



## General information

### Product:

OFFECCT Sou, Sofa system

### Program operator:

The Norwegian EPD Foundation  
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### Declaration number: vLU.KchgwOcwDbCcUL

### ECO Platform reference number:

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR  
NPCR 026:2018 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 OFFECCT Sou, Sofa system

### Declared unit with option:

A1,A2,A3,A4

### Functional unit:

Sou 1 seater (Camira/Xtreme) with table - including packaging

### 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. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. 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.

Erik Svanes, Norsus AS

(no signature required)

### Owner of the declaration:

Flokk AS  
Contact person: Atle Thiis-Messel  
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### Manufacturer:

Flokk AS  
Drammensveien 145, 0277 Oslo  
Norway

### Place of production:

Flokk - Turek  
ul. Górnicza 8 62-700 Turek  
Poland

### Management system:

ISO 14001, ISO 9001, ISO 50001(Norway, Sweden)

### Organisation no:

No 928 902 749

### Issue date: vwPG:OGOPOO

### Valid to: vwPG:OGOPOD

### Year of study:

2023

### Comparability:

EPDs from programmes other than the Norwegian EPD Foundation may not be comparable

### Development and verification of EPD:

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Damian Bakowski - OS

Reviewer of company-specific input data and EPD:

Monika Kuczynska

### Approved:

Sign

Håkon Hauan, CEO EPD-Norge

Key environmental indicators	Unit	Cradle to gate A1 - A3
Global warming	kg CO2 eqv	121,42
Total energy use	MJ	2814,58
Amount of recycled materials	%	10,54

## Product

### Market:

Worldwide

### Product description:

Take a piece of furniture apart down to its most basic components, and put it back together step by step. Teruhiro Yanagihara's sofa Sou, designed for Offecct, is constructed in different layers to make it possible to freely create different shapes and functions for public environments.

Teruhiro Yanagihara has a background in spatial design and architecture and always thinks about rooms and surfaces, rather than individual objects. As in his previous collection for Offecct, Osaka, the new Sou sofa is based on a spatial perspective where the furniture works as a flexible jigsaw puzzle.

"Since the seat and backrest are separated, you can choose different colours of fabric or different finishes on the table part, for instance" Teruhiro Yanagihara explains.

He also emphasizes the similarity between Japanese and Scandinavian design tradition when it comes to reducing rather than adding to the product. Sou, with its simple shape, is given a timeless and easy-to-place expression, while also being a sustainable design choice with lower consumption of resources and materials.

### Product specification

Leg frame in solid wood: white stained ash or black stained.  
 Inside frame back and seat: solid wood, birch plywood and fiber board.  
 Polyuretane foam glued to frame.  
 Non-glued upholstery which can easily be re-upholstered.

### Technical data:

Sou 1-seater:

H 810  
 D 750  
 L 950  
 SH 460  
 SD 570

Sou 2.5 seater / Sou 1-seater with table:

H 810  
 D 750  
 L 1600  
 SH 460  
 SD 570

### Reference service life, product

5 years

### Reference service life, building

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Printed paper	0,16	0,29	0,00	0,00
Metal - Steel	0,34	0,61	0,00	0,00
Textile - Polyester (PE)	2,64	4,71	2,90	109,91
Packaging - Cardboard	11,92	21,26	0,00	0,00
Plastic - Polyurethane (PUR)	10,39	18,53	0,00	0,00
Wood - Medium Density Fibreboard (MDF)	6,20	11,06	0,00	0,00
Plastic - Polypropylene (PP)	0,02	0,04	0,01	50,00
Packaging - Plastic	0,30	0,54	0,00	0,00
Wood - Solid oak	9,75	17,39	0,00	0,00
Wood - Solid pine	0,83	1,48	0,00	0,00
Wood - Plywood	9,45	16,85	0,00	0,00
Glue for wood	0,24	0,43	0,00	0,00
Lacquer, water based	0,45	0,80	0,00	0,00
Packaging - Paper	0,01	0,01	0,00	0,00
Textile - Felt	0,01	0,01	0,00	72,22
Packaging - Recycled cardboard	2,98	5,32	2,98	100,00
Glue	0,38	0,68	0,01	2,87
Total:	56,07		5,91	

## LCA: Calculation rules

### Declared unit:

1 Pcs OFFECCT Sou, Sofa system

### 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.

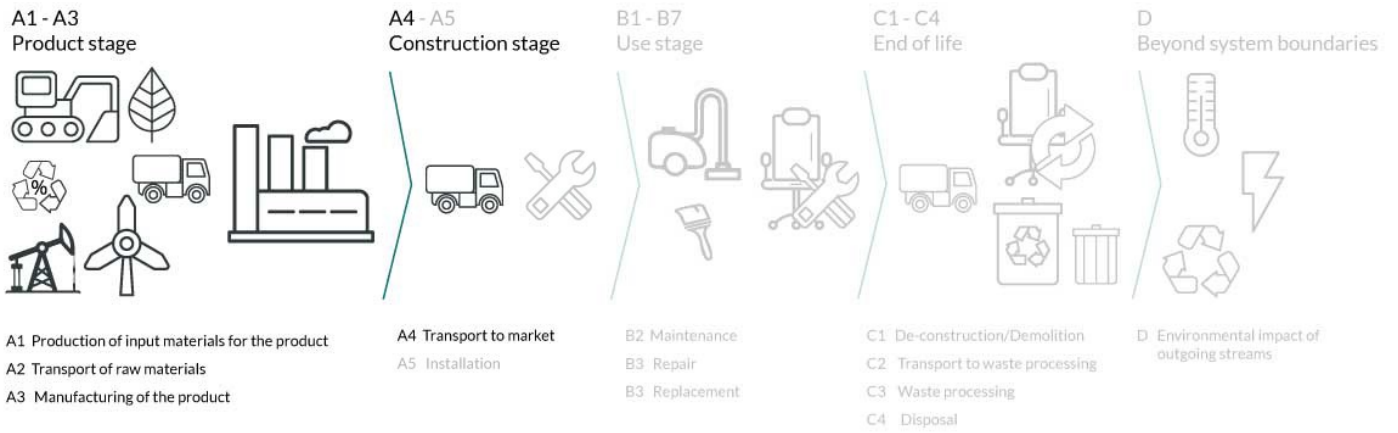
### Data quality:

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.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. 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.

**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)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	38,8 %	Truck, 16-32 tonnes, EURO 5	1000	0,044606	l/tkm	44,61
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

### Assembly (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials for waste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

### Use (B1)

	Unit	Value

### Maintenance (B2)/Repair (B3)

	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

### Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		

\* Described above if relevant

### Operational energy (B6) and water consumption (B7)

	Unit	Value
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

### End of Life (C1, C2)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

### Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Scenarios after A1-A4 are not included

## LCA: Results

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

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

Product stage				Construction installation stage	User 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	Deconstruction 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	

### Environmental impact

Parameter	Unit	A1	A2	A3	A4
GWP	kg CO <sub>2</sub> -eq	1,18E+02	2,67E+00	7,05E-01	9,12E+00
ODP	kg CFC11 -eq	5,53E-06	5,06E-07	7,44E-08	1,68E-06
POCP	kg C <sub>2</sub> H <sub>4</sub> -eq	4,28E-02	4,33E-04	1,12E-04	1,49E-03
AP	kg SO <sub>2</sub> -eq	4,03E-01	9,89E-03	3,05E-03	2,91E-02
EP	kg PO <sub>4</sub> <sup>3-</sup> -eq	1,14E-01	1,76E-03	6,90E-04	4,82E-03
ADPM	kg Sb -eq	1,62E-03	5,59E-06	5,40E-07	2,78E-05
ADPE	MJ	1,38E+03	4,10E+01	6,18E+00	1,37E+02

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

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

\*INA Indicator Not Assessed

## Resource use

Parameter	Unit	A1	A2	A3	A4
RPEE	MJ	1,03E+03	7,52E-01	2,82E+01	2,00E+00
RPEM	MJ	5,70E+02	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	1,60E+03	7,52E-01	2,82E+01	2,00E+00
NRPE	MJ	1,70E+03	4,23E+01	8,43E+00	1,41E+02
NRPM	MJ	1,97E+02	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	1,90E+03	4,23E+01	8,43E+00	1,41E+02
SM	kg	5,91E+00	0,00E+00	1,95E-03	0,00E+00
RSF	MJ	7,00E-01	0,00E+00	7,88E-04	0,00E+00
NRSF	MJ	2,22E-01	0,00E+00	5,76E-03	0,00E+00
W	m <sup>3</sup>	1,22E+00	9,91E-03	1,83E-02	2,63E-02

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

## End of life - Waste

Parameter	Unit	A1	A2	A3	A4
HW	kg	1,93E-01	2,36E-05	1,65E-02	8,21E-05
NHW	kg	2,18E+01	3,48E+00	3,18E-01	7,40E+00
RW	kg	INA*	INA*	INA*	INA*

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

## End of life - Output flow

Parameter	Unit	A1	A2	A3	A4
CR	kg	2,38E-05	0,00E+00	0,00E+00	0,00E+00
MR	kg	8,97E-02	0,00E+00	1,10E+00	0,00E+00
MER	kg	8,85E-01	0,00E+00	4,20E-03	0,00E+00
EEE	MJ	INA*	INA*	INA*	INA*
ETE	MJ	INA*	INA*	INA*	INA*

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

## Additional Norwegian 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, renewable (kWh) - Poland	ecoinvent 3.6	3,93	g CO <sub>2</sub> -ekv/kWh

### Dangerous substances

The product contains dangerous substances, more than 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.

Name	CASNo	Amount
Melamine (incl. only in the CMHR foam - dedicated for UK market to fulfil the BS 5852 IS-5 standard)	108-78-1	more than 0.1 %

### Indoor environment

## Additional environmental information

Key environmental indicators for variants for this EPD: Cradle to Gate analyse from A1 to A3

Variant number	Global warming (kg CO <sub>2</sub> )	Total energy use (MJ)	Share of recycled material in product(%)
OFFECCT Sou 1-seater	78,52	2 183,91	8,40
OFFECCT Sou 2.5-seater with 2-armrests	111,20	3 231,89	9,79
OFFECCT Sou 2.5-seater with 1-armrest	110,28	3 163,85	9,28
OFFECCT Sou 1-seater with table	83,39	2 374,82	7,14

Key environmental indicators for options for this EPD: Cradle to Gate analyse from A1 to A3

Option number	Global warming (kg CO <sub>2</sub> )	Total energy use (MJ)	Share of recycled material in product(%)
OFFECCT Sou 1-seater - Packaging	9,22	198,13	70,50
OFFECCT Sou 2.5-seater / 1-seater with table - Packaging	38,03	439,75	19,65
OFFECCT Sou Connectors	1,86	29,10	41,67

## 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+A1:2013 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.

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Vold et al., (2019) EPD generator for Norsk Industri, Background information for industry application and LCA data, LCA.no report number 06.19.

NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.

NPCR 026 Part B for Furniture. Ver. 2.0 October 2018, EPD-Norge.

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