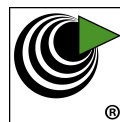


ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025



epd-norge.no
The Norwegian EPD Foundation

Owner of the declaration

Program holder

Declaration number

Issue date

Valid to

Flokk AS

The Norwegian EPD Foundation

NEPD00034E Rev. 1

17.12.2014

17.12.2019

Håg H03 - 330

Product

Flokk AS

Owner of the declaration

Flokk

HÅG • RH • BMA • OFFECCT • RBM



General information

Product

Håg H03 - 330

Owner of the declaration:

Flokk AS

Contact person: Atle Thiis-Messel

Phone: +4798256830

E-mail: Atle.messel@flokk.com
General information

The Norwegian EPD Foundation

Post Box 5250 Majorstuen, 0303 Oslo

Phone: +47 23 08 80 00

e-mail: post@epd-norge.no
Manufacturer

Flokk AS

Declaration number:

NEPD00034E Rev. 1

Place of production:

Rørø, Norway

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

Management system:

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

Declared unit:
Org. No:

No 928 902 749

Declared unit with option:
Issue date:

17.12.2014

Functional unit:

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

Valid to:

17.12.2019

The EPD has been worked out by:

Østfoldforskning AS, Mie Vold

Comparability:

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


Year of study:

2014

Verification:

Independent verification of data and other environmental
externally ☒ internally ☐

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

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	57
Total energy use	MJ	696
Substances from the REACH Candidate list	*	
Amount of recycled materials	%	29 %

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

Product

Product description:

HÅG H03 is based on the unique HÅG movement philosophy and is a flexible chair that suits everyone. With its simple, harmonious lines, HÅG H03 was designed so that it will fit into practically any work environment. It requires few components and utilises a high proportion of recycled materials, making it one of our most environmentally-friendly solutions. Its mechanism, which is based on an ingenious rocking-chair principle, ensures constant motion. A simple movement with your arms allows you to adjust several features at once. No wonder this flexible and user friendly collection is a big favourite among educational institutions.

Technical data:

Total weight: 14,0 kg (16,9 kg with packaging)

More information:

<http://www.hag-uk.co.uk/products/hag-h03/hag-h03-330/>

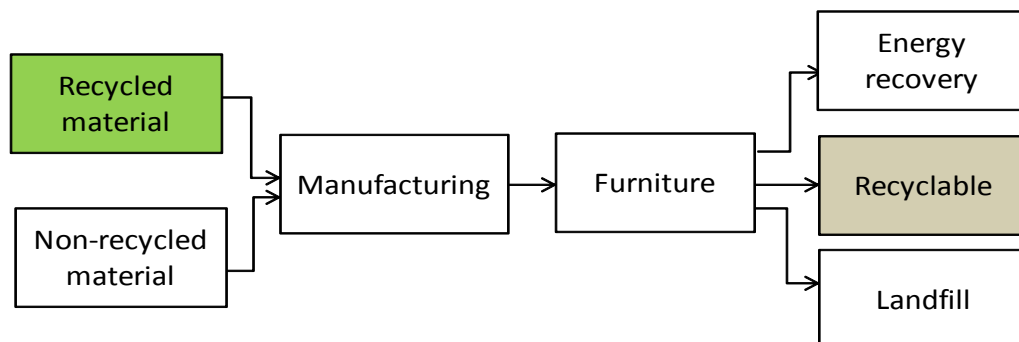
Market:

Europe and U.S.A.

Reference service life:

15 years

Materials	kg	%
Steel	7,6	54 %
Aluminium	0,5	4 %
Zink	0,0	0 %
Plastics	5,1	37 %
Textile	0,3	2 %
Various	0,5	4 %
	0,0	0 %
Total product	14,0	100 %
Packaging	3,0	
Total product and packaging	16,9	



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	27 %	2,0	12 %	100 %	7,6	1 %
Aluminium	30 %	0,2	1 %	100 %	0,5	30 %
Polypropylene	100 %	1,6	10 %	100 %	1,6	9 %
Polyurethane	0 %	0,0	0 %	0 %	0,0	0 %
Other plastic	0 %	0,0	0 %	100 %	2,7	48 %
Textile	99 %	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	-	4,0	29 %	-	12,6	90 %
Cardboard (packaging)	74 %	2,2		100 %	3,0	
Total product and packaging		6,2	37 %	-	15,6	92 %

In manufacture, about 37% of the total mass of the chair and its packaging is recycled material. At the end of the chair's life, about 92% of its total mass will consist of materials that can be recycled.

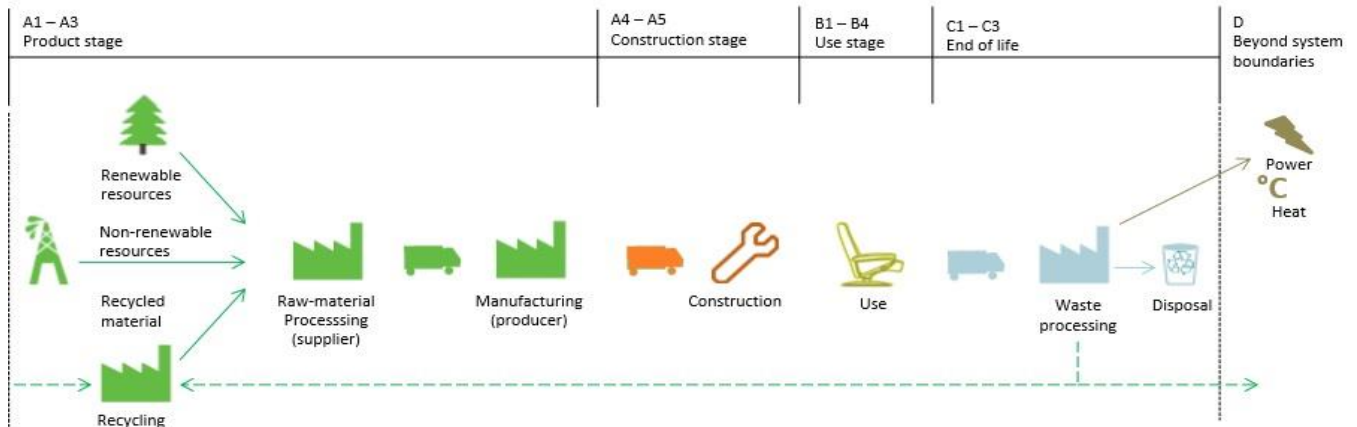
LCA: Calculation rules

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 the figure below and through the corresponding letter and number designations in the declaration.



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	52	1,7	3,3	57	0,0	6,1E-03	1,4	12	3,4E-02	13	-12
ODP	2,5E-06	1,1E-07	2,8E-07	2,9E-06	1,5E-10	1,9E-10					-3,33E-06
POCP	1,7E-02	1,7E-04	8,2E-04	1,8E-02	1,6E-07	1,2E-06					-2,78E-03
AP	8,1E-02	1,3E-03	8,3E-03	9,1E-02	1,7E-06	5,0E-06					-1,65E-02
EP	2,3E-01	6,8E-03	1,2E-02	2,5E-01	7,5E-06	3,4E-05					-4,00E-02
ADPM*	2,5E-04	7,6E-09	1,1E-05	2,6E-04	1,0E-11	2,0E-08					-4,67E-05
ADPE	634	23	42	699	3,1E-02	8,2E-02					-121

*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*	13	0,00	2,8E-06	13	0,00	9,3E-02					-22
RPEM*	2,8	2,84E-03	20	23	3,7E-06	2,3E-05					-20
TPE*	16	2,84E-03	20	36	3,7E-06	9,3E-02					-42
NRPE	621	24	46	691	3,1E-02	7,9E-02	22	61	0,89	84	-135
NRPM	125	0,00	8,9E-05	125	0,00	9,0E-03					0
TRPE	747	24	46	816	3,1E-02	8,8E-02	22	61	0,89	84	-135
SM	4,4	0	2,1	6,6	0,00	2,8E-06					-12
RSF	0,0	0	0	0,00	0,00	0,0E+00					0,00
NRSF	-7,7	0	0	-7,7	0,00	4,0E-02					0,00
W	2,3	4,50E-03	0,11	2,4	6,0E-06	4,6E-03					-0,36

* 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	4,4E-02	1,6E-05	9,8E-05	4,4E-02	2,2E-08	5,8E-06					-1,49E-03
NHW	23	1,4E-02	0,61	24	1,8E-05	7,6E-04			2,3	2,3	-2,8
RW	0	0	0	0	0	0					0
CR	0	0	0	0	0	0					0
MR	3,1E-03	0,0E+00	8,7E-04	3,9E-03	0	0		9,9		9,9	-6,90E-03
MER	0	0	2,1E-04	2,1E-04	0	0		2,5		2,5	0
EEE	0	0	0	0	0	0					0
ETE	0	0	0	0	0	0					95

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=14362&BrandID=11>

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 seks sitteløsninger fra Scandinavian Business Seating AS. 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=14362&BrandID=11>

 epd-norge.no The Norwegian EPD Foundation	Program holder The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norge	Phone: +47 23 08 80 00 e-mail: post@epd-norge.no web: www.epd-norge.no
 HÅG • RH • BMA • OFFECCT • RBM	Owner of the declaration Flokk AS P.O Box 5055 majorstua, No 3001 Oslo Contact person: Atle Thiis-Messel	Phone: +47 98 25 68 30 Fax: +47 22 59 59 59 e-mail: info-no@flok.no web: http://www.flok.no/
 Østfoldforskning SUSTAINABLE INNOVATION	Author of the Life Cycle Assessment Østfoldforskning AS Stadion 4, 1671 Kråkerøy Contact person: Mie Vold	Phone: +47 69 35 11 00 Fax: +47 69 34 24 94 e-mail: post@ostfoldforskning.no web: www.ostfoldforskning.no