epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Flokk AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-4128-3345-EN
Registration number:	NEPD-4128-3345-EN
ECO Platform reference number:	-
Issue date:	16.09.2022
Valid to:	16.09.2027

HÅG Celi

Flokk AS

www.epd-norge.no

HÅG

General information

Product:

HÅG Celi

Owner of the declaration:

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Program operator:

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Manufacturer:

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Drammensveien 145, 0277 Oslo
Norway

Declaration number:

NEPD-4128-3345-EN

Place of production:

Flokk - Nässjö
Vallgatan 1 571 23 Nässjö
Sweden

ECO Platform reference number:

Management system:

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

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

Organisation no:

No 928 902 749

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.

Issue date: 16.09.2022

Valid to: 16.09.2027

Declared unit:

1 Pcs HÅG Celi

Year of study:

2022

Declared unit with option:

A1,A2,A3,A4

Comparability:

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

Functional unit:

HÅG Celi 9100 (including its packaging)

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:

Kenneth Dam Lindegaard Knudsen

Reviewer of company-specific input data and EPD:

Atle Thiis-Messel

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 proccess is reviewed annualy. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

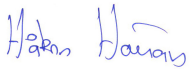
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Erik Svanes, Norsus AS

(no signature required)

Approved:

Sign



Håkon Hauan, CEO EPD-Norge

Key environmental indicators	Unit	Cradle to gate A1 - A3
Global warming	kg CO2 eqv	14,27
Total energy use	MJ	233,00
Amount of recycled materials	%	71,80

Product

Market:

Worldwide

Product description:

The HÅG Celi is a lightweight, modern, centre-tilt canteen and conference chair, with high comfort and excellent sustainability. The HÅG Celi collection is a thoughtful selection of colours and materials, creating an iconic and contemporary set of chair designs. With our trademark HÅG inBalance® movement mechanism HÅG Celi provides unparallel comfort for the canteen and conference environment.
Stackable: 12-15 chairs can be stacked on top of each other.

Product specification

The model studied in this declaration is the HÅG Celi 9100 with plastic seat and back shells and its packaging.
The chair consists of a total of 75% post-consumer recycled aluminium and 94% post-consumer recycled plastic in the seat and back shells.

Technical data:

Total weight: 4,92 kg (packaging excluded)
Total weight: 6,17 kg (packaging included)

See page 8 for variants and options

Reference service life, product

Reference service life, building

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Metal - Aluminium	2,56	41,54	2,08	81,20
Metal - Steel	0,13	2,07	0,00	0,00
Packaging - Cardboard	0,80	12,97	0,00	0,00
Plastic - Polypropylene (PP)	2,13	34,50	1,97	92,59
Plastic - Polyoxymethylene (POM)	0,00	0,03	0,00	0,00
Rubber, synthetic	0,09	1,52	0,00	0,00
Powder coating	0,04	0,65	0,00	0,00
Plastic - Polyethylene (HDPE)	0,04	0,58	0,00	0,00
Packaging - Recycled cardboard	0,38	6,12	0,38	100,00
Total:	6,17		4,43	71,80

LCA: Calculation rules

Declared unit:

1 Pcs HÅG Celi

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:

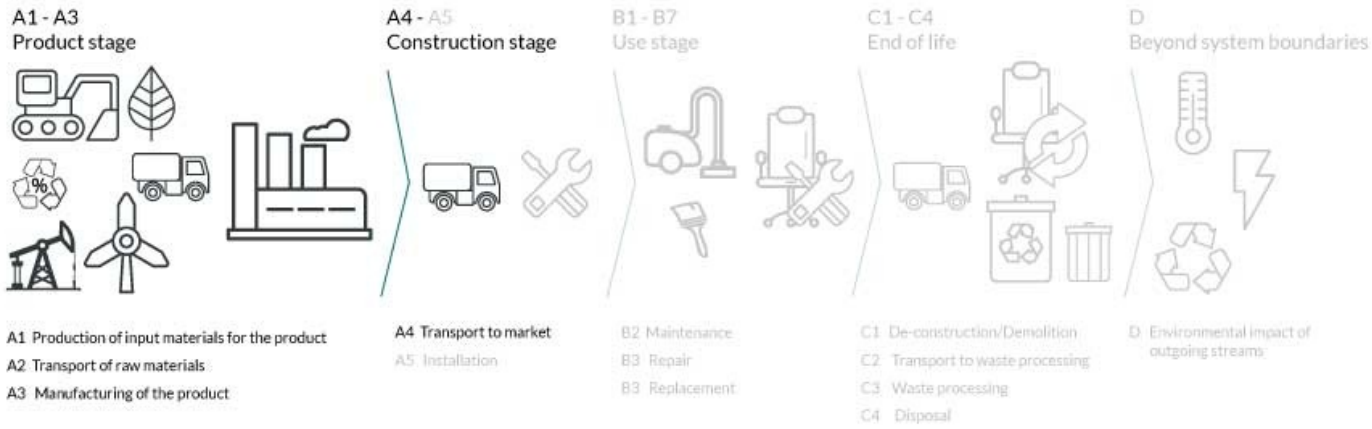
The allocation is made in accordance with the provisions of EN 15804. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

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
Plastic - Polyethylene (HDPE)	ecoinvent 3.4	Database	2015
Plastic - Polyoxymethylene (POM)	ecoinvent 3.4	Database	2015
Plastic - Polypropylene (PP)	ecoinvent 3.4	Database	2015
Rubber, synthetic	ecoinvent 3.4	Database	2015
Metal - Aluminium	ecoinvent 3.4	Database	2017
Metal - Steel	ecoinvent 3.4	Database	2017
Packaging - Recycled cardboard	NORSUS	Database	2018
Packaging - Cardboard	Ecoinvent 3.6	Database	2019
Metal - Aluminium	NEPD-1841-768-EN	EPD	2019
Powder coating	NEPD-2362-1089-EN	EPD	2020

System boundary:



Additional technical information:

Product specification (HÅG Celi 9100):
Chair height: 785 mm
Chair width: 526 mm
Chair depth: 415 mm

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	55,0 %	Truck, over 32 tonnes, EURO 5	373	0,022823	l/tkm	8,51
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials fr ste 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^3	
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^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C

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

Scenarios after A1-A4 are not included

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	

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 bondaries
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	MND	MND	MNR	MND	MND	MND	MND	MND	MND	MND	MND	MND	.	MND

Environmental impact

Parameter	Unit	A1	A2	A3	A4
GWP	kg CO_2 -eq	1,38E+01	1,31E-01	3,01E-01	2,01E-01
ODP	kg CFC11 -eq	8,12E-07	2,56E-08	1,60E-08	3,91E-08
POCP	kg C_2H_4-eq	5,05E-03	2,12E-05	1,45E-04	3,25E-05
AP	kg SO_2 -eq	7,11E-02	4,26E-04	1,11E-03	6,53E-04
EP	kg PO_4^{3-} -eq	1,41E-02	7,15E-05	3,72E-04	1,10E-04
ADPM	kg Sb -eq	4,85E-05	2,96E-07	3,31E-06	4,54E-07
ADPE	MJ	1,97E+02	2,06E+00	1,84E+00	3,15E+00

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*10-3 = 0,009
*INA Indicator Not Assessed

Resource use

Parameter	Unit	A1	A2	A3	A4
RPEE	MJ	4,26E+01	3,72E-02	2,63E+01	5,70E-02
RPEM	MJ	1,28E+01	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	5,54E+01	3,72E-02	2,63E+01	5,70E-02
NRPE	MJ	1,58E+02	2,12E+00	3,38E+00	3,25E+00
NRPM	MJ	8,97E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	1,67E+02	2,12E+00	3,38E+00	3,25E+00
SM	kg	4,43E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	3,18E-02	0,00E+00	5,19E-04	0,00E+00
NRSF	MJ	-1,03E-03	0,00E+00	5,32E-01	0,00E+00
W	m^3	6,33E-02	5,00E-04	1,57E-03	7,66E-04

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*10-3 = 0,009
*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1	A2	A3	A4
HW	kg	9,88E-03	1,13E-06	7,23E-04	1,73E-06
NHW	kg	4,93E+00	1,92E-01	2,11E-01	2,95E-01
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*10-3 = 0,009
*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1	A2	A3	A4
CR	kg	3,02E-06	0,00E+00	0,00E+00	0,00E+00
MR	kg	1,02E-02	0,00E+00	6,25E-01	0,00E+00
MER	kg	6,48E-02	0,00E+00	1,63E-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*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
Energy, district heating, Norwegian average (kWh)	Østfoldforskning	19,71	g CO2-ekv/kWh
Energy, electricity, Nordic average, hydro: 1 kWh	Østfoldforskning	10,19	g CO2-ekv/kWh

Dangerous substances

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

Indoor environment

GREENGUARD Gold certified

Additional environmental information

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

Variant number	Global warming (kg CO2)	Total energy use (MJ)	Share of recycled material in product(%)
HÅG Celi 9100 - Plastic chair - No packaging	11,46	199,52	82,23
HÅG Celi 9200 - Wooden chair - No packaging	10,52	250,08	50,12

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

Option number	Global warming (kg CO2)	Total energy use (MJ)	Share of recycled material in product(%)
Seat upholstery Shapeknit	1,70	25,37	100,00
Back upholstery Shapeknit	1,42	21,37	93,40
HÅG Celi - Table Hanger	0,55	6,79	0,00
HÅG Celi - Connection Device	0,22	2,61	0,00
HÅG Celi Armrests - Painted	10,92	167,26	94,17
Packaging 1 (Default large box, one chair - used in declared unit)	2,81	33,48	29,83
Packaging 2 (Default large box, five chairs)	11,85	240,53	26,57

Bibliography

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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.
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