

ENVIRONMENTAL PRODUCT DECLARATION



epd-norge.no
The Norwegian EPD Foundation

In accordance with ISO 14025

Owner of the declaration

Program holder

Declaration number

Issue date

Valid to

Flokk AS

The Norwegian EPD Foundation

NEPD00035E Rev. 1

17.12.2014

17.12.2019

HÅG H04 4400

Product

Flokk AS

Owner of the declaration:

Flokk

HÅG • RH • BMA • OFFECCT • RBM



General information

Product

HÅG H04 4400

Program holder:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo
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Declaration number:

NEPD00035E Rev. 1

This declaration is based on Product Category Rules:

PCR for Seating Solution, NPCR 003 extended version 2013, in accordance with recommendations by the Norwegian EPD Foundation

Declared unit:
Declared unit with option:
Functional unit:

Production of one seating solution provided and maintained for a period of 15 years.

The EPD has been worked out by:

Østfoldforskning AS, Mie Vold



Verification:

Independent verification of data and other environmental
externally ☒ internally ☐



Senior Research Scientist, Cecilia Askham
(Independent verifier approved by EPD Norway)

Owner of the declaration:

Flokk AS
Contact person: Atle Thiis-Messel
Phone: +47 98 25 68 30
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Manufacturer

Flokk AS

Place of production:

7366 Røros, Norway

Management system:

ISO 14001, Certificate No.2010-SKM-AR-1487 from the Accredited Unit: DNV Certification AB, Sweden.

Org. No:

No 928 902 749

Issue date:

17.12.2014

Valid to:

17.12.2019

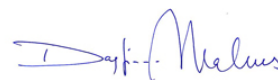
Comparability:

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

Year of study:

2014

Approved



Dagfinn Malnes
Managing Director of EPD-Norway

Functional unit:

Production of one seating solution provided and maintained for a period of 15 years.

| Key environmental indicators (A1-A3) | Unit | Cradle to gate A1 - A3 |
|--|------------------------|---------------------------|
| Global warming | kg CO ₂ eqv | 66 |
| Total energy use | MJ | 802 |
| Substances from the REACH Candidate list | * | |
| Amount of recycled materials | % | 37 % |

* The product contains no substances from the REACH Candidate list or the Norwegian priority list

Product

Product description:

It's no coincidence that HÅG H04 is a favourite among many interior designers. Because of its clean and timeless design, HÅG H04 fits easily into any work environment. The extremely precise adjustment system makes it easy to adjust the chair to your personal requirements. As all other HÅG chairs, it is based on the unique HÅG movement that ensures circulation and well-being. An optimised tilt angle as well as soft but supportive cushioning in the seat and back provide a feeling of comfort.

Technical data:

Total weight: 15,8 kg (17,7 kg with packaging)

More information:

<http://www.hag-uk.co.uk/products/hag-h04/hag-h04-4400/>

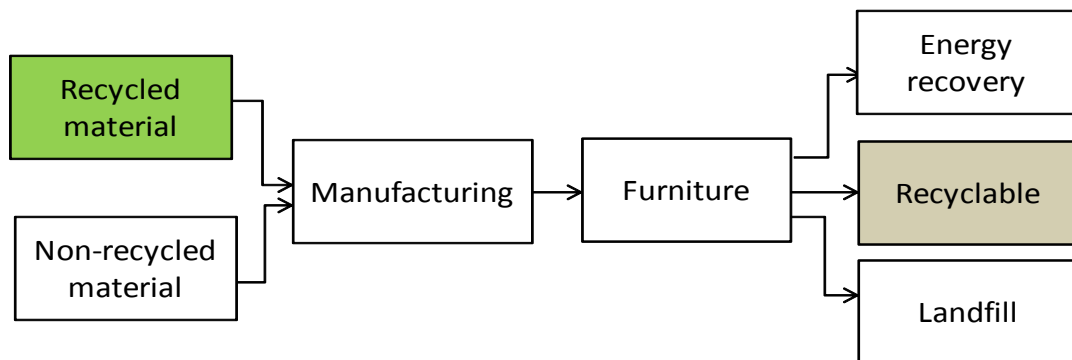
Market:

Europe and USA

Reference service life:

15 years

| Materials | kg | % |
|-----------------------------|------|-------|
| Steel | 5,4 | 34 % |
| Aluminium | 3,9 | 25 % |
| Zink | 0,1 | 1 % |
| Plastics | 5,5 | 35 % |
| Textile | 0,3 | 2 % |
| Various | 0,6 | 4 % |
| | 0,0 | 0 % |
| Total product | 15,8 | 100 % |
| Cardboard (packaging) | 1,9 | |
| Total product and packaging | 17,7 | |



| Materials | Recycled share for each material | Recycled amount | Recycled share in product | Recyclable share for each material | Recyclable amount | Recyclable share in product |
|------------------------------------|----------------------------------|-----------------|---------------------------|------------------------------------|-------------------|-----------------------------|
| Unit | % | kg | % | % | kg | % |
| Steel | 30 % | 1,6 | 9 % | 100 % | 5,4 | 1 % |
| Aluminium | 75 % | 2,9 | 17 % | 100 % | 3,9 | 30 % |
| Polypropylene | 0 % | 0,0 | 0 % | 100 % | 2,1 | 9 % |
| Polyurethane | 0 % | 0,0 | 0 % | 0 % | 0,0 | 0 % |
| Other plastic | 41 % | 1,0 | 6 % | 100 % | 2,4 | 48 % |
| Textile | 96 % | 0,3 | 2 % | 100 % | 0,3 | 3 % |
| Varnish | 0 % | 0,0 | 0 % | 0 % | 0,0 | 0 % |
| Not included | 0 % | 0,0 | 0 % | 0 % | 0,0 | 0 % |
| Total product | - | 5,8 | 37 % | - | 14,1 | 89 % |
| Cardboard (packaging) | 72 % | 1,3 | 8 % | 100 % | 1,8 | 0 % |
| Total product and packaging | | 7,1 | 40 % | - | 15,9 | 90 % |

In manufacture, about 40% of the total mass of the chair and its packaging is recycled material. At the end of the chair's life, about 90% of its total mass will consist of materials that can be recycled.

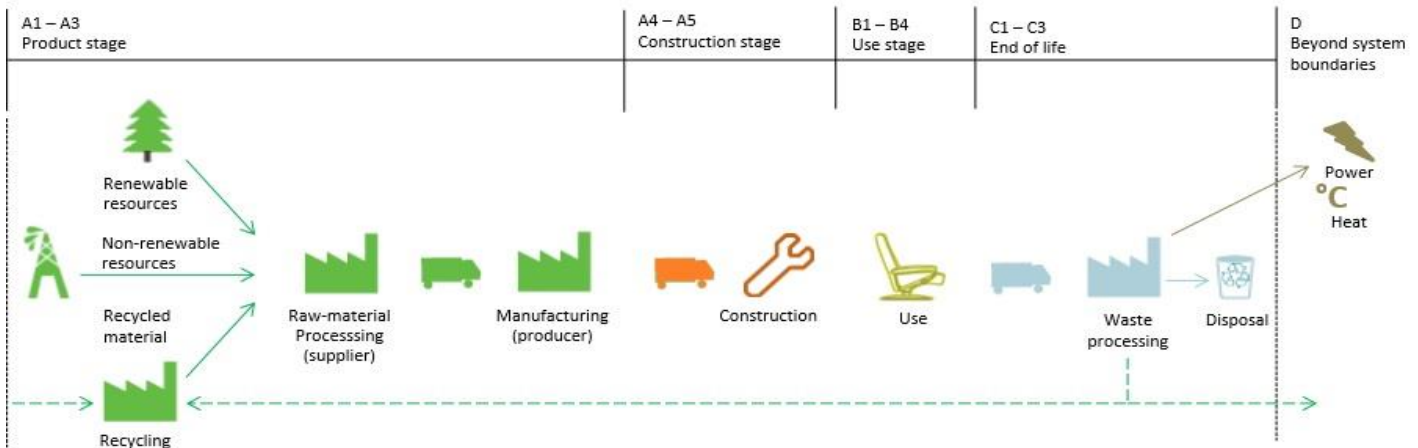
LCA: Calculation rules

Functional unit:

Production of one seating solution provided and maintained for a period of 15 years.

System boundary:

Life cycle stages included are described in figure and through the corresponding letter and number designations in the declaration (see figure below)



The seating solution components are assembled at SBSeating's facility in Røros.

Data quality:

Specific data from suppliers and manufacturer 2011/2012 are used in the EPD analysis. Database data from Ecoinvent 3 is used as the basis for raw material and energy carrier production.

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 of waste are allocated to the product system that uses the recovered energy. This is a deviation from the PCR for Ecoinvent processes, where emissions from incineration are allocated to the product system in which the waste arises.
- Emissions from incineration of waste without energy recovery are allocated to the production system where the waste arises.

Additional information

According to the PCR the output should include both impact and the largest emissions (by mass) to air and water. Because of the format of the EPD the largest emissions are not presented. The methods for calculating the environmental impact are IPCC 2007 for global warming and CML 2001 for other impact categories.

Material recycling at end of life (D) is not within the system boundaries, but as a scenario. The avoided emissions from replaced virgin material are included in D.

LCA: Scenarios and additional technical information

Transportation to an average customer in Copenhagen is 1000 km (A4). The use stage is represented by a scenario and includes vacuum cleaning of textiles 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 chair is dismantled and the materials recycled or combusted according to the general Norwegian treatment of industrial waste. This calculation includes CO₂ emissions and energy only (C1-D). Disassembly is a manual process with no impacts on the results of the LCA and is therefore not included. The transport distance to reuse, recovery or recycling varies for each material, but the average distance is 373 km.

LCA: Results

The following information describes 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

| Parameter | A1 | A2 | A3 | A1-A3 | A4 | B1 | C1 | C2 | C3 | C1-C3 | D |
|-----------|---------|---------|---------|---------|---------|---------|-----|------|----|-------|-----------|
| GWP | 62 | 1,5 | 2,1 | 66 | 2,4 | 6,1E-03 | 1,4 | 13,5 | 0 | 15 | -14 |
| ODP | 2,3E-05 | 9,5E-08 | 1,7E-07 | 2,3E-05 | 1,6E-07 | 1,9E-10 | | | | | -2,01E-05 |
| POCP | 2,0E-02 | 1,6E-04 | 5,1E-04 | 2,1E-02 | 1,7E-04 | 1,2E-06 | | | | | -2,99E-03 |
| AP | 1,1E-01 | 1,2E-03 | 5,2E-03 | 1,1E-01 | 1,8E-03 | 5,0E-06 | | | | | -2,23E-02 |
| EP | 3,3E-01 | 6,4E-03 | 7,9E-03 | 3,4E-01 | 8,0E-03 | 3,4E-05 | | | | | -5,11E-02 |
| ADPM* | 1,7E-03 | 6,5E-09 | 6,8E-06 | 1,7E-03 | 1,1E-08 | 2,0E-08 | | | | | -2,54E-04 |
| ADPE | 833 | 20,4 | 26,2 | 880 | 33,5 | 8,2E-02 | 0 | 0 | 0 | 0 | -123 |

*Some processes included are based on data from Ecoinvent 3.0.1. which is lacking data for renewable resources. The correct number of ADPM in the table above and RPEE, RPEM and TPE in the table below may be higher. See reference [5] for details. The lack of data will be addressed in a new version of Ecoinvent 3, which not was available when this declaration was carried out.

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)

Resource use**

| Parameter | A1 | A2 | A3 | A1-A3 | A4 | B1 | C1 | C2 | C3 | C1-C3 | D |
|-----------|----------|---------|---------|----------|---------|---------|---------|---------|---------|---------|-----------|
| RPEE* | 1,1E+01 | 0,0E+00 | 3,6E-03 | 1,1E+01 | 0,0E+00 | 9,3E-02 | | | | | -1,65E+01 |
| RPEM* | 4,1E+00 | 2,5E-03 | 1,2E+01 | 1,6E+01 | 4,0E-03 | 2,3E-05 | | | | | -1,28E+01 |
| TPE* | 1,5E+01 | 2,5E-03 | 1,2E+01 | 2,7E+01 | 4,0E-03 | 9,3E-02 | | | | | -2,92E+01 |
| NRPE | 7,5E+02 | 2,0E+01 | 2,8E+01 | 8,0E+02 | 3,4E+01 | 7,9E-02 | 2,3E+01 | 5,7E+01 | 1,2E+00 | 8,1E+01 | -1,40E+02 |
| NRPM | 2,2E+02 | 0 | 1,2E-01 | 2,2E+02 | 0,0E+00 | 9,0E-03 | | | | | 0,00E+00 |
| TRPE | 9,7E+02 | 2,0E+01 | 2,8E+01 | 1,0E+03 | 3,4E+01 | 8,8E-02 | 2,3E+01 | 5,7E+01 | 1,2E+00 | 8,1E+01 | -1,40E+02 |
| SM | 6,2E+00 | 0 | 1,3E+00 | 7,5E+00 | 0,0E+00 | 2,8E-06 | | | | | -1,17E+01 |
| RSF | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0,00E+00 |
| NRSF | -7,7E+00 | 0 | 0 | -7,7E+00 | 0,0E+00 | 4,0E-02 | | | | | 0,00E+00 |
| W | 2,4E+00 | 3,9E-03 | 6,5E-02 | 2,5E+00 | 6,4E-03 | 4,6E-03 | | | | | -3,26E-01 |

*See above

** Energy is given in MJ in accordance with recommendations in the Norwegian EPD program.

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); **TRPE** 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

| Parameter | A1 | A2 | A3 | A1-A3 | A4 | B1 | C1 | C2 | C3 | C1-C3 | D |
|-----------|---------|---------|---------|---------|---------|---------|----|---------|---------|---------|-----------|
| HW | 3,2E-02 | 1,4E-05 | 6,4E-05 | 3,2E-02 | 2,4E-05 | 5,8E-06 | | | | | -1,42E-03 |
| NHW | 2,8E+01 | 1,2E-02 | 4,2E-01 | 2,8E+01 | 1,9E-02 | 7,6E-04 | | | 2,3E+00 | 2,3E+00 | -3,80E+00 |
| RW | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0,00E+00 |
| CR | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0,00E+00 |
| MR | 2,5E-03 | 0,0E+00 | 1,1E+00 | 1,1E+00 | 0 | 0 | | 9,9E+00 | | 9,9E+00 | -4,93E-03 |
| MER | 0,0E+00 | 0,0E+00 | 2,7E-01 | 2,7E-01 | 0 | 0 | | 2,5E+00 | | 2,5E+00 | 0,00E+00 |
| EEE | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 0,00E+00 |
| ETE | 0 | 0 | 0 | 0 | 0 | 0 | | | | | 9,50E+01 |

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 following data from ecoinvent v3 (June 2012) for Norwegian production mix included import, low voltage is used; Energy/Electricity country mix/Low voltage/Market: Electricity, low voltage {NO}| market for | Alloc Def, U. Production of transmission lines, in addition to direct emissions and loss in grid are included. Characterisation factors stated in EN 15804:2012+A1:2013 are used. This gives following greenhouse gas emissions: 24 g CO₂-eqv/kWh.

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 '16.06.2014) substances on the Norwegian Priority list (pr.17.06.2013) 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.

Indoor environment

<http://productguide.ulenvironment.com/ProductDetail.aspx?productID=4560&includeWords=HAG>

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] PCR for seating solution: PRODUCT-CATEGORY RULES(PCR) for preparing an environmental product declaration (EPD) for Product Group "Seating solution", PCR 2008:NPCR 003, extended version

[5] Vold, M.; Livsløpsdata for 6 sitteløsninger fra Håg. Bakgrunnsdata for miljødeklarasjon (EPD), Østfoldforskning AS, OR 17.14 Fredrikstad.

[6] 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

[7] <http://productguide.ulenvironment.com/ProductDetail.aspx?productID=4560&includeWords=HAG>

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