Environmental Product Declaration

Complies with ISO 14025 and EN 15804 for the following product lines:

PVC frames, for the following series:

ALUCLIP
MD68
MD80
4001
4002
4003

Of the organization

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Registration number:	S-P-05531
Date of publication:	2022-02-22
Date of revision:	
Valid until:	2027-02-22

Information on the Programme operator

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

Product category rules (PCR): Construction products (PCR 2019:14), Version 1.11, 2021-02-05.
Revision of the PCR conducted by: *Claudia A. Peña*
Indipendent verification of the declaration and contents, according with ISO 14025:2006: ☐ EPD process certification ☒ EPD verification (external)
Third party verfication: Ugo Pretato (Studio Fieschi & Soci srl) – *Recognized Individual Verifier* Accredited or approved by: The International EPD® System
Procedure for reviewing data during EPD validity involves third party verifier: ☐ Yes ☒ No

The owner of the EPD has sole ownership of and responsibility for the EPD.
EPDs within the same product category but from different certification schemes or not in line with EN 15804:2012+A2:2019 may not be comparable.

Company profile

EPD Owner: **Colma Srl**, via Carlo Alberto dalla Chiesa, 8 80059 Torre del Greco (NA)
Web: www.colmasrl.com
Contatto di riferimento EPD: Pasquale Avagliano
E mail: p.avagliano@colmasrl.it
Mobile: +39. 347 488 9368

Description of the organization: COLMA srl, founded in the 1990s, is a leading company in the field of trade in non-ferrous metals. It is mainly specialised in the trade of aluminium, accessories and complements. COLMA is one of the leading companies in the field of systems for windows and doors, curtain walls and accessories. The main field of application is the design and production of systems for windows, doors, shutters and accessories for the building industry, with its own thermal break profile assembly plants and painting and decoration plants for aluminium surface treatments. Thanks to its 30000 square metres of warehouses with ready-made goods and the presence of all the departments for the production of windows and doors, it can satisfy all requests for profiles and commercial bars.

Name and location of the production site: Via Vicinale Chiesa (zona P.I.P.) 81030 – Teverola (CE)

Product description

Product name
ALUCLIP
MD68
MD80
4001
4002
4003

Product identification: PVC frames, complete with PVC profile, glass, gaskets and hardware

Product description: The products included in this EPD are PVC frames

All products considered are manufactured by assembling different components:

- PVC profiles for windows/doors
- Glass
- Gaskets
- Hardware

This manufacturer's environmental statement (EPD) relates to an average product from a single production plant.

This manufacturer's environmental statement (EPD) relates to an average product from a single production plant, calculated on production volumes for year 2020, of the following profile series:

- ALUCLIP – swing series with external aluminium carter
- MD68 – swing series
- MD80 – swing series
- 4001 – sliding/lift series
- 4002 – sliding series
- 4003 – sliding series

CPC code: 89200 – Moulding, pressing, stamping, extruding and similar plastic manufacturing services

Geographical scope: Italy

Technical performance of the products

ALUCLIP		
	Fixed frame size	74 mm
	Mobile frame size	70 mm
	Standard lateral knot	129 mm
	Standard central knot	181 mm
	Perimeter leakage	8 mm
	Permeability to air	Class 4
	Watertightness	Class E750
	Wind load resistance	Class C2
	Thermal insulation Uw (Ug=1,0 WmqK)	1,19 W/mqK
MD68		
	Fixed frame size	68 mm
	Mobile frame size	68 mm
	Standard lateral knot	116 mm
	Standard central knot	178 mm
	Perimeter leakage	8 mm
	Permeability to air	Class 4
	Watertightness	Class 8A
	Wind load resistance	Class B3
	Thermal insulation Uw (Ug=1,0 WmqK)	1,13 W/mqK
MD80		
	Fixed frame size	80 mm
	Mobile frame size	75 mm
	Standard lateral knot	126 mm
	Standard central knot	178 mm
	Perimeter leakage	8 mm
	Permeability to air	Class 4
	Watertightness	Class 9A
	Wind load resistance	Class C3
	Thermal insulation Uw (Ug=1,0 WmqK)	1,10 W/mqK
4001		
	Fixed frame size	172 mm
	Mobile frame size	76 mm
	Standard lateral knot	125 mm
	Standard central knot	109 mm
	Perimeter leakage	4,6 mm
	Permeability to air	Class 4
	Watertightness	Class 6A
	Wind load resistance	Class C2
	Thermal insulation Uw (Ug=1,0 WmqK)	1,26 W/mqK

4002		
	Fixed frame size	150 mm
	Mobile frame size	68 mm
	Standard lateral knot	157 mm
	Standard central knot	127 mm
	Perimeter leakage	9,5 mm
	Permeability to air	Class 4
	Watertightness	Class 6A
	Wind load resistance	Class C2
	Thermal insulation Uw (Ug=1,0 WmqK)	1,68 W/mqK
4003		
	Fixed frame size	68 mm
	Mobile frame size	45 mm
	Standard lateral knot	130 mm
	Standard central knot	84 mm
	Perimeter leakage	10 mm
	Permeability to air	Class 4
	Watertightness	Class 9A
	Wind load resistance	Class C4
	Thermal insulation Uw (Ug=1,0 WmqK)	1,43 W/mqK

Information about LCA

Declared unit: 1 kg of profile, including packaging

Reference service life: n.a.

Temporal representativeness:
For all production phases (A1-A3), primary data with the following characteristics were used:

- industrial production data (consolidated data on at least 1 or 2 years of production)
- supplied directly by the respective companies responsible for the production processes
- updating less than 5 years (as required by EN 15804:2012+A2:2019)

Materials/process	Type	Source	Year
Extrusion of PVC profiles	Primary process data	ROPLASTO (Besagroup)	2020
Knurling, assembly and packaging of profiles	Primary process data	COLMA Srl	2020

Ecoinvent v.3.7..1 databases were used for the secondary data.

Materials/process	Georaphical scope	Year
Polietielene film-Low Density (packaging)	Europe	2021
PVC film	Global	2021
Primer for PVC film	Global	2021
Steel	Global	2021
Alluminium	Global	2021
Glass production	Global	2021
Gaskets production	Global	2021
Hardware production	Global	2021

Database and LCA software:
SimaPro Analyst ver.9.1.1.1, Ecoinvent v.3.7.1

Stages of the system analysed

- A1: production of plastic granules, transport to extrusion sites, extrusion processes for PVC, production of PVC film and primer for its application, production of glass, gaskets and hardware, generation of the energy consumed in all the different process steps
- A2: transport of raw materials to the assembly site in Teverola (CE).
- A3: assembly of components, and packaging at the Teverola (CE) plant.
- C1: No dismantling is considered for the profile alone, for which reference is made to the complete frame.
- C2: transport of profile components (after dismantling at end-of-life) to waste collection and treatment centres.
- C3: pre-treatment of waste for recovery and disposal.
- C4: landfill of non-recoverable materials.
- D: potential benefits from the reuse, recycling or recovery of materials (PVC content of the profile).

The PVC end-of-life destination and the environmental benefits associated to the recycling of the PVC profile are quantified respectively in modules C3 and D, considering an end-of-life scenario with 32,1% recycling destination (reference to Eurostat data). For all other materials, a disposal process in landfill or incinerator was considered, quantified in module C4 (also in this case reference is made to Eurostat data, Italy case). For the transport of all materials to the treatment plants, 50 km from the disposal centre and for aluminium 150 km from the recycling centre were considered, based on the location of the plants present on the territory.

Description of system boundaries:
cradle-to-gate with modules C1-C4 and D

Excluded life cycle stages: The transport and installation phases of the finished product (A4-A5), the subsequent use phases (B modules) were excluded from the study

Additional information

Energy

The Teverola plant, where the assembly process is carried out, has a photovoltaic (PV) system, the energy produced from which is sold to the distribution network operator. The energy produced by PV partially covers the energy demand of the plant, so the energy consumption has been allocated according to the two different energy sources (grid energy for 80% and PV generation process for the remaining part).

For grid electricity, the Italian Residual Mix provided by the AIB (Association of Issuing Bodies) for 2020 was used.

Italian residual mix for 2020

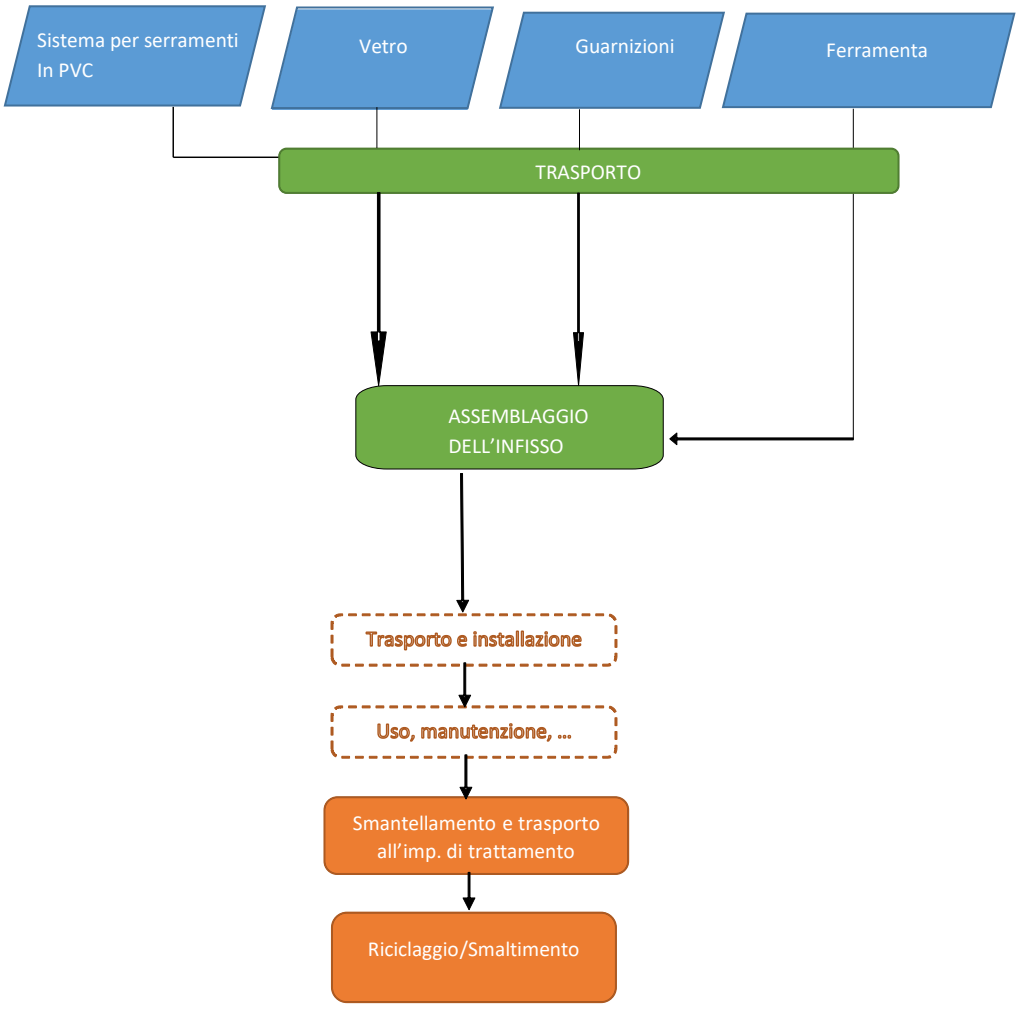
Primary sources	%
Natural gas	54,43%
Coil	17,40%
Heating oil	3,87%
Lignite	0,54%
Other fossil sources	2,11%
Nuclear	11,42%
Idroelectric and sea	1,72%
Wind	1,75%
Solar	5,02%
Biomass	1,73%
Geothermal	0%
Other renewables (biogas)	0%

The impact in terms of CO2 equivalent for the electricity mix used (GWP-GHG indicator) is 0.702 $kgCO_2$ eq./kWh.

Assumptions

Outflows: Waste production is only calculated for the Teverola site.

LCA study realized by Environment Park Spa (Parco Scientifico Tecnologico per l'Ambiente **Via Livorno, 60 10144 – Torino, Italy; www.envipark.com)**


Sistema per serramenti In PVC
Vetro
Guarnizioni
Ferramenta
TRASPORTO
ASSEMBLAGGIO DELL'INFISSO
Trasporto e installazione
Uso, manutenzione, ...
Smantellamento e trasporto all'imp. di trattamento
Riciclaggio/Smaltimento
FASE A1
FASE A2
FASE A3
FASI B1-B7
FASI C1-C2
FASI C3-C4

	Product		Construction process			Use							End of life				Recovery
	Raw materials production	Transport	Production	Trasnsport	Installation	Utse	Maintenance	Repair	Substitution	Refurbishment	Energy use	Water use	Demolition of construction	Transport	Waste treatment	Disposal	Reuse-Recovery-Recycling potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Declared modules	X	X	X	N.D.	N.D.	N.D	N.D	N.D	N.D	N.D	N.D.	N.D.	X	X	X	X	X
Scope	GLO	GLO	IT	N.D.	N.D.	N.D	N.D	N.D	N.D	N.D	N.D.	N.D.	IT	IT	IT	IT	GLO
Speciic data used	> 90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

Content declaration

The functional unit considered (1 kg of product including packaging) has the following composition

Materials	**Weight [kg]**	**Post consumer material %**	**Renewable material %**
PVC profile*	0,46	37%	0
Glass	0,47	0	0
Gaskets	0,01	0	0
Hardware	0,04	0	0
Materials	**Weight [kg]**	**weight % (respect to product)**	
Imballaggio	0,02	2,0%	

**For the composition of aluminium profile please go to EPD S-P-05528*

Specific weight of the product per surface unit: 42,43 kg/m^2

The products used do not contain any substances on the European Chemical Agency's SVHC candidate list.

The amount of recycled material in the aluminium profile (as shown in the table), makes the product compliant with the parameters required by the minimum environmental criteria for building construction and renovation work - "C.A.M. Edilizia - Entrusting of design and works services for the new construction, renovation and maintenance of public buildings" D.M. 11/10/2017

Environmental performance

Environmental impacts

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Global warming (GWP fossile)	kg CO2 eq	**1,92**	0,01	0,07	2,00	0,31	0,02	0	0,24	0
Global warming (GWP bio-genico)	kg CO2 eq	**0,02**	1,93E-05	-3,44E-04	0,02	4,59 E-03	6,95E-05	0	6,30E-04	0
Global warming (GWP-luluc)	kg CO2 eq	**1,18 E-03**	2,84E-06	3,77E-05	1,22E-03	2,56 E-05	1,07E-05	0	2,22E-05	0
Global warming (GWP-totale)	kg CO2 eq	**1,95**	0,01	0,07	2,02	0,32	0,02	0	0,24	0
Ozone layer depletion (ODP)	kg CFC-11 eq	**3,55 E-07**	1,51E-09	4,30E-09	3,60E-07	4,40 E-08	4,25E-09	0	9,19E-09	0
AP	Mol H^+ eq	**0,01**	2,67E-05	2,84E-04	0,01	1,19 E-03	7,55E-05	0	2,08E-04	0
EP fresh water	kg $PO4^{3-}$ eq	**1,86 E-03**	1,64E-06	5,49E-05	1,92E-03	0,32	5,91E-06	0	3,26E-05	0
EP fresh water	kg P eq	**6,06 E-04**	5,35E-07	1,79E-05	6,25E-04	5,76 E-05	1,93E-06	0	1,06E-05	0
EP aquatic	Kg N eq	**2,15 E-03**	7,93E-06	5,56E-05	2,21E-03	2,10 E-04	2,13E-05	0	1,35E-04	0
EP land	Mol N eq	**0,02**	8,64E-05	5,71E-04	0,02	2,22 E-03	2,32E-04	0	6,17E-04	0
POFP	Kg NMVOC eq	**4,03 E-03**	2,65E-05	2,36E-04	4,29E-03	6,40 E-04	7,21E-05	0	1,78E-04	0
ADP mineral/metal	kg Sb eq	**1,77 E-05**	3,23E-08	2,86E-07	1,80E-05	2,52 E-07	1,29E-07	0	2,15E-07	0
ADP (fossil fuels)	MJ	**30,47**	0,10	1,69	32,26	4,82	0,30	0	0,49	0
WDP	M^3	**0,84**	3,08E-04	0,04	0,88	0,03	1,04E-03	0	0,32	0

Other environmental indicators

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	**1,89**	0,01	0,07	1,97	0,31	0,02	0	0,24	0

Consumption of resources

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Renewable primary energy (energy carrier)	MJ	**1,69**	1,64E-03	0,07	1,77	0,25	0,01	0	0,03	0
Renewable primary energy (raw materials)	MJ	**0**	0	0	0	0	0	0	0	0
Renewable primary energy TOTAL	MJ	**1,69**	1,64E-03	0,07	1,77	0,25	0,01	0	0,03	0

Non-renewable primary energy (energy carrier)	MJ	**28,54**	0,10	1,69	30,33	4,82	0,30	0	0,49	0
Non-renewable primary energy (raw materials)	MJ	**0,43**	0,00	0,75	1,18	0	0	0	0	0
Non-renewable primary energy TOTAL	MJ	**28,96**	0,10	2,44	31,51	4,82	0,30	0	0,49	0
SM	kg	**0,14**	0	0	0,14	0	0	0	0	0
RSF	MJ	**0**	0	0	0	0	0	0	0	0
NRSF	MJ	**0**	0	0	0	0	0	0	0	0
FW	m3	**2,67E-03**	0	0	2,67E-03	0	0	0	0	0

Waste production

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	Kg	**2,40E-03**	0	0	2,40E-03	0	0	0	0	0
Non-Hazardous waste disposed	Kg	**27,20**	0	0	27,20	0	0	0	0	0
Radioactive waste disposed	kg	**9,30E-05**	6,92E-07	2,26E-06	9,60E-05	0	1,22E-06	0	2,62E-06	0

Output flows

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Components for reuse	kg	**0,02**	0	0	0	0	0	0	0	0
Recycling material	kg	**0**	0	0	0	0	0	**0,10**	0	0
Materials for energy recovery	kg	**0**	0	0	0	0	0	0	**0,07**	0
Energy exported, electricity	MJ	**0**	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	**0**	0	0	0	0	0	0	0	0

Other environmental information

Release of hazardous substances in the use phase

The product does not release any hazardous substances during use.

References

- General Programme Instructions of the International EPD® System. Version 3.0.
- Construction products and construction services (PCR 2019:14), Version 1.11, 2021-02-05.
- ISO 14040:2006 e ISO 14044:2006, Gestione ambientale - Valutazione del ciclo di vita - Principi e quadro di riferimento, requisiti e linee guida
- EN 15804:2012+A2:2019, Sostenibilità delle opere da costruzione - Dichiarazioni ambientali di prodotto - Regole fondamentali per la categoria di prodotti da costruzione
- "Studio LCA di sistemi per serramenti in alluminio, PVC e legno-alluminio per l'azienda Colma srl" Environment Park, rev 10/12/2021
- Position paper "Recycled content vs. End of Life recycling rate", rev. 1, 26.5.2016

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