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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Ab Rani Plast Oy
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-1230-387-EN
Issue date:	20.12.2016
Valid to:	20.12.2021

RaniMoBar

Ab Rani Plast Oy

General information

Product:
RaniMoBar

Owner of the declaration:
Ab Rani Plast Oy
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Program operator:
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Manufacturer:
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Fabriksvägen 6, FI-68700 Terijärv Finland
Phone: +358 20 768 0111
e-mail: raniplast@raniplast.com

Declaration number:
NEPD-1230-387-EN

Place of production:
Teerijärvi factory, Ranivägen 185, FI-68700 Terijärv Finland

ECO Platform reference number:
-

Management system:
ISO 9001, ISO 14001

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A1:2013 serves as core PCR.
NPCR 022 Rev 1 Roof waterproofing

Organisation no:
21073065

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 manufacturerinformation, life cycle assessment data and evidences.

Issue date:
20.12.2016

Valid to:
20.12.2021

Declared unit:
1 m2 of ready-to-use plastic film.

Year of study:
2016

Declared unit with option:

Comparability:
EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

Functional unit:
1 m2 of installed plastic film with a refernce service life of 60 years.

The EPD has been worked out by:
Thomas Andersson
Ecobio Oy

Verification:
The CEN Norm EN 15804 serves as the core PCR.
Independent verification of the declaration and data, according to ISO14025:2010

☐ internal ☑ external

Third party verifier:
Marti Reenaas

(Independent verifier approved by EPD Norway)

Approved

Håkon Hauan
Managing Director of EPD-Norway

Product

Product description:
RaniMoBar plastic film is a plastic sheet for damp proofing. The RaniMoBar plastic film is used as such for moisture control in constructions and can be applied to floors, walls and roofs to prevent moisture from passing into the interior spaces.

Product specification:
The plastic film is produced in three different thicknesses; 0,12 mm, 0,15 mm and 0,20 mm.

Materials	kg	%
Polyetylen	0.110*	> 99,5
Masterbatch (for color)	0.001*	< 0.5

* 0.12 mm

Technical data:
0,111 kg/m2 for 0,12 mm thickness
0,138 kg/m2 for 0,15 mm thickness
0,185 kg/m2 for 0,20 mm thickness

CE - EN 13984:2013, VTT - Technical Research Center of Finland.
P - 389/90, SP - Technical Research Institute of Sweden.
SINTEF - TG 20201, Byggforsk Norway.

Market:
Nordic countries

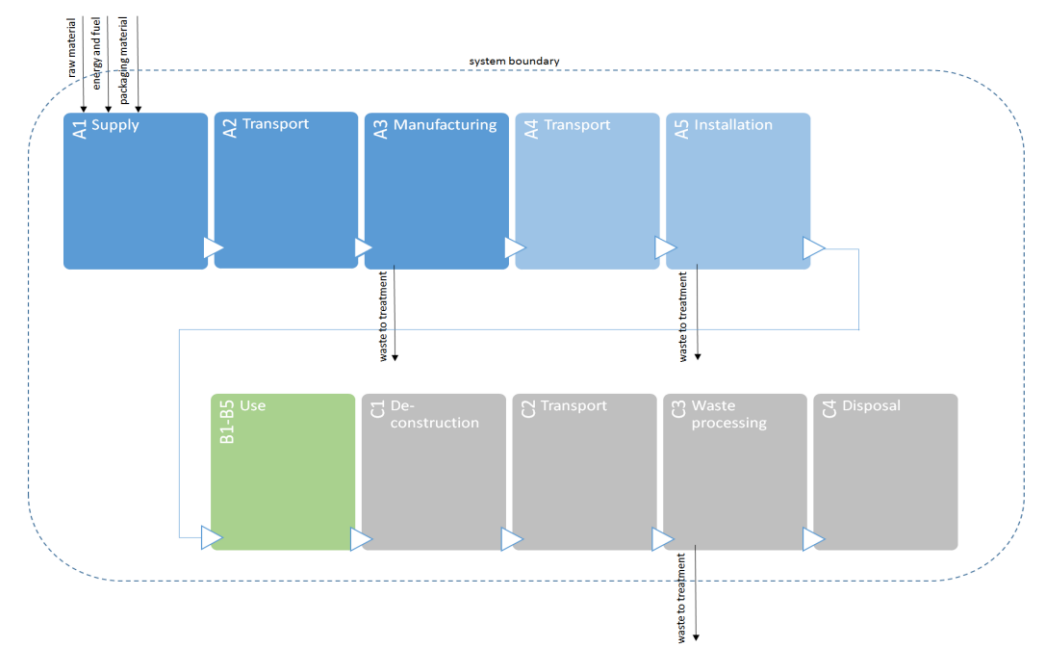
Reference service life, product:
60 years

Reference service life, building:
60 years

LCA: Calculation rules

Declared unit:
1 m2 of ready-to-use plastic film.

System boundary:
Cradle-to-grave, module D not declared.



Data quality:
Specific data: production at Ab Rani Plast Oy (2014)
Generic data: upstream and downstream processes, ecoinvent 3.2 (2016)

Allocation:
The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Cut-off criteria:
All major raw materials and all the essential energy is included. The production process 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.

LCA: Scenarios and additional technical information

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

Transport from production place to user (A4)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	37 % (ecoinvent 3.2)	lorry, 16-32 metric ton	1033	0.05 l/tkm	48
Railway	-			kWh/tkm	
Boat	65 % (ecoinvent 3.2)	transoceanic ship	243	0.003 l/tkm	1
<Other Transportation>				<xx>	

Assembly (A5)

	Unit	Value
Auxiliary	kg	
Water consumption	m^3	
Electricity consumption	kWh	
Other energy carriers	MJ	
Material loss	kg	0.001*
Output materials from waste treatment	kg	
Dust in the air	kg	

* 0.12 mm

Use (B1)

	Unit	Value

Maintenance (B2)/Repair (B3)

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

Replacement (B4)/Refurbishment (B5)

	Unit	Value
Replacement cycle*		
Electricity consumption	kWh	
Replacement of worn parts	0	

* Number or RSL (Reference Service Life)

No maintanance, repair or replacement is needed during the lifecycle of the product.

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, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling	kg	0.11*
Energy recovery	kg	
To landfill	kg	

* 0.12 mm

No operational energy or water use is required during the lifecycle of the product.
Waste treatment and disposal of RaniMoBar plastic film according to Norwegian average treament methods.

Transport to waste processing (C2)

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	37 % (ecoinvent 3.2)	lorry, 16-32 metric ton	100	0.05 l/tkm	5
Railway	-			kWh/tkm	
Boat	-			l/tkm	
<Other Transportation>				<xx>	

Transport distance to waste processing or disposal is estimated to be < 100 km from the construction site.

Additional technical information

There are no harmful substances released to the indoor air during the use of the product. Emission measurement has been done by SP (Technical Research Institute of Sweden) according to ISO 16000-10.

LCA: Results

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

Product stage			Assemby stage		Use 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	De-construction 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	x	x	x	x	x	x	MNR	MNR	x	x	x	x	MND

Environmental impact - 0.12 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	0.291	0.020	0.004	0	0	0.002	0.017	0
ODP	kg CFC11-eqv	7.50E-09	3.56E-09	1.85E-10	0	0	3.40E-10	1.38E-11	0
POCP	kg C_2H_4 -eqv	6.00E-05	3.45E-06	7.23E-07	0	0	3.14E-07	3.43E-08	0
AP	kg SO_2 -eqv	1.13E-03	6.98E-05	1.39E-05	0	0	6.14E-06	1.72E-06	0
EP	kg PO_4^{3-}-eqv	1.41E-04	1.46E-05	2.52E-06	0	0	1.35E-06	1.32E-06	0
ADPM	kg Sb-eqv	6.92E-08	3.90E-08	1.90E-09	0	0	3.77E-09	9.49E-11	0
ADPE	MJ	8.69	0.30	0.10	0	0	0.03	0.002	0

Environmental impact - 0.15 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	0.362	0.024	0.005	0	0	0.002	0.021	0
ODP	kg CFC11-eqv	9.32E-09	4.43E-09	2.30E-10	0	0	4.23E-10	1.72E-11	0
POCP	kg C_2H_4 -eqv	7.46E-05	4.29E-06	8.99E-07	0	0	3.90E-07	4.27E-08	0
AP	kg SO_2 -eqv	1.40E-03	8.68E-05	1.73E-05	0	0	7.63E-06	2.14E-06	0
EP	kg PO_4^{3-}-eqv	1.75E-04	1.82E-05	3.13E-06	0	0	1.68E-06	1.64E-06	0
ADPM	kg Sb-eqv	8.60E-08	4.85E-08	2.36E-09	0	0	4.69E-09	1.18E-10	0
ADPE	MJ	10.80	0.37	0.11	0	0	0.04	0.003	0

Environmental impact - 0.20 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
GWP	kg CO_2 -eqv	0.485	0.033	0.006	0	0	0.003	0.028	0
ODP	kg CFC11-eqv	1.25E-08	5.94E-09	3.08E-10	0	0	5.67E-10	2.31E-11	0
POCP	kg C_2H_4 -eqv	1.00E-04	5.75E-06	1.21E-06	0	0	5.23E-07	5.72E-08	0
AP	kg SO_2 -eqv	1.88E-03	1.16E-04	2.32E-05	0	0	1.02E-05	2.86E-06	0
EP	kg PO_4^{3-}-eqv	2.35E-04	2.44E-05	4.20E-06	0	0	2.25E-06	2.20E-06	0
ADPM	kg Sb-eqv	1.15E-07	6.50E-08	3.16E-09	0	0	6.29E-09	1.58E-10	0
ADPE	MJ	14.48	0.49	0.15	0	0	0.05	0.003	0

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

Resource use - 0.12 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
RPEE	MJ	0.36	0.004	0.007	0	0	0.0004	3.56E-05	0
RPEM	MJ	0.37	0	0	0	0	0	0	0
TPE	MJ	0.73	0.004	0.007	0	0	0.0004	3.56E-05	0
NRPE	MJ	0.99	0.301	0.109	0	0	0.029	0.002	0
NRPM	MJ	8.96	0	0	0	0	0	0	0
TRPE	MJ	9.95	0.301	0.109	0	0	0.029	0.002	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
W	m^3	0.003	6.39E-05	3.22E-05	0	0	6.08E-06	1.84E-06	0

Resource use - 0.15 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
RPEE	MJ	0.45	0.005	0.009	0	0	0.0005	4.42E-05	0
RPEM	MJ	0.46	0	0	0	0	0	0	0
TPE	MJ	0.91	0.005	0.009	0	0	0.0005	4.42E-05	0
NRPE	MJ	1.23	0.374	0.136	0	0	0.036	0.003	0
NRPM	MJ	11.14	0	0	0	0	0	0	0
TRPE	MJ	12.37	0.374	0.136	0	0	0.036	0.003	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
W	m^3	0.004	7.94E-05	4.00E-05	0	0	7.56E-06	2.28E-06	0

Resource use - 0.20 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
RPEE	MJ	0.60	0.006	0.012	0	0	0.0006	5.93E-05	0
RPEM	MJ	0.61	0	0	0	0	0	0	0
TPE	MJ	1.21	0.006	0.012	0	0	0.0006	5.93E-05	0
NRPE	MJ	1.65	0.501	0.182	0	0	0.048	0.004	0
NRPM	MJ	14.93	0	0	0	0	0	0	0
TRPE	MJ	16.58	0.501	0.182	0	0	0.048	0.004	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
W	m^3	0.005	1.06E-04	5.37E-05	0	0	1.01E-05	3.06E-06	0

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

End of life - Waste - 0.12 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
HW	kg	4.05E-05	0	0	0	0	0	0	0
NHW	kg	3.16E-05	0	0	0	0	0	0	0
RW	kg	0	0	0	0	0	0	0	0

End of life - Waste - 0.15 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
HW	kg	5.06E-05	0	0	0	0	0	0	0
NHW	kg	3.95E-05	0	0	0	0	0	0	0
RW	kg	0	0	0	0	0	0	0	0

End of life - Waste - 0.20 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
HW	kg	6.75E-05	0	0	0	0	0	0	0
NHW	kg	5.26E-05	0	0	0	0	0	0	0
RW	kg	0	0	0	0	0	0	0	0

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

End of life - Output flow - 0.12 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
CR	kg	0	0	0	0	0	0	0	0
MR	kg	4.22E-04	0	x	0	0	0	0.105	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	1.98E-04	0	0.009	0	0	0	0.031	0
ETE	MJ	4.05E-04	0	0.019	0	0	0	0.059	0

End of life - Output flow - 0.15 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
CR	kg	0	0	0	0	0	0	0	0
MR	kg	5.28E-04	0	0.021	0	0	0	0.131	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	2.47E-04	0	0.012	0	0	0	0.038	0
ETE	MJ	5.06E-04	0	0.024	0	0	0	0.074	0

End of life - Output flow - 0.20 mm

Parameter	Unit	A1- A3	A4	A5	B1-B5	C1	C2	C3	C4
CR	kg	0	0	0	0	0	0	0	0
MR	kg	7.04E-04	0	0.028	0	0	0	0.176	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	3.29E-04	0	0.016	0	0	0	0.051	0
ETE	MJ	6.75E-04	0	0.032	0	0	0	0.099	0

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 = $9{,}0*10^{-3}$ = 0,009

Additional Norwegian requirements

Greenhous gas emission from the use of electricity in the manufacturing phase
National production mix from import, low woltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing prosess(A3).

Data source	Amount	Unit
Econinvent v3.2	231	g CO_2-eqv/kWh

Dangerous substances

☑ The product contains no substances given by the REACH Candidate list or the Norwegian priority list
☐ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by
☐ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the
☐ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified

Name	CAS no.	Amount

Indoor environment
There are no harmful substances released to the indoor air during the use of the product. Emission measurement has been done by SP (Technical Research Institute of Sweden) according to ISO 16000-10.

Carbon footprint
Carbon footprint has not been worked out for the product.

Bibliography

ISO 14025:2010 — *Environmental labels and declarations - Type III environmental declarations - Principles and procedures*

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

EN 15804:2012+A1:2013 — *Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products*

ISO 21930:2007 — *Sustainability in building construction - Environmental declaration of building products*

ECOBIO LCA 2016 — Ab Rani Plast Oy RaniMoBar - Life Cycle Assessment according to ISO 14040 and EN 15804

NPCR 022 Rev 1 — Roof waterproofing

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