - Cardboard	Modified ecoinvent 3.6	Database	2019
Packaging - foam	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Plastic straps	ecoinvent 3.6	Database	2019
Plastic - Nylon (PA)	ecoinvent 3.6	Database	2019
Plastic - Polypropylene (PP)	ecoinvent 3.6	Database	2019
Plastic - Polypropylene (PP)	Modified 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
Textile - Wool	Modified ecoinvent 3.6	Database	2019
Thermoplastic elastomers (TPE)	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 stage			Construction installation 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	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	X	X	X	MND	MND	MND	X	X	X	X	X

**System boundary:**

The analysis is a cradle-to-cradle, A1-D, where some B-stages that were assumed to be neglectable are not included. The A1-A4 stages includes the extraction and production of raw materials, transportation to the production site, the production process itself, and an estimated transport distance to the market. A5 includes the generated waste from the packaging of the product after the assembly at the customer. The only B-stage that is assumed to be relevant is B2, which includes assumptions on how the customer takes care of the product according to Lammhults' care instructions. The C- and D-stages includes the use of materials and energy for deconstruction, the transport to waste management, the waste processes, disposal of materials that cannot be processed, and the potential of reuse, recovery, and recycling of the product.



**Additional technical information:**

<https://www.lammhults.se/products/chairs-armchairs/spira>

Lammhults Care & Maintenance: <https://issuu.com/lammhults/docs/lammhultscaremaintenance2205>

### LCA: Scenarios and additional technical information

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














Some assumptions have been made regarding the products lifetime after leaving the factory gates. The product is assumed to be transported to the capital of each country sold/delivered to. An average distance (A4) to the customer has been calculated through this data. In the A5 phase, the packaging of the product becomes waste, and the impacts are added automatically according to assumptions made in the EPD tool on waste handling on-site. In the use stage, the assumption is that the customer takes care of the product by vacuuming the product twice a year. For the end-of-life stage of the product, it has been assumed that there is a 50 km distance from the customer to a waste terminal. The rest of the values are automatically filled in by the tool. For the D-stage, automatic values are filled in, according to generic data.














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 %	548	0,043	l/tkm	23,56
Assembly (A5)					
	Unit	Value			
Waste, packaging, cardboard, 100 % recycled, to average treatment (kg)	kg	0,24			
Waste, packaging, corrugated board box, 0 % recycled, to average treatment (kg)	kg	0,10			
Waste, packaging, PET straps, to average treatment - A5 (kg)	kg	0,01			
Waste, packaging, plastic film (LDPE), to average treatment - A5 (kg)	kg	0,02			
Waste, packaging, plastic foam, to average treatment - A5 (kg)	kg	0,00			
Maintenance (B2)					
	Unit	Value			
Electricity, Nordic (kWh)	kWh/DU	0,35			
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 %	50	0,043	l/tkm	2,15
Waste processing (C3)					
	Unit	Value			
Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction - C3 (kg)	kg	0,06			
Waste treatment per kg Paperboard, incineration with fly ash extraction - C3 (kg)	kg	0,06			
Waste treatment per kg Plastics, Mixture, municipal incineration with fly ash extraction (kg)	kg	0,01			
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	1,34			
Waste treatment per kg Polyurethane (PU), incineration (kg)	kg	0,41			
Waste treatment per kg Scrap steel, incineration with fly ash extraction (kg)	kg	2,57			
Waste treatment per kg Textile, incineration with fly ash extraction (kg)	kg	0,24			
Waste treatment per kg Wood, incineration with fly ash extraction (kg)	kg	1,25			
Waste, materials to recycling (kg)	kg	0,87			

<b>Disposal (C4)</b>	<b>Unit</b>	<b>Value</b>			
Landfilling of ashes and residues from incineration of Scrap steel (kg)	kg	1,70			
Landfilling of ashes from incineration of Non-hazardous waste, process per kg ashes and residues - C4 (kg)	kg	0,01			
Landfilling of ashes from incineration of Paperboard, process per kg ashes and residues - C4 (kg)	kg	0,00			
Landfilling of ashes from incineration of Plastics, Mixture, municipal incineration with fly ash extraction, 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	0,04			
Landfilling of ashes from incineration of Polyurethane (PU), process per kg ashes and residues - C4 (kg)	kg	0,02			
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	0,01			
<b>Benefits and loads beyond the system boundaries (D)</b>	<b>Unit</b>	<b>Value</b>			
Substitution of electricity, in Norway (MJ)	MJ	3,98			
Substitution of primary steel with net scrap (kg)	kg	0,87			
Substitution of thermal energy, district heating, in Norway (MJ)	MJ	60,23			

**LCA: Results**

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

Environmental impact							
Indicator	Unit	A1-A3	A4	A5	B2	B3	
 GWP-total	kg CO <sub>2</sub> -eq	3,14E+01	5,67E-01	5,87E-01	5,10E-02	0	
 GWP-fossil	kg CO <sub>2</sub> -eq	2,51E+01	5,67E-01	7,97E-03	4,75E-02	0	
 GWP-biogenic	kg CO <sub>2</sub> -eq	5,09E+00	2,35E-04	5,79E-01	8,68E-04	0	
 GWP-luluc	kg CO <sub>2</sub> -eq	1,15E+00	2,02E-04	2,01E-06	2,60E-03	0	
 ODP	kg CFC11 -eq	1,88E-06	1,28E-07	1,31E-09	5,14E-09	0	
 AP	mol H+ -eq	3,62E-01	1,63E-03	2,91E-05	2,19E-04	0	
 EP-FreshWater	kg P -eq	3,85E-03	4,53E-06	5,03E-08	3,14E-06	0	
 EP-Marine	kg N -eq	6,70E-02	3,22E-04	1,14E-05	3,46E-05	0	
 EP-Terrestrial	mol N -eq	1,36E+00	3,60E-03	1,04E-04	4,65E-04	0	
 POCP	kg NMVOC -eq	9,93E-02	1,38E-03	3,05E-05	1,09E-04	0	
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	5,66E-04	1,57E-05	1,47E-07	7,39E-07	0	
 ADP-fossil <sup>1</sup>	MJ	3,87E+02	8,57E+00	8,73E-02	1,28E+00	0	
 WDP <sup>1</sup>	m <sup>3</sup>	7,23E+03	8,29E+00	1,34E-01	9,93E+01	0	

Indicator	Unit	B4	C1	C2	C3	C4	D
 GWP-total	kg CO <sub>2</sub> -eq	0	0	5,17E-02	7,31E+00	2,26E-02	-1,32E+00
 GWP-fossil	kg CO <sub>2</sub> -eq	0	0	5,17E-02	4,76E+00	2,25E-02	-1,31E+00
 GWP-biogenic	kg CO <sub>2</sub> -eq	0	0	2,14E-05	2,55E+00	1,76E-05	-1,25E-03
 GWP-luluc	kg CO <sub>2</sub> -eq	0	0	1,84E-05	1,94E-05	6,28E-06	-1,25E-02
 ODP	kg CFC11 -eq	0	0	1,17E-08	1,18E-08	6,26E-09	-2,54E-02
 AP	mol H+ -eq	0	0	1,49E-04	1,73E-03	1,47E-04	-7,65E-03
 EP-FreshWater	kg P -eq	0	0	4,13E-07	1,41E-06	2,37E-07	-9,01E-05
 EP-Marine	kg N -eq	0	0	2,94E-05	8,96E-04	5,18E-05	-1,93E-03
 EP-Terrestrial	mol N -eq	0	0	3,29E-04	8,99E-03	5,75E-04	-2,03E-02
 POCP	kg NMVOC -eq	0	0	1,26E-04	2,17E-03	1,65E-04	-7,61E-03
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	0	0	1,43E-06	5,17E-07	3,48E-07	-2,00E-05
 ADP-fossil <sup>1</sup>	MJ	0	0	7,82E-01	9,70E-01	4,67E-01	-1,31E+01
 WDP <sup>1</sup>	m <sup>3</sup>	0	0	7,56E-01	2,19E+00	1,19E+00	-1,24E+01

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







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







\*INA Indicator Not Assessed

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 experienced with the indicator

**Remarks to environmental impacts**



Additional environmental impact indicators							
Indicator	Unit	A1-A3	A4	A5	B2	B3	
 PM	Disease incidence	4,15E-06	3,47E-08	4,40E-10	1,16E-09	0	
 IRP <sup>2</sup>	kgBq U235 -eq	2,96E+00	3,74E-02	3,76E-04	2,93E-02	0	
 ETP-fw <sup>1</sup>	CTUe	9,44E+02	6,35E+00	1,13E-01	1,61E+00	0	
 HTP-c <sup>1</sup>	CTUh	8,19E-08	0,00E+00	3,00E-12	3,70E-11	0	
 HTP-nc <sup>1</sup>	CTUh	6,39E-07	6,94E-09	1,40E-10	9,86E-10	0	
 SQP <sup>1</sup>	dimensionless	-9,02E+03	5,99E+00	6,94E-02	9,68E-01	0	




Indicator	Unit	B4	C1	C2	C3	C4	D
 PM	Disease incidence	0	0	3,17E-09	1,20E-08	2,62E-09	-2,54E-07
 IRP <sup>2</sup>	kgBq U235 -eq	0	0	3,42E-03	1,81E-03	1,89E-03	-2,85E-02
 ETP-fw <sup>1</sup>	CTUe	0	0	5,79E-01	5,28E+00	3,16E-01	-8,07E+01
 HTP-c <sup>1</sup>	CTUh	0	0	0,00E+00	3,38E-10	1,20E-11	-5,12E-09
 HTP-nc <sup>1</sup>	CTUh	0	0	6,33E-10	9,53E-09	3,56E-10	7,43E-08
 SQP <sup>1</sup>	dimensionless	0	0	5,47E-01	1,34E-01	1,04E+00	-3,40E+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)

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

\*INA Indicator Not Assessed

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 experienced with the indicator
2. 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	B3	
	PERE	MJ	2,33E+02	1,23E-01	1,53E-03	1,26E+00	0	
	PERM	MJ	2,67E+01	0,00E+00	-3,02E+00	0,00E+00	0	
	PERT	MJ	2,60E+02	1,23E-01	-3,02E+00	1,26E+00	0	
	PENRE	MJ	3,64E+02	8,57E+00	8,73E-02	1,30E+00	0	
	PENRM	MJ	5,84E+01	0,00E+00	-1,06E+00	0,00E+00	0	
	PENRT	MJ	4,22E+02	8,57E+00	-9,76E-01	1,30E+00	0	
	SM	kg	9,11E-01	0,00E+00	0,00E+00	0,00E+00	0	
	RSF	MJ	9,51E-01	4,39E-03	4,88E-05	1,28E-02	0	
	NRSF	MJ	1,20E+00	1,57E-02	1,91E-04	0,00E+00	0	
	FW	m <sup>3</sup>	4,22E-01	9,16E-04	4,18E-05	5,74E-03	0	

Indicator		Unit	B4	C1	C2	C3	C4	D
	PERE	MJ	0	0	1,12E-02	3,26E-02	9,96E-03	-3,15E+01
	PERM	MJ	0	0	0,00E+00	-2,37E+01	0,00E+00	0,00E+00
	PERT	MJ	0	0	1,12E-02	-2,36E+01	9,96E-03	-3,15E+01
	PENRE	MJ	0	0	7,82E-01	9,80E-01	4,67E-01	-1,31E+01
	PENRM	MJ	0	0	0,00E+00	-5,76E+01	0,00E+00	0,00E+00
	PENRT	MJ	0	0	7,82E-01	-5,66E+01	4,67E-01	-1,31E+01
	SM	kg	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	RSF	MJ	0	0	4,00E-04	7,78E-04	2,61E-04	2,93E-02
	NRSF	MJ	0	0	1,43E-03	0,00E+00	2,08E-02	-8,20E-01
	FW	m <sup>3</sup>	0	0	8,36E-05	2,83E-03	4,22E-04	-3,92E-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 excluding 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<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

End of life - Waste								
Indicator		Unit	A1-A3	A4	A5	B2	B3	
	HWD	kg	4,96E-01	4,42E-04	0,00E+00	1,20E-04	0	
	NHWD	kg	5,76E+00	4,17E-01	3,72E-01	7,97E-03	0	
	RWD	kg	1,85E-03	5,84E-05	0,00E+00	1,35E-05	0	






  

Indicator		Unit	B4	C1	C2	C3	C4	D
	HWD	kg	0	0	4,03E-05	0,00E+00	1,76E+00	-5,22E-03
	NHWD	kg	0	0	3,80E-02	6,00E-02	4,71E-02	-5,10E-01
	RWD	kg	0	0	5,32E-06	0,00E+00	2,88E-06	-2,35E-05






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

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

\*INA Indicator Not Assessed

End of life - Output flow								
Indicator		Unit	A1-A3	A4	A5	B2	B3	
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	
	MFR	kg	3,53E-01	0,00E+00	3,33E-01	0,00E+00	0	
	MER	kg	5,22E-01	0,00E+00	2,01E-06	0,00E+00	0	
	EEE	MJ	2,57E-01	0,00E+00	1,95E-02	0,00E+00	0	
	EET	MJ	3,89E+00	0,00E+00	2,95E-01	0,00E+00	0	

Indicator		Unit	B4	C1	C2	C3	C4	D
	CRU	kg	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	0	0	0,00E+00	8,73E-01	0,00E+00	0,00E+00
	MER	kg	0	0	0,00E+00	5,96E+00	0,00E+00	0,00E+00
	EEE	MJ	0	0	0,00E+00	3,97E+00	0,00E+00	0,00E+00
	EET	MJ	0	0	0,00E+00	6,00E+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<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	5,99E-01
Biogenic carbon content in accompanying packaging	kg C	1,58E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## 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, Sweden (kWh)	ecoinvent 3.6	54,94	g CO <sub>2</sub> -eq/kWh

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### 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	31,36	0,57	39,95	38,63
Total energy consumption	MJ	598,76	8,71	612,44	567,09
Amount of recycled materials	%	7,30			

### Additional environmental impact indicators required in NPCR Part A for construction products

Indicator	Unit	A1-A3	A4	A5	B2	B3
GWPIOBC	kg CO <sub>2</sub> -eq	4,23E+01	5,67E-01	7,97E-03	6,91E-02	0

Indicator	Unit	B4	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	0	0	5,17E-02	5,19E+00	2,36E-02	-1,79E+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.






### Variants and Options

#### Key environmental indicators (A1-A3) for variants of this EPD

Variants	Weight (kg)	GWPtotal (kg CO <sub>2</sub> -eq)	Total energy consumption (MJ)	Amount of recycled materials (%)
Spira armchair 5-feet swivel base	12,35	70,52	1208,07	13,03
Spira armchair	7,52	36,78	706,69	12,11

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