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## Manufacturer

**HELLAND®**



## General information

### Product

Duun highback chair with open arms and removable neck cushion and armrest top.

### General Information

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo  
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e-mail: post@epd-norge.no

### Declaration number: D000F111E000

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

NPCR 003: 2015 Version 2.1 seating  
Norwegian EPD Foundation  
PCR Description Line 3

### Declared unit:

Duun highback chair with open arms and removable neck cushion and armrest top.

### Declared unit with option:

Duun highback chair have stepless adjustment of the backrest.

### Functional unit:

Production of one chair provided and maintained for a period of 15 years

### This EPD has been worked out by:

The declaration has been developed using Furniture EPD Tool Version 1.3.1, Approval: NEPDT04  
Company specific data collected and registered by:  
**Oddrun Aunet Innselset**  
Company specific data audited by:  
**Øyvind Tafjord**

### Verification:

Independent verification of data, other environmental information and EPD has been carried out in accordance with ISO14024, 8.1.3. and 8.1.4.

externally



Mie Vold, Senior Research Scientist  
(Independent verifier approved by EPD Norway)

### Owner of the declaration:

Contact person: Øyvind Tafjord  
Phone: +47 416 60 163  
E-mail: oyvind.tafjord@helland.no

### Manufacturer

Helland Møbler AS

### Place of production:

90437 Läänemaa + Kadaka Tee 179B, Tallinn, Estonia

### Management system:

ISO 14001: 2014 Certificate no. 901085  
From the accredited unit: Nemko AS, Norway

### Org. No:

NO 94 35 11 128 MVA

### Issue date: D000F111E000


### Valid to: D000F111E000

### Comparability:

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

### Year of study:

Approved



Håkon Hauan  
Managing Director of EPD-Norway

## Key environmental indicators

Key environmental indicators	Unit	Cradle to Gate A1-A3
Global warming	kg CO <sub>2</sub>	21
Total energy use	MJ	689
Amount of recycled materials	%	32 %

## Product

### Product Description and Application

Duun highback chair with open arms and removable neck cushion and armrest top. Design: Helge Taraldsen.

### Technical Data

Total weight: 20,10 kg. Dimensions: H115, W63, D85. Seat height: 46 cm

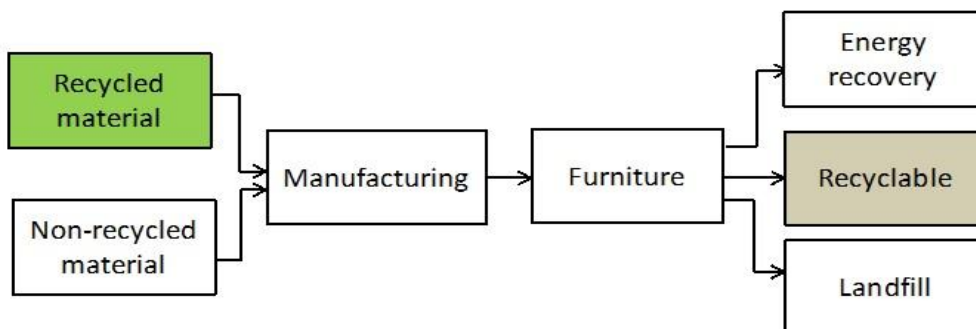
### Market

Europe and USA

### Reference Service Life

15 years

Materials			Recycled material in manufactured product		Recyclable material at end of product life	
Unit	kg	%	%	kg	%	kg
Wood	7,64	38 %	0 %	0,00	0 %	0,00
Steel	4,36	22 %	88 %	3,85	100 %	4,36
Polyethylene	3,70	18 %	0 %	0,00	100 %	3,70
Packaging	3,30	16 %	76 %	2,51	100 %	3,30
Textiles	1,00	5 %	0 %	0,00	0 %	0,00
Polyurethane	0,10	0 %	0 %	0,00	100 %	0,10
Total	20,10		32 %		57 %	



Product manufactured from 32% recycled material  
At end of life product contains 57% recyclable material

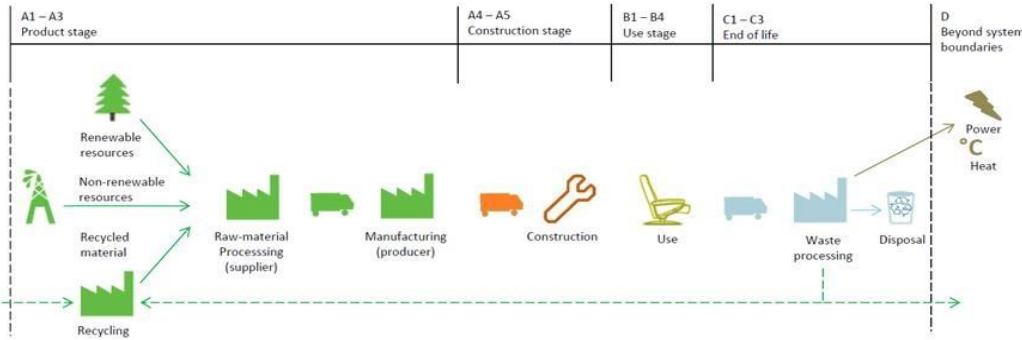
## LCA: Calculation rules

### Declared Unit

Duun highback chair with open arms and removable neck cushion and armrest top.

### System Boundary

Life cycle stages included are described in figure and through the corresponding letter and number designations in the



### Data quality

Specific manufacturing data from 2014 are used. Data from Ecoinvent 3.0.1. and Østfoldforskning databases are used as the basis for raw materials and energy carrier production. See (6)

### Cut-off criteria

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows that are included with very small amounts (<1%) are not included. This cut-off rule does not apply for hazardous materials and substances

### Allocation

Where virgin materials are used, emissions and energy consumption connected with extraction and production are included.

Where recycled materials are used in the product, emissions and energy consumption related to the recycling process are included.

Emissions from incineration are allocated to the product system that uses the recovered energy.

Emissions from incineration of waste are allocated to the product system that uses the recovered energy.

## LCA: Scenarios and additional technical information

Transportation to an average customer in Copenhagen is 1000 km (A4: average European lorry > 32 tonnes)

The use stage (B1) is represented by a scenario and includes vacuum cleaning of textile once a month. The PCR does not provide detailed guidelines for what should be included in the use stage. In the end of life stage, the transport distance for waste to waste processing is 72 km (C1). The reuse, recovery and recycling stage is beyond the system boundaries (D). It is assumed that the solution is dismantled and the materials recycled or combusted according to general Norwegian treatment of industrial waste (see the table below). This calculation includes only CO<sub>2</sub> emissions (GWP) in the C-modules. The transport distance to reuse, recovery or recycling varies for each material, but the average distance is 373 km. The vehicles used and associated data are described in detail in [5].

	Material recovery	Energy recovery	Disposal
Aluminium	70,1 %	0,0 %	30 %
Steel	70,1 %	0,0 %	30 %
Plastic	64,3 %	30,8 %	5 %
Cardboard	94,5 %	5,5 %	0 %

## LCA: Results

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

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

Product stage			Construction stage		Use stage				End of life			Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction	Maintenance	Repair	Replacement	Operational energy use	Transport	Waste Processing	Disposal	Reuse-recovery-recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D
x	x	x	x	MNR	x	MNR	MNR	MNR	x	x	x	x

### Environmental impact (INA = Indicator Not Assessed)

Parameter	A1	A2	A3	A1-A3	A4	B1	C1	C2	C3	C1-C3	D
GWP	18,9	1,7	0,1	20,8	0,0	0,0	1,4	12,5	1,9	15,8	-9,1
ODP	1,3E-06	3,1E-07	2,0E-08	1,7E-06	0,0	0,0	INA	INA	INA	INA	-3,1E-07
POCP	6,5E-03	3,1E-04	2,0E-05	6,9E-03	0,0	0,0	INA	INA	INA	INA	-8,0E-03
AP	3,9E-02	1,6E-03	1,0E-04	4,1E-02	0,0	0,0	INA	INA	INA	INA	-8,1E-03
EP	0,1	6,9E-03	4,7E-04	0,1	0,0	0,0	INA	INA	INA	INA	-2,9E-02
ADPM*	4,0E-05	6,6E-06	3,2E-07	4,7E-05	0,0	0,0	INA	INA	INA	INA	-2,7E-05
ADPE	223,5	25,4	1,6	250,6	0,0	0,0	INA	INA	INA	INA	-210,8

GWP Global warming potential (kg CO<sub>2</sub>-eqv.); ODP Depletion potential of the stratospheric ozone layer (kg CFC11-eqv.); POCP Formation potential of tropospheric photochemical oxidants (kg C<sub>2</sub>H<sub>4</sub>-eqv.); AP Acidification potential of land and water (kg SO<sub>2</sub>-eqv.); EP Eutrophication potential (kg PO<sub>4</sub>-3-eqv.); ADPM Abiotic depletion potential for non fossil resources (kg Sb -eqv.); ADPE Abiotic depletion potential for fossil resources (MJ);

\* Some processes use Ecoinvent 3.0.1. and thus data on renewable resources is omitted. The true ADPM, RPEE, RPEM and TPE may be higher than indicated. This issue will be addressed in a new version of Ecoinvent 3, data from which was not available when this declaration was prepared.

### Resource use (INA = Indicator Not Assessed)

Parameter	A1	A2	A3	A1-A3	A4	B1	C1	C2	C3	C1-C3	D
RPEE*	379,6	0,4	2,2E-02	380,0	0,0	0,0	INA	INA	INA	INA	-1,2
RPEM*	249,8	0,1	7,1E-03	249,9	0,0	0,0	INA	INA	INA	INA	-4,7
TPE*	629,5	0,5	2,9E-02	630,0	0,0	0,0	INA	INA	INA	INA	-5,9
NRPE	281,5	25,9	1,7	309,1	0,0	0,0	INA	INA	INA	INA	-207,1
NRPM	1,7	0,0	0,0	1,7	0,0	0,0	INA	INA	INA	INA	0,0
TNRPE	283,2	25,9	1,7	310,8	0,0	0,0	INA	INA	INA	INA	-207,1
SM	8,1	0,0	0,0	8,1	0,0	0,0	INA	INA	INA	INA	-3,3
RSF	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
NRSF	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
W	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0

RPEE Renewable primary energy resources used as energy carrier (MJ); RPEM Renewable primary energy resources used as raw materials (MJ); TPE Total use of renewable primary energy resources (MJ); NRPE Non renewable primary energy resources used as energy carrier (MJ); NRPM Non renewable primary energy resources used as materials (MJ); TNRPE Total use of non renewable primary energy resources (MJ); SM Use of secondary materials (kg); RSF Use of renewable secondary fuels (MJ); NRSF Use of non renewable secondary fuels (MJ); W Use of net fresh water (m3);

### End of life - Waste and Output flow (INA = Indicator Not Assessed)

Parameter	A1	A2	A3	A1-A3	A4	B1	C1	C2	C3	C1-C3	D
HW	1,3E-03	1,8E-05	1,0E-06	1,3E-03	0,0	0,0	INA	INA	INA	INA	0,0
NHW	6,2	1,2	0,1	7,5	0,0	0,0	INA	INA	INA	INA	-0,6
RW	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
CR	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
MR	5,0E-03	0,0	0,0	5,0E-03	0,0	0,0	INA	INA	INA	INA	0,0
MER	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
EEE	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0
ETE	0,0	0,0	0,0	0,0	0,0	0,0	INA	INA	INA	INA	0,0

HW Hazardous waste disposed (kg); NHW Non hazardous waste disposed (kg); RW Radioactive waste disposed (kg); CR Components for reuse (kg); MR Materials for recycling (kg); MER Materials for energy recovery (kg); EEE Exported electric energy (MJ); ETE Exported thermal energy ( MJ);

## Specific Norwegian requirements

### Electricity

The electricity consumed is assumed to be from East pool mix in the East European countries. European mix and energy mix in Estonia is based on data from the Woid bank. (Based on data 2011)

Electricity mix: 0,053 kg CO<sub>2</sub> eqv / MJ (East European mix)

### Dangerous Substances

None of the following substances have been added to the product: Substances on the REACH Candidate list of substances of very high concern (of 17.12.2014) and substances that lead to the product being classified as hazardous waste.

The chemical content of the product complies with regulatory levels as given in the Norwegian Product Regulations.

REACH = Registration - Evaluation - Authorisation - Chemicals - Restriction

### Indoor Environment

Our furniture does not contain any substances that affect indoor climate

### Climate Declaration

Not relevant

## Additional environmental information

Key environmental indicators for variants : Cradle to gate analyse from A1 to A3 (packaging included)

Variant model addition option:	Global warming (kg CO <sub>2</sub> )	Total energy use (MJ)	Share of recycled material in product
Duun Highback motorchair (with Medley)	37,0	1095	50 %
Duun Highback chair upholstered armrest.	27,0	947	28 %

## Bibliography

[1] NS-EN ISO 14025:2006, Environmental labels and declarations-Type III environmental declarations - Principles and procedures.



[2] NS-EN ISO 14044:2006, Environmental management - Life cycle assessment - Requirements and guidelines

[3] EN 15804:2012 + A1:2013 Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products

[4] Product category rules (PCR) for preparing an environmental product declaration for:  
Product Group Seating Solution NPCR 003: 2015; Product Group Plate Furniture NPCR 021: 2012

[5] Raadal, H. L., Modahl, I. S., Lyng, K. A. (2009). Klimaregnskap for avfallshåndtering, Fase I og II. OR 18.09.  
ISBN : 978-82-7520-611-2, 82-7520-611-1

[6] Dokumentasjon som grunnlag for verifisering, Ostfold Research

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