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The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025

| | |
|---|---|
| Owner of the declaration | Helland Møbler AS |
| Program holder and publisher | The Norwegian EPD Foundation |
| Declaration number | NEPD-1485-502-EN |
| Issue date | 25.01.2018 |
| Valid to | 25.01.2023 (validity extended to 31.12.2023) |

## Duun Highback Chair, Bariatri

Product

HELLAND®

## Helland Møbler AS

Manufacturer

## General information

**Product**

Duun Highback chair, Bariatri with open side

**Owner of the declaration:**

Contact person: Øyvind Tafjord
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E-mail: oyvind.tafjord@helland.no

**General Information**

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**Manufacturer**

Helland Møbler AS

**Declaration number:** NEPD-1485-502-EN

**Place of production:**

90437 Läännemaa + Kadaka Tee 179B, Tallinn, Estonia

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

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

**Management system:**

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

**Declared unit:**

Duun Highback chair, Bariatri with open side.

**Org. No:**

NO 94 35 11 128 MVA

**Declared unit with option:**

Duun highback chair, Bariatri.
Made to withstand high weight up to 250 kg.

**Issue date:** 25.01.2018

**Functional unit:**

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

**Valid to:** 25.01.2023 (validity extended to 31.12.2023)

**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**

**Comparability:**

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

**Year of study:**

**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)

Approved

Håkon Hauan
Managing Director of EPD-Norway

| Key environmental indicators | Unit | Cradle to Gate A1-A3 |
|---|---|---|
| Global warming | kg $CO_2$ | 23 |
| Total energy use | MJ | 731 |
| Amount of recycled materials | % | 33 % |

## Product

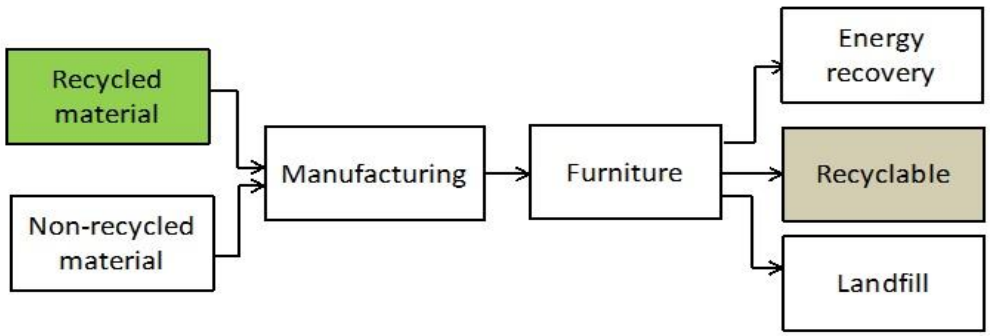
**Product Description and Application**
Duun highback chair, bariatri with open side. Made for withstand heigh weight up to 250 kg.

**Technical Data**
Total weigth: 22,25 kg. Dimensions: H115 , W73, 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 | 8,55 | 38 % | 0 % | 0,00 | 0 % | 0,00 |
| Steel | 4,62 | 21 % | 100 % | 4,62 | 100 % | 4,62 |
| Polyethylene | 3,70 | 17 % | 0 % | 0,00 | 100 % | 3,70 |
| Packaging | 3,70 | 17 % | 76 % | 2,81 | 100 % | 3,70 |
| Textiles | 1,10 | 5 % | 0 % | 0,00 | 0 % | 0,00 |
| Paint | 0,40 | 2 % | 0 % | 0,00 | 100 % | 0,40 |
| Polyurethane | 0,18 | 1 % | 0 % | 0,00 | 100 % | 0,18 |
| Total | 22,25 | | 33 % | | 57 % | |

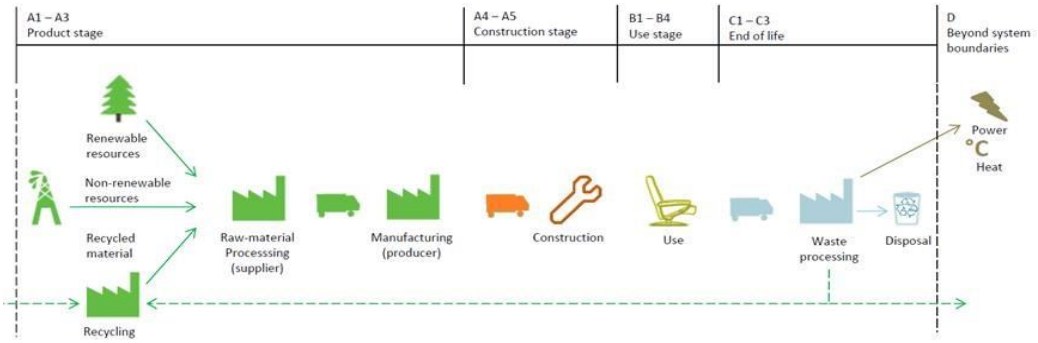



Product manufactured from 33% recycled material
At end of life product contains 57% recyclable material

## LCA: Calculation rules

**Declared Unit**
Duun Highback chair, Bariatri with open side.

**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 marerials 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 CO2 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 scenaries 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 | 19,4 | 3,3 | 0,1 | 22,8 | 0,0 | 0,0 | 1,6 | 13,2 | 2,2 | 17,0 | -9,7 |
| ODP | 1,3E-06 | 4,8E-07 | 2,0E-08 | 1,8E-06 | 0,0 | 0,0 | INA | INA | INA | INA | -3,5E-07 |
| POCP | 5,6E-03 | 1,6E-03 | 1,9E-05 | 7,3E-03 | 0,0 | 0,0 | INA | INA | INA | INA | -8,3E-03 |
| AP | 3,8E-02 | 5,9E-03 | 1,0E-04 | 4,4E-02 | 0,0 | 0,0 | INA | INA | INA | INA | -8,9E-03 |
| EP | 0,1 | 1,8E-02 | 4,6E-04 | 0,1 | 0,0 | 0,0 | INA | INA | INA | INA | -3,1E-02 |
| ADPM* | 3,0E-05 | 1,0E-05 | 3,1E-07 | 4,0E-05 | 0,0 | 0,0 | INA | INA | INA | INA | -3,0E-05 |
| ADPE | 235,3 | 45,7 | 1,6 | 282,6 | 0,0 | 0,0 | INA | INA | INA | INA | -220,4 |

GWP Global warming potential (kg CO2-eqv.); ODP Depletion potential of the stratospheric ozone layer (kg CFC11-eqv.); POCP Formation potential of tropospheric photochemical oxidants (kg C2H4-eqv.); AP Acidification potential of land and water (kg SO2-eqv.); EP Eutrophication potential (kg PO4-3-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* | 147,3 | 236,2 | 2,2E-02 | 383,5 | 0,0 | 0,0 | INA | INA | INA | INA | -1,3 |
| RPEM* | 94,9 | 169,7 | 6,9E-03 | 264,6 | 0,0 | 0,0 | INA | INA | INA | INA | -5,2 |
| TPE* | 242,2 | 405,9 | 2,9E-02 | 648,1 | 0,0 | 0,0 | INA | INA | INA | INA | -6,6 |
| NRPE | 292,4 | 53,4 | 1,6 | 347,4 | 0,0 | 0,0 | INA | INA | INA | INA | -216,6 |
| NRPM | 3,1 | 0,0 | 0,0 | 3,1 | 0,0 | 0,0 | INA | INA | INA | INA | 0,0 |
| TNRPE | 295,5 | 53,4 | 1,6 | 350,5 | 0,0 | 0,0 | INA | INA | INA | INA | -216,6 |
| SM | 9,4 | 0,0 | 0,0 | 9,4 | 0,0 | 0,0 | INA | INA | INA | INA | -3,5 |
| 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 Renwable 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 | 1,5E-03 | 8,0E-05 | 1,0E-06 | 1,6E-03 | 0,0 | 0,0 | INA | INA | INA | INA | 0,0 |
| NHW | 5,4 | 1,8 | 0,1 | 7,3 | 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 | 6,0E-03 | 0,0 | 0,0 | 6,0E-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 CO2 eqv/ MJ (East Europen 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 Requlations.
REACH = Registration - Evalution - Authorisation - Chermicals - Restriction

**Indoor Environment**
Our furniture does not contian any substances that affects indoor climate

**Climate Declaration**

Not relevant

## 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] Brekke, A., Møller, H., Baxter, J., Askham, C. (2014). Verktøy - miljødeklarasjon for møbel Dokumentasjon som grunnlag for verifisering, Ostfold Research

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