

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

EPD of aluminium skin systems:

CLADDING, BATTENS LIGHT, BATTENS 50

from

ForMe SRL

**FOR
ME**
DESIGN

Programme:

Programme operator:

EPD registration number:

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The International EPD® System, www.environdec.com

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EPD of multiple products, based on a representative product.


An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>construction products, PCR 2019:14, VERSION 1.3.4</i>
PCR review was conducted by: <i>Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.</i>
Life Cycle Assessment (LCA)
LCA accountability: <i>Forethinking Srl Società Benefit; info@forethinking.com; www.forethinking.com</i>

Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> EPD verification by accredited certification body
Third-party verification: RINA Services S.p.a. – Via Corsica 12, I – 16128 Genova (Italia) is an approved certification body accountable for the third-party verification
Tel: +39.010.53851 – Fax: +39.010.5351000 – www.rina.org Accredited by: Accredia 0002VV
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: FORME S.R.L.

Contact: Andrea Giachero

andrea.giachero@mysinergy.eu

0836/935218

Description of the organisation: ForMe is a company of DFV Group, for 50 years leader in industrial painting and wood effect decoration, and was born in 2020 for the production of two aluminium product lines:

- SKIN, Indoor & Outdoor cladding;
- DOOR, entrance doors.

ForMe was born in DFV, placing at its service the skills, know-how, production technology and widespread presence consolidated over years of experience in the market.

ForMe shapes extruded aluminium in a variety of forms and infinite decorative solutions, from wood effect to material effects with a result that can adapt to various design requirement. The mission is to inspire new concepts of sustainable living through a conscious and intelligent use of the materials and new technologies available, with the aim of improving the quality of life.

Product-related or management system-related certifications: ForMe has obtained various product certifications according to current regulations, carried out in accredited laboratories such as wind and impact resistance certification, soundproofing power, load resistance for ceiling application and reaction to fire.

Name and location of production site(s): the ForMe production site is based in Puglia, in Surano (Lecce), in the South of Italy (S.S. 275 km. 14,400 – 73030 SURANO (LE)).

Product information

Product name: ForMe aluminium SKIN system

Product identification: The product outlined in this EPD mainly consists of painted extruded profiles made of 6060 aluminium alloy and various accessories used for anchoring. The product includes 3 families:

- Cladding,
- Battens Light and
- Battens 50.

Product description:

The aluminium ForMe SKIN envelops exterior facades and interior walls, providing design and sustainability. It is possible to distinguish robust plank cladding as CLADDING, functional as BATTENS 50 or minimal as BATTENS LIGHT.

- **Cladding** is a functional cladding system for exterior façades and interior walls.
- **Battens light** is a modern and practical aluminium cladding system, suitable for interior settings.
- **Battens 50** is a sturdy aluminium cladding system suitable for outdoor and indoor spaces.

Composition

The main component for the SKIN systems is the aluminium profiles, which can have different possible sections and vary in terms of profile spacing in accordance with the respective customer's requirements, so the corresponding density (kg of aluminium per square metre) is also variable. Specifically, the aluminium density for the various systems that can be realized varies from a minimum of 5.2 to a maximum of 25 kg/m², with a median density value is 13.2 kg/m². It is worth noting that among the best-selling products there are:

- Cladding system composed by 150 mm slat (8 kg/m²);
- Battens light system composed by 30 mm*25 mm profile and 30 mm spacer (8.8 kg/m²) or by 40 mm*25 mm profile and 30 mm spacer (7.8 kg/m²);
- Battens 50 system composed by 50 mm*100 mm profile and 150 mm spacer (12.4 kg/m²)

SKIN system	Components	Aluminium grammage (kg/m ²)
Cladding	150 mm slat	8
Battens light	30 mm*25 mm profile and 30 mm spacer	8.8
Battens light	40 mm*25 mm profile and 30 mm spacer	7.8
Battens 50	50 mm*100 mm profile and 150 mm spacer	12.4

According with the above claims, in this study it was evaluated the environmental impact of 1 kg of aluminium skin system, considering the product with an aluminium weight of 12.4 kg/m² as the main reference product (SKIN Battens 50 system mm * 100 mm, spacing 150 mm) as reported in the following Table.

Product	Value	Unit
Declared unit	1	kg
Grammage	12.4	kg/m ²
Conversion factor to 1 kg	0.081	m ² /kg

The choice to consider the Battens 50 system as a representative product in this study is related to the fact that it is one of the best-selling products and in addition has a density (12.4 kg/m²) that is closer to the median value (13.2 kg/m²) obtained for the entire range of skin systems that can be realized by ForMe.

Packaging

The aluminium skin systems are generally transported directly from ForMe production site to the building site by lorry. The products are separated from each other by plastic film, corrugated board and wood beams. These packaging materials are included in the scope of this EPD.

Recycling and disposal

When an aluminium building product reaches the end of its life, it is systematically and selectively collected and sent to recycling facilities for secondary billet production. A collection rate for aluminium products next to 95% is well documented in construction sector.

In module D only the net benefits of recycling are reported, i.e., the burden savings at the end of life minus the benefits already considered in the module A1 due to secondary material content.

UN CPC code: 41532, bars, rods, and profiles of aluminium

LCA information

Functional unit / declared unit: 1 kg

Time representativeness: the reference year for the LCA calculation is 2023

Database(s) and LCA software used: Ecoinvent 3.8 database, SimaPro 9.3.0.3

Description of system boundaries:

The system boundaries are cradle to gate with options, modules C1-C4, module D and A4, A5 as optional module (A1-A3 + A4 + A5 + C + D and additional modules). Modules B1-B7 are excluded as they are strongly dependent on the specific application case.

The following stages are included in the study:

Product stage

Module A1: extraction and processing of raw materials, such as aluminum, steel, wood and cardboard, polyethylene, processing of secondary materials (e.g., aluminum recycling processes), and generation of electricity, steam, and heat from energy sources primary energy sources, including their extraction, processing, and transportation

Module A2: transport of raw materials by the manufacturer to the gate of the ForMe S.r.l. production site

Module A3: manufacturing process, including energy consumption for cutting aluminium profiles, packaging materials production, waste production management

Construction process stage

Module A4: transport of the finished product to the relevant market

Module A5: recycling and disposal of the packaging

End of life stage

Module C1: demolition/deconstruction

Module C2: transport from collection to waste processing and disposal site

Module C3: waste processing

Module C4: disposal (landfill and incineration) of unrecovered material fractions of waste (not sent for recycling/re-use)

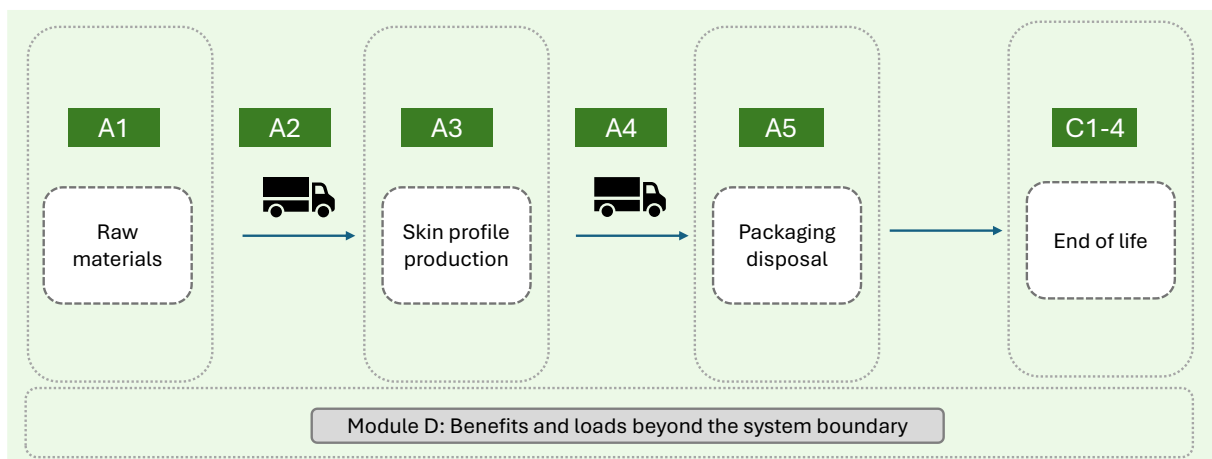
According to PCRs, the following are not considered within the boundaries of the system:

- the production of equipment and buildings with a life span of more than 3 years;
- employee mobility;
- business trips;
- research and development activities.

Module D: load and benefit due to the reusability of the products, the recyclability of the materials (aluminum, steel and glass) and the energy carriers (heat and electricity) that leave the product system.

B1-B7 modules were not included in the study as they were optional according to PCR.

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND*	ND*	ND*	ND*	ND*	ND*	ND*	X	X	X	X	X
Geography	EU, GLO	EU, GLO	EU, IT	EU, GLO	EU, GLO	ND*	ND*	ND*	ND*	ND*	ND*	ND*	EU, GLO	EU, GLO	EU, GLO	EU, GLO	EU, GLO
Specific data used	>80%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) Maximum variation for all declared products - (2) Maximum variation for all manufacturers

X= declared module *ND= not declared module

Data quality

Specific data used for the manufacturing phase are based on the production year 2023. All background data used in the study are from LCI database and are not older than 5 years.

Based on the information provided by the company, raw materials were assumed to be transported with trucks for some raw materials. The real distances were considered for the transport of raw materials to the factory (module A2).

With specific reference to the electricity used in the manufacturing processes, the electricity residual mix is used.

Allocation

The allocation is made in accordance with EN 15804. Energy, resources, incoming packaging, waste and emissions in output are allocated to the production of the SKIN system under study according to the total production in the considered year (2023).

Cut-offs criteria and main assumption

1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

The main assumptions used in the study are summarized below.

For the production of some raw materials, auxiliary products and packaging, an average European production process was considered, while for others a global production process was used.

The modelling of the aluminium profile was performed considering the content of secondary aluminium in agreement with the database guidance.

As far as incoming aluminium profiles for the SKIN system are concerned, an amount 10% higher than the declared value was assumed, as 10% is the amount of scrap estimated by ForMe technicians and destined for recycling or internal recovery. The modelling of the aluminium profile painting process was done by using proxy data.

Based on the information provided by the company, the following transports were considered for incoming raw materials: transport, freight, lorry 16-32 metric ton, EURO5 {RER} | transport, freight, lorry 16-32 metric ton, EURO5 | Cut-off, S (pickup truck).

For energy consumption due to the manufacturing, the total amount of energy consumed in production site in 2023 was related to the total production, with the aim to calculate the kWh consumed per kg of product. The climate impact of the energy source is 0.654 kg CO₂ eq./kWh.

For module A4, the use of a truck for the distribution of the finished product was considered.

For module A5, the treatment and disposal process of the finished product packaging was considered.

For the definition of the end-of-life scenario:

- for phase C1: consumption was not considered as it was carried out manually;
- for phase C2: a distance of 50 km from the waste treatment and disposal plant was assumed;
- for phase C3 and C4: the considered percentages of recycling and landfill of the product in the end of life were the following: 95% for recovery rate of metals and 5% for the amount of metals to landfill.

Module D reports the environmental burden of recycled scraps generated at the end of life minus that used at the production stage. Scrap inputs to the production stage are subtracted from scrap to be recycled at the end of life with the aim to obtain the net scrap output from the product system. This principle is applied for aluminium and steel.

LCA practitioners

This EPD and the supporting LCA study has been performed by:
Forethinking Srl Società Benefit, info@forethinking.com, www.forethinking.com

Content information

Battens 50 aluminium skin system (1 kg with material density of 13 kg/m²)

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Aluminium	0.93	-	-
Steel	0.07	-	-
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Corrugated board box	0.046	4.6%	0.02
Wooden beams	0.032	3.2%	0.01
Plastic film	0.007	<1%	-
TOTAL			-

The recycled content according to this PCR excludes pre-consumer scrap. According to ISO 14021:2016, the average recycled content in the product is about 70%. This percentage takes into account the average recycled content of aluminium found in the database guidance.

The content of substances included in the Candidate List of Substances of Very High Concern (SVHC) in the products does not exceed 0,1 % of their weights.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit (1 kg)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	9,68E+00	6,82E-02	1,49E-02	0,00E+00	4,54E-03	2,63E-01	1,83E-03	-1,36E+00
GWP-biogenic	kg CO ₂ eq.	-9,09E-02	6,95E-05	4,48E-02	0,00E+00	4,62E-06	4,27E-03	1,74E-05	-8,36E-03
GWP-luluc	kg CO ₂ eq.	2,31E-02	2,45E-05	1,83E-06	0,00E+00	1,63E-06	3,34E-04	2,05E-06	-2,93E-02
GWP-total	kg CO ₂ eq.	9,61E+00	6,83E-02	5,97E-02	0,00E+00	4,54E-03	2,68E-01	1,85E-03	-1,40E+00
ODP	kg CFC 11 eq.	8,04E-07	1,63E-08	1,14E-09	0,00E+00	1,08E-09	1,70E-08	2,06E-10	-1,30E-07
AP	mol H ⁺ eq.	5,94E-02	2,85E-04	2,20E-05	0,00E+00	1,89E-05	1,12E-03	1,22E-05	-7,65E-03
EP-freshwater	kg P eq.	3,72E-03	4,25E-06	3,34E-07	0,00E+00	2,83E-07	7,02E-05	5,37E-07	-6,51E-04
EP-marine	kg N eq.	1,03E-02	8,68E-05	1,11E-05	0,00E+00	5,78E-06	2,00E-04	3,04E-06	-1,18E-03
EP-terrestrial	mol N eq.	1,03E-01	9,50E-04	7,70E-05	0,00E+00	6,32E-05	2,18E-03	3,27E-05	-1,08E-02
POCP	kg NMVOC eq.	3,11E-02	3,06E-04	2,43E-05	0,00E+00	2,03E-05	6,22E-04	9,72E-06	-4,01E-03
ADP-minerals&metals*	kg Sb eq.	1,03E-04	1,56E-07	1,13E-08	0,00E+00	1,04E-08	1,09E-05	4,06E-09	2,57E-05
ADP-fossil*	Mj	1,12E+02	1,06E+00	7,52E-02	0,00E+00	7,07E-02	1,98E+00	2,63E-02	-2,01E+01
WDP*	m ³	2,79E+00	3,66E-03	4,86E-04	0,00E+00	2,43E-04	2,20E-02	6,97E-04	-5,54E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit (1 kg)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	9,77E+00	6,83E-02	1,58E-02	0,00E+00	4,54E-03	2,66E-01	1,84E-03	-1,40E+00

Resource use indicators

Results per functional or declared unit (1 kg)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,48E+01	1,35E-02	1,41E+00	0,00E+00	9,00E-04	2,19E-01	1,67E-03	-8,15E+00
PERM	MJ	1,41E+00	0,00E+00	-1,41E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,62E+01	1,35E-02	1,01E-03	0,00E+00	9,00E-04	2,19E-01	1,67E-03	-8,15E+00
PENRE	MJ	1,12E+02	1,06E+00	3,97E-01	0,00E+00	7,07E-02	1,98E+00	2,63E-02	0,00E+00
PENRM	MJ	3,22E-01	0,00E+00	-3,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,12E+02	1,06E+00	7,52E-02	0,00E+00	7,07E-02	1,98E+00	2,63E-02	-2,01E+01
SM	kg	6,90E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	8,95E-02	1,17E-04	1,58E-05	0,00E+00	7,79E-06	1,07E-03	1,88E-05	-5,25E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Results per functional or declared unit (1 kg)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4,24E-03	2,57E-06	1,80E-07	0,00E+00	1,71E-07	5,83E-03	2,65E-08	5,13E-04
Non-hazardous waste disposed	kg	2,21E+00	9,95E-02	8,55E-02	0,00E+00	6,62E-03	1,11E+00	5,25E-02	-6,40E-01
Radioactive waste disposed	kg	3,18E-04	7,20E-06	5,02E-07	0,00E+00	4,79E-07	9,31E-06	1,06E-07	-1,22E-04

Output flow indicators

Results per functional or declared unit (1 kg)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,50E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional environmental information

This EPD and the PCR 2019:14 "Construction products" are available on the website of The International EPD[®] System (www.environdec.com).

The verifier and the Programme Operator do not make any claim nor have any responsibility of the legality of the products included in the present EPD. The LCA study and the present EPD have been issued with the technical scientific support of Forethinking Srl Società Benefit, www.forethinking.com

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