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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 [1]

Owner of the declaration	Flokk AS
Program holder and publisher	The Norwegian EPD Foundation
Declaration number	NEPD-1847-792-EN
Issue date	16.08.2019
Valid to	16.08.2024

RH New Logic

including variants and options

Product

HÅG • RH • GIROFLEX • BMA • OFFECCT • RBM

Flokk AB

Manufacturer

General information

Product

RH New Logic
See page 6 for variants and options

General Information

The Norwegian EPD Foundation
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Declaration number:

NEPD-1847-792-EN

This declaration is based on Product Category Rules:

PCR for Seating Solution, NPCR 003:2015
in accordance with recommendations by the
Norwegian EPD Foundation. See [3]

Declared unit:

One office chair: RH New Logic large back
with Select textile by Gabriel®

Declared unit with option:

- Armrest TPU top
- Neckrest
- Packaging

Functional unit:

Production of one seating solution 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 1.4.3, Approval: NEPDT04
Company specific data collected and registered by:
Laura Fouilland
Company specific data audited by:
Carl Peter Aaser

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. See [2]

externally

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

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Manufacturer

Flokk AB

Place of production:

Vallgatan 1, 571 23 Nässjö, Sweden

Management system:

ISO 14001, Certificate No. 14001-0336
From the accredited unit: SCAB Svensk Certifiering Norden AB
ISO 9001, Certificate No.9001-0336
From the accredited unit: SCAB Svensk Certifiering Norden AB

Org. No:

No 928 902 749

Issue date:

16.08.2019

Valid to:

16.08.2024

Comparability:

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

Year of study:

2019

Approved

Håkon Hauan
Managing Director of EPD-Norway

Key environmental indicators for **RH New Logic large back with Select textile** including armrest TPU, neckrest and packaging	Unit	Cradle to Gate A1-A3
Global warming	kg CO_2	95,5
Total energy use	MJ	1378
Amount of recycled materials	%	61 %

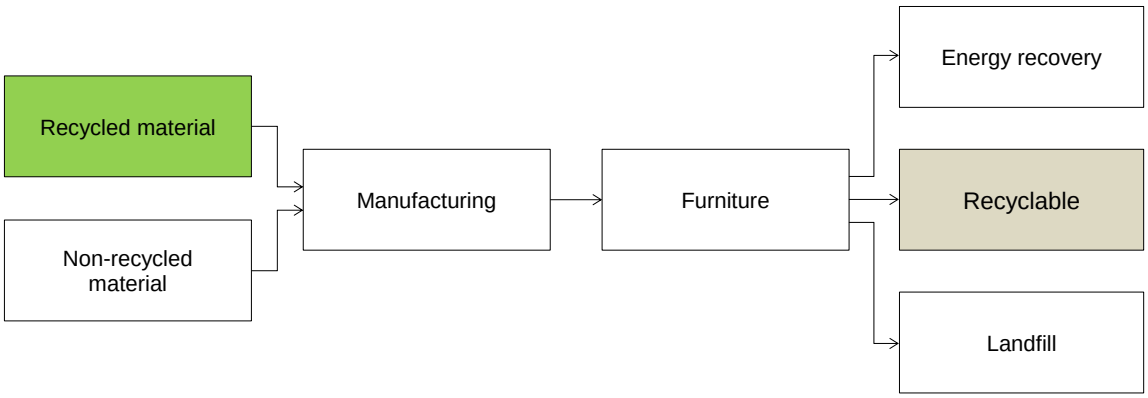
Product

Product Description and Application
RH Logic collection is office chairs with optimal ergonomics and visual elegance, that provide comfort and enhances performance during the work day. Based on our vision of upright posture and active seating. RH Logic chairs are easily adjusted to individual needs and preferences, so that every user can find the perfect balance between movement and support.
Sustainability and environmental efficiency is a big part of RH Logic. The chair is designed to be long lasting and to make the lowest possible environmental impact throughout its life cycle – from raw material extraction to end-of-life. This is why all parts are easy to replace and disassemble, and every component is fully recyclable and free from toxic substance.

Technical Data
Total Weight: 24,95kg (packaging excluded)

Market
Worldwide
Reference Service Life
15 years

Materials				Recycled share in product		Recyclable potential of product	
Unit		*g*	*%*	*g*	*%*	*g*	*%*
Metal	Aluminium	8 702	35%	8 125	93 %	8 702	100 %
Metal	Steel	6 825	27%	1 549	23 %	6 825	100 %
Plastic	Polypropylene (PP)	5 773	23%	5 188	90 %	5 773	100 %
Padding	Polyurethane (PUR)	1 347	5%	0	0 %	0	0 %
Plastic	Polyamide with glass fiber (PA-GF)	1 094	4%	0	0 %	1 094	100 %
Plastic	Polyoxymethylene (POM)	451	2%	0	0 %	451	100 %
Textile	Select by Gabriel® (85%Wool 15% PA)	258	1%	0	0 %	0	0 %
Plastic	Thermoplastic polyurethane (TPU)	220	1%	0	0 %	220	100 %
Plastic	Polyamide (PA-Nylon)	143	1%	0	0 %	143	100 %
Metal	Zinc	92	0%	7	8 %	92	100 %
Textile	Polyester fibers	33	0%	0	0 %	33	100 %
Plastic	Rubber	12	0%	0	0 %	12	100 %
Plastic	Polyethylene (HDPE)	1	0%	0	0 %	1	100 %
Total product		**24 952**	**100 %**	**14 869**	**60 %**	**23 346**	**94 %**
Packaging	Cardboard	3 500	12%	2 660	76 %	3 500	100 %
Packaging	Expandable Polystyrene (EPS)	200	1%	0	0 %	200	100 %
Total product with packaging		**28 652**		**17 529**	**61 %**	**27 046**	**94 %**

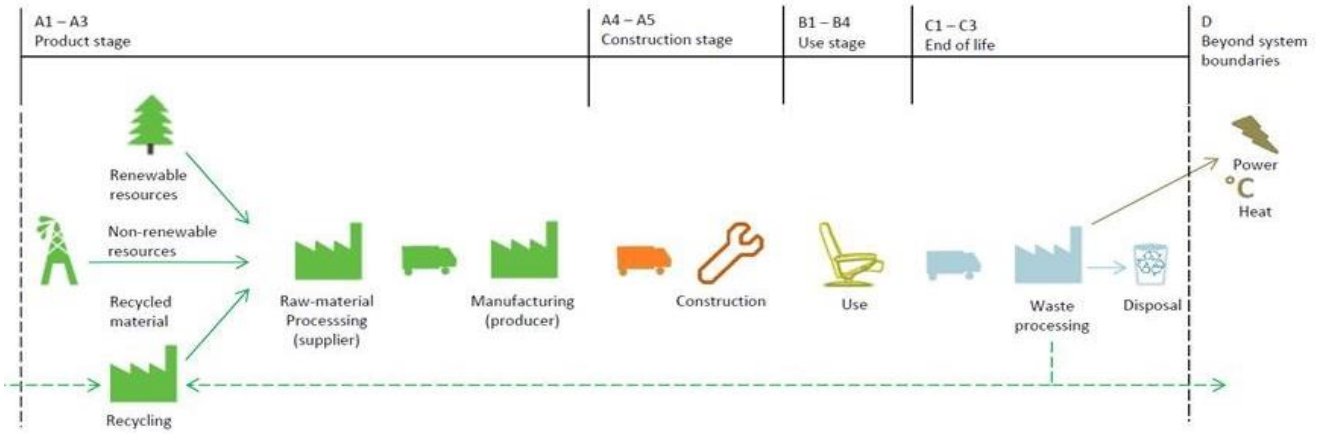


Product manufactured from 61% recycled material (packaging included)
At end of life product contains 94% recyclable material (packaging included)

LCA: Calculation rules

Declared 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)



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 [5].

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 360 km (A4: average European lorry > 32 tonnes)

The use stage is represented by a scenario and includes vacuum cleaning of textile once a month. The PCR [3] 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 the general Norwegian treatment of industrial waste (see the table below). The transport distance to reuse, recovery or recycling is varying for each material, but the average distance is 373 km. The vehicles used and associated data are described in detail in [4].

	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	94,5	0,9	3,4E-02	95,5	0,9	6,1E-03	2,4	22,7	0,1	25,2	-17,9
ODP	4,6E-06	1,8E-07	8,7E-10	4,8E-06	1,8E-07	1,9E-10	INA	INA	INA	INA	0,0E+00
POCP	3,0E-02	1,8E-04	1,7E-05	3,0E-02	1,4E-04	1,2E-06	INA	INA	INA	INA	0,0E+00
AP	0,4	4,3E-03	3,7E-04	0,4	3,4E-03	5,0E-06	INA	INA	INA	INA	0,0E+00
EP	0,2	8,5E-04	3,9E-04	0,2	7,7E-04	3,4E-05	INA	INA	INA	INA	0,0E+00
ADPM*	3,9E-03	1,7E-06	3,0E-06	3,9E-03	1,7E-06	2,0E-08	INA	INA	INA	INA	0,0E+00
ADPE	1162,9	14,9	0,2	1178,1	14,9	8,2E-02	INA	INA	INA	INA	-447,8

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*	132,4	0,3	14,8	147,5	0,3	9,3E-02	INA	INA	INA	INA	0,0
RPEM*	39,4	0,1	2,0E-02	39,5	0,1	0,0	INA	INA	INA	INA	0,0
TPE*	171,9	0,3	14,8	187,0	0,3	9,3E-02	INA	INA	INA	INA	0,0
NRPE	1214,3	15,4	0,3	1230,0	15,3	7,9E-02	INA	INA	INA	INA	0,0
NRPM	110,4	0,0	1,5E-03	110,4	0,0	0,0	INA	INA	INA	INA	0,0
TNRPE	1324,8	15,4	0,3	1340,4	15,3	8,8E-02	INA	INA	INA	INA	0,0
SM	12,6	0,0	5,9E-13	12,6	0,0	0,0	INA	INA	INA	INA	0,0
RSF	0,0	0,0	6,7E-06	6,7E-06	0,0	0,0	INA	INA	INA	INA	0,0
NRSF	0,0	0,0	0,0	0,0	0,0	4,0E-02	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	0,1	7,4E-06	6,2E-06	0,1	7,3E-06	5,8E-06	INA	INA	INA	INA	0,0
NHW	55,7	1,3	0,1	57,0	1,3	7,6E-04	INA	INA	INA	INA	0,0
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	2,0E-03	0,0	5,5E-04	2,6E-03	0,0	0,0	INA	INA	INA	INA	0,0
MER	0,0	0,0	6,4E-06	6,4E-06	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

Electricity purchased by Flokk for its production sites in Sweden and Norway comes with a guarantee of origin for Nordic Hydropower. Therefore the electricity mix used in this EPD is: Energy, electricity, hydro, Nordic average. This gives following greenhouse gas emissions: 2,8 g CO2-eqv/kWh

Dangerous Substances

None of the following substances have been added to the product: Substances on the Candidate list of substances of very high concern (published in accordance with Article 59(10) of the REACH Regulation), substances on the Norwegian Priority list 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.

Additional environmental information

Key environmental indicators for all variants in the RH New Logic collection
Cradle to Gate analyse from A1 to A3

	(Textile: **Select** by Gabriel®)				(Textile: **Fame** by Gabriel®)			
Variant model:	**GWP** (kg CO_2)	**Total energy use** (MJ)	**Share of recycled material**	**Total weight** (kg)	**GWP** (kg CO_2)	**Total energy use** (MJ)	**Share of recycled material**	**Total weight** (kg)
RH New Logic large back	**68,5**	983	59 %	20,4	69,5	992,6	59 %	20,4
RH New Logic medium back	66,8	955	58 %	19,8	67,7	963,0	58 %	19,9
Additional options (must be added to chosen model, see example below):								
Armrest TPU top	**18,9**	242	58 %	3,6	18,9	242	58 %	3,6
Armrest leather top	19,4	241	56 %	3,6	19,4	241	56 %	3,6
Neckrest	**3,8**	51	81 %	1,0	3,9	52,2	81 %	1,0
Coat hanger	0,2	4	0 %	0,1	0,2	4	0 %	0,1
XL seat	0,8	13	0 %	0,1	0,9	14,1	0 %	0,1
Coccyx seat	-0,2	-2	0 %	-0,03	-0,2	-2,6	0 %	-0,03
XL Coccyx seat	0,6	9,1	0 %	0,1	0,6	9,5	0 %	0,1
Back full upholstered medium	1,4	17	0 %	0,1	1,7	20,8	0 %	0,1
Back full upholstered large	1,6	20	0 %	0,1	2,0	24,0	0 %	0,1
Packaging	**4,2**	101	72 %	3,7	4,2	101	72 %	3,7

Example for:	**GWP** (kg CO_2)	**Total energy use** (MJ)	**Weight of recycled material** (kg)	**Share of recycled material**	**Total weight** (kg)
RH New Logic large back w Select textile	68,5	983	59% x 20,4 = 11,99	17,5/28,64	20,4
+ Armrest TPU top	+ 18,9	+ 242	58% x 3,6 = 2,11		+ 3,6
+ Neckrest	+ 3,8	+ 51	81% x 1,0 = 0,85		+ 1,0
+ Packaging	+ 4,2	+ 101	72% x 3,7 = 0,26		+ 3,7
Total	95,5	1378	17,5	61 %	28,6

Bibliography

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

[2] ISO 14024:1999, Environmental labels and declarations - Type I environmental labelling - Principles and procedures

[3] PCR for seating solution: PRODUCT-CATEGORY RULES (PCR) for preparing an environmental product declaration (EPD) for Product Group "Seating solution", NPCR 003:2015

[4] 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

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

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