

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Flokk AS
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
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Issue date:	15.11.2021
Valid to:	15.11.2026

RBM Ana 4340 - Graphite black edition with recycled plastic shell

Flokk AS



www.epd-norge.no




General information

Product:

RBM Ana 4340 - Graphite black edition with recycled plastic shell

Program operator:

The Norwegian EPD Foundation
Pb. 5250 Majorstuen, 0303 Oslo
Phone: +47 23 08 80 00
e-mail: post@epd-norge.no

Declaration number:

NEPD-3221-1860-EN

ECO Platform reference number:

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 026:2018 Part B for furniture

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 Pcs RBM Ana 4340 - Graphite black edition with recycled plastic shell

Declared unit with option:

A1,A2,A3,A4

Functional unit:

RBM Ana 4340 - Graphite black edition with recycled plastic shell
(packaging included)

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the process is reviewed annually. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Erik Svanes, Norsus AS

(no signature required)

Owner of the declaration:

Flokk AS
Contact person: Atle Thiis-Messel
Phone: 0047 98 25 68 30
e-mail: atle.messel@flokk.com

Manufacturer:

Flokk AS
Drammensveien 145, 0277 Oslo
Norway

Place of production:

Flokk - Nässjö
Vallgatan 1 571 23 Nässjö
Sweden

Management system:

ISO 14001, ISO 9001, ISO 50001(Norway, Sweden)

Organisation no:

No 928 902 749

Issue date:

15.11.2021

Valid to:

15.11.2026

Year of study:

2021

Comparability:

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

Development and verification of EPD:

The declaration has been developed and verified using EPD tool Ica.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Laura Fouilland

Reviewer of company-specific input data and EPD:

Damian Bakowski

Approved:

Sign

Håkon Hauan, CEO EPD-Norge

Key environmental indicators	Unit	Cradle to gate A1 - A3
Global warming	kg CO2 eqv	13,92
Total energy use	MJ	213,09
Amount of recycled materials	%	51,49

Product

Market:

Worldwide

Product description:

RBM Ana is a popular chair filling assembly halls, canteens, meeting rooms and cafeterias with activity. RBM Ana is easy to position in rows and easy to stack and it has a simple and ergonomic design, and is available in a wide range of colours applicable for polypropylene shells as well as the steel tubular frames.

Product specification

The model studied in this declaration is RBM Ana 4340 with the Graphite black plastic shell.

The Graphite black plastic shell consists of 98% recycled polypropylene (PP) with a minimum of 65% post consumer recycled content.

The other colored plastic shells available - Charcoal grey, Vanilla, Poppy, Teal Blue, Sea Green, and Misty Grey - are made of virgin polypropylene.

The key environmental indicators for the other colored models as well as the upholstery options and the packaging are presented on a table page 8 of this declaration.

Frame of 19 x 1.5 mm tubular steel available in various colours.

Seat height 430 mm, Back height 400 mm, Chair width 490 mm, Chair height 825 mm, Chair depth 515 mm

Stackable up to 12 chairs without upholstery (height: 1.83 m) and 10 chairs with upholstery (height: 1.65 m)

Materials	kg	%	Recycled share in material (kg)	Recycled share in material (%)
Metal - Steel	1,96	52,37	0,30	15,14
Plastic - Polypropylene (PP)	1,78	47,38	1,74	98,00
Plastic - Polyethylene (LDPE)	0,01	0,26	0,00	0,00
Total:	3,75		2,04	

Packaging	kg		Recycled share in material (kg)	Recycled share in material (%)
Packaging - Cardboard	0,49		0,00	0,00
Packaging - Recycled cardboard	0,30		0,30	100,00
Total including packaging	4,54		2,34	

LCA: Calculation rules

Declared unit:

1 Pcs RBM Ana 4340 - Graphite black edition with recycled plastic shell

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Data quality:

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Plastic - Polyethylene (LDPE)	ecoinvent 3.4	Database	2013
Plastic - Polypropylene (PP)	ecoinvent 3.4	Database	2015
Metal - Steel	EPD-Norge	EPD	2015
Metal - Steel	ecoinvent 3.4	Database	2017
Metal coating - Powder coating on steel	ecoinvent 3.4	Database	2017
Process	ecoinvent 3.4	Database	2017
Packaging - Recycled cardboard	NORSUS	Database	2018
Packaging - Cardboard	Ecoinvent 3.6	Database	2019

Technical data:

Total weight: 3,747kg (packaging excluded)

Total weight: 4,539kg (packaging included)

Reference service life, product

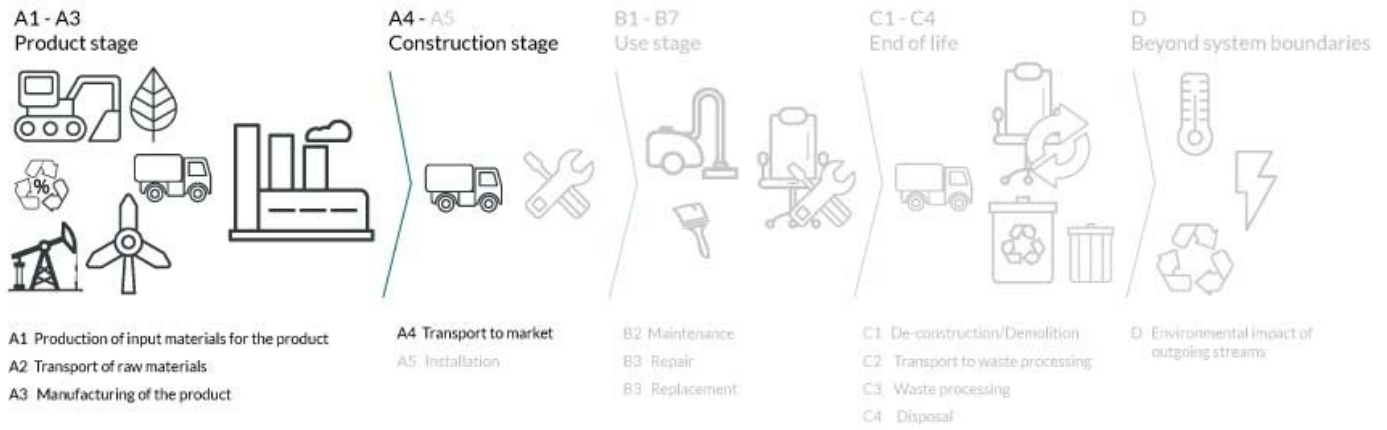
Reference service life, building

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

System boundary:

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



Additional technical information:

LCA: Scenarios and additional technical information

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

Transportation to an average customer in Copenhagen is 373km (A4: average European lorry >32 tonnes)

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck	55,0 %	Truck, over 32 tonnes, EURO 5	373	0,022823	l/tkm	8,51
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

Assembly (A5)

.	Unit	Value
Auxiliary	kg	
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
Output materials from waste treatment	kg	
Dust in the air	kg	
VOC emissions	kg	

Use (B1)

.	Unit	Value

Maintenance (B2)/Repair (B3)

.	Unit	Value
Maintenance cycle*		
Auxiliary		
Other resources		
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	
VOC emissions	kg	

Replacement (B4)/Refurbishment (B5)

.	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts		
* Described above if relevant		

Operational energy (B6) and water consumption (B7)

.	Unit	Value
Water consumption	m ³	
Electricity consumption	kWh	
Other energy carriers	MJ	
Power output of equipment	kW	

End of Life (C1, C2)

.	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling		
Energy recovery		
To landfill	kg	

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Unit	Value (l/t)
Truck					l/tkm	
Railway					l/tkm	
Boat					l/tkm	
Other Transportation					l/tkm	

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

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

Product stage				Construction installation stage	User stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X														

Environmental impact

Parameter	Unit	A1	A2	A3	A4
GWP	kg CO ₂ -eq	1,35E+01	1,20E-01	2,90E-01	1,48E-01
ODP	kg CFC11 -eq	8,32E-07	2,35E-08	1,59E-08	2,88E-08
POCP	kg C ₂ H ₄ -eq	4,57E-03	1,94E-05	1,45E-04	2,39E-05
AP	kg SO ₂ -eq	5,23E-02	3,91E-04	1,12E-03	4,80E-04
EP	kg PO ₄ ³⁻ -eq	1,43E-02	6,56E-05	3,73E-04	8,06E-05
ADPM	kg Sb -eq	8,93E-05	2,72E-07	3,41E-06	3,34E-07
ADPE	MJ	1,31E+02	1,89E+00	1,85E+00	2,32E+00

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009

*INA Indicator Not Assessed

Resource use

Parameter	Unit	A1	A2	A3	A4
RPEE	MJ	2,54E+01	3,41E-02	2,61E+01	4,19E-02
RPEM	MJ	7,83E+00	0,00E+00	0,00E+00	0,00E+00
TPE	MJ	3,32E+01	3,41E-02	2,61E+01	4,19E-02
NRPE	MJ	1,56E+02	1,95E+00	3,29E+00	2,39E+00
NRPM	MJ	1,72E+00	0,00E+00	0,00E+00	0,00E+00
TRPE	MJ	1,58E+02	1,95E+00	3,29E+00	2,39E+00
SM	kg	2,34E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	1,96E-02	0,00E+00	5,22E-04	0,00E+00
NRSF	MJ	-6,36E-04	0,00E+00	5,35E-01	0,00E+00
W	m ³	1,04E-01	4,59E-04	1,53E-03	5,63E-04

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

Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Waste

Parameter	Unit	A1	A2	A3	A4
HW	kg	5,15E-03	1,03E-06	8,40E-06	1,27E-06
NHW	kg	9,71E+00	1,77E-01	2,04E-01	2,17E-01
RW	kg	INA*	INA*	INA*	INA*

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Output flow

Parameter	Unit	A1	A2	A3	A4
CR	kg	2,41E-06	0,00E+00	0,00E+00	0,00E+00
MR	kg	7,95E-03	0,00E+00	6,23E-01	0,00E+00
MER	kg	4,40E-02	0,00E+00	2,17E-03	0,00E+00
EEE	MJ	INA*	INA*	INA*	INA*
ETE	MJ	INA*	INA*	INA*	INA*

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Additional Norwegian requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Energy, district heating, Norwegian average (kWh)	Østfoldforskning	19,71	g CO ₂ -ekv/kWh
Energy, electricity, hydro, Nordic average:1 kWh	Østfoldforskning	10,19	g CO ₂ -ekv/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment

Greenguard Gold certified

Additional environmental information

Key environmental indicators for variants for this EPD: Cradle to Gate analyse from A1 to A3

Variant number	Global warming (kg CO ₂)	Total energy use (MJ)	Share of recycled material in product(%)
RBM Ana 4340 - Graphite black edition with recycled plastic shell (no packaging)	12,25	194,27	54,36 %
RBM Ana 4340 - Colored edition with virgin plastic shell (no packaging)	14,41	241,63	7,93 %

Key environmental indicators for options for this EPD: Cradle to Gate analyse from A1 to A3

Option number	Global warming (kg CO ₂)	Total energy use (MJ)	Share of recycled material in product(%)
Seat upholstery with Xtreme fabric by Camira	2,75	45,88	12,79 %
Seat and back upholstery with Xtreme fabric by Camira	5,31	88,52	13,90 %
Seat upholstery with Cura fabric by Gabriel	2,73	45,59	11,84 %
Seat and back upholstery with Cura fabric by Gabriel	5,26	87,96	11,95 %
Packaging for RBM Ana	1,66	18,82	37,96 %

Bibliography

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ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.

EN 15804:2012+A1:2013 Environmental product declaration - Core rules for the product category of construction products.

ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.

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NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.

NPCR 026 Part B for Furniture. Ver. 2.0 October 2018, EPD-Norge.

<p>epd-norge.no The Norwegian EPD Foundation</p>	<p>Program operator and publisher The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway</p>	<p>Phone: +47 23 08 80 00 e-mail: post@epd-norge.no web: www.epd-norge.no</p>
	<p>Owner of the declaration Flokk AS Drammensveien 145, 0277 Oslo</p>	<p>Phone: 0047 98 25 68 30 e-mail: atle.messel@flokk.com web: https://www.flokk.com</p>
	<p>Author of the Life Cycle Assessment LCA.no AS Dokka 1C 1671 Kråkerøy</p>	<p>Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no</p>
	<p>Developer of EPD generator LCA.no AS Dokka 1C 1671 Kråkerøy</p>	<p>Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no</p>