Environmental Product Declaration

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

Aluminium frames, for the following series:

MAR73HTI
MA72HP
MA77HTI
MA77HTI
MABLINDTT
MAS106TT EVO
MAS129TT
MAS150TT
MAS170TT
MAXVISION

Of the organization

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Registration number:	S-P-05529
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
MAR73HTI
MA72HP
MA77HTI
MABLINDTT
MAS106TT EVO
MAS129TT
MAS150TT
MAS170TT
MAXVISION

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

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

All products considered are manufactured by assembling different components:

- aluminium 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:

- MAR73HTI – swing series
- MA72HP – swing series
- MA77HTI – swing series
- MABLINDTT – swing series for armoured doors and windows
- MAS106TT EVO – sliding/lift series
- MAS129TT – lift series
- MAS150TT – lift series
- MAS170TT – lift series
- MAXVISION – sliding series

CPC code: 42120 – Doors, windows and their frames and thresholds for doors, of iron, steel or aluminium

Geographical scope: Italy

Technical performance of the products

MAR73HTI		
	Fixed frame size	73,5 mm
	Mobile frame size	77 mm
	Standard lateral knot	92 mm
	Standard central knot	148 mm
	Perimeter leakage	5 mm
	Permeability to air	Class 4
	Watertightness	Class E1350
	Wind load resistance	Class C5
	Thermal insulation Uw (Ug=1,0 WmqK)	1,20 W/mqK
MA72HP		
	Fixed frame size	72 mm
	Mobile frame size	80 mm
	Standard lateral knot	94/73,5 mm
	Standard central knot	144/95 mm
	Perimeter leakage	4,5 mm
	Permeability to air	Class 4
	Watertightness	Class E900
	Wind load resistance	Class C5
	Thermal insulation Uw (Ug=1,0 WmqK)	1,25 W/mqK
MA77HTI		
	Fixed frame size	77 mm
	Mobile frame size	85 mm
	Standard lateral knot	94/73,5 mm
	Standard central knot	144/95 mm
	Perimeter leakage	4,5 mm
	Permeability to air	Class 4
	Watertightness	Class E1350
	Wind load resistance	Class C5
	Thermal insulation Uw (Ug=1,0 WmqK)	1,15 W/mqK
MABLINDTT		
	Fixed frame size	92 mm
	Mobile frame size	100 mm
	Standard lateral knot	134 mm
	Standard central knot	183 mm
	Perimeter leakage	5 mm
	Permeability to air	Class 4
	Watertightness	Class E900
	Wind load resistance	Class C5
	Thermal insulation Uw (Ug=1,0 WmqK)	1,34 W/mqK

MAS106TT EVO		
	Fixed frame size	106/90 mm
	Mobile frame size	45 mm
	Standard lateral knot	116 mm
	Standard central knot	90/40 mm
	Perimeter leakage	8,5 mm
	Permeability to air	Class 4
	Watertightness	Class E1200
	Wind load resistance	Class A3
	Thermal insulation Uw (Ug=1,0 WmqK)	1,81 W/mqK
MAS129TT		
	Fixed frame size	129 mm
	Mobile frame size	58 mm
	Standard lateral knot	133 mm
	Standard central knot	116,5 mm
	Perimeter leakage	8,5 mm
	Permeability to air	Class 4
	Watertightness	Class 9A
	Wind load resistance	Class B5
	Thermal insulation Uw (Ug=1,0 WmqK)	2,06 W/mqK
MAS150TT		
	Fixed frame size	150 mm
	Mobile frame size	59,8 mm
	Standard lateral knot	133 mm
	Standard central knot	116,5 mm
	Perimeter leakage	8,5 mm
	Permeability to air	Class 4
	Watertightness	Class 9A
	Wind load resistance	Class B5
	Thermal insulation Uw (Ug=1,0 WmqK)	2,06 W/mqK
MAS170TT		
	Fixed frame size	170 mm
	Mobile frame size	72 mm
	Standard lateral knot	140 mm
	Standard central knot	115,5/56 mm
	Perimeter leakage	8,5 mm
	Permeability to air	Class 4
	Watertightness	Class E1200
	Wind load resistance	Class C5
	Thermal insulation Uw (Ug=1,0 WmqK)	1,75 W/mqK

MAXVISION		
	Fixed frame size	161,8 mm
	Mobile frame size	58 mm
	Standard lateral knot	72 mm
	Standard central knot	27 mm
	Perimeter leakage	8,5 mm
	Permeability to air	Class 4
	Watertightness	Class 8A
	Wind load resistance	Class C3
	Thermal insulation Uw (Ug=1,0 WmqK)	1,26 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
Al profile extrusion	Primary process data	ALEX Spa	2020
Al profile oxidation	Primary process data	Oxall	2020
PA 66 GF25 bars extrusion	Primary process data	TECHNOFORM BAUTEC	2020
Knurling, assembly and packaging of profiles	Primary process data	COLMA Srl	2020
Surface finish with powder coating and sublimation	Primary process data	COLMA Srl	2020

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

Materials/process	Georaphical scope	Year
Primary aluminium	Europe	2021
Post-consumer recycled aluminium	Europe	2021
Pre-consumer recycled aluminium	Europe	2021
Polietielene film-Low Density (packaging)	Europe	2021
Glass fibre for Poliammide	Global	2021
Steel bars extrusion	Global	2021
Paint production	Global	2021
Sublimation film production	Global	2021
Glass production	Europe	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

Life cycle stages analyzed

- A1: primary and secondary aluminium production, production of plastic granules, transport to extrusion sites, extrusion processes for aluminium profiles and plastic bars, powder coating production, sublimation film production, knurling and assembling of components, surfaca finishing of profiles, production of glass, gaskets, 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: knurling and assembly of components, product surface finishing (painting/sublimation) 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 (aluminium of the profile).

The aluminium end-of-life destination and the environmental benefits associated to the recycling of the aluminium profile are quantified respectively in modules C3 and D, considering an end-of-life scenario with 90% recycling destination (reference to Eurostat data for material recovery rates and to EAA for the elaboration of the aluminium recycling process). 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

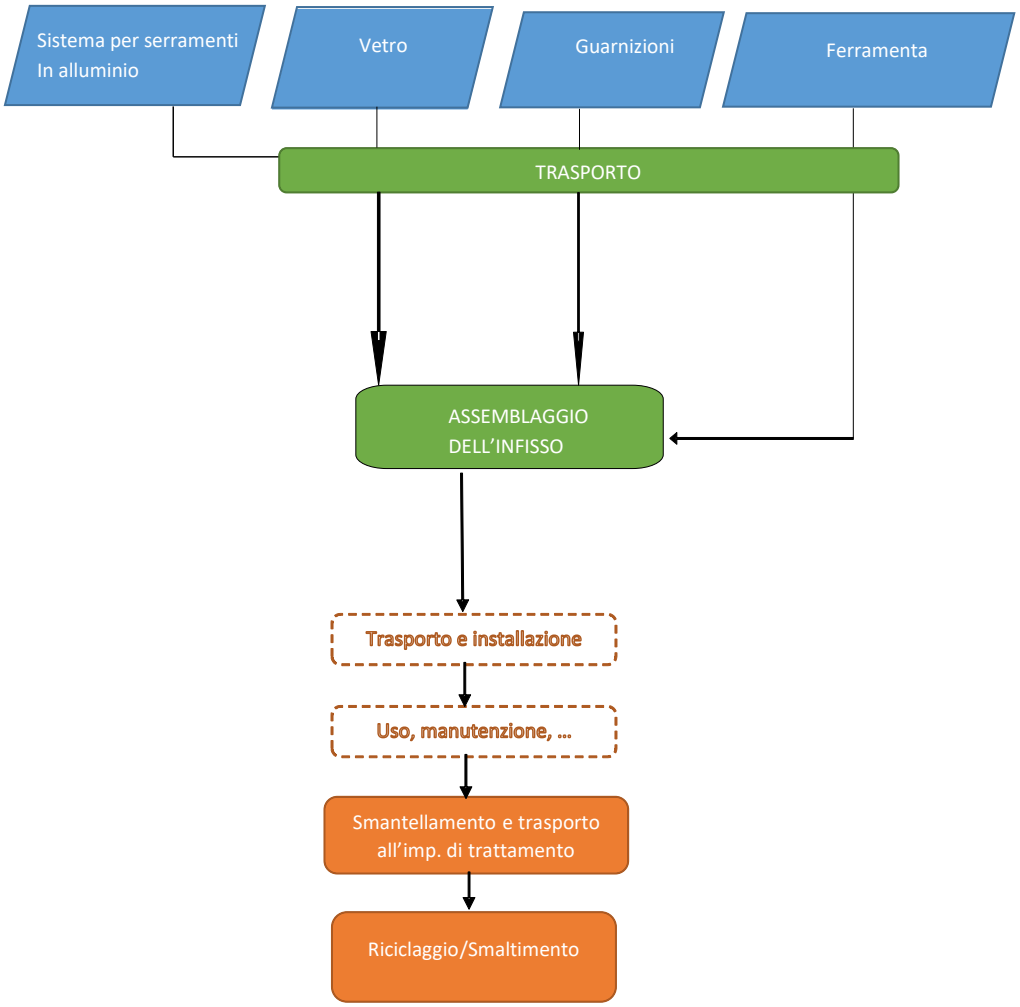
Primary sources	%
Natural gas	54,43%
Coil	17,40%
Heating oil	3,87%
Lignite	0,54%
Other fossil sources	2,11%
Nuclear	11,42%
Idroelectric and sea	1,72%
Wind	1,75%
Solar	5,02%
Biomass	1,73%
Geothermal	0%
Other renewables (biogas)	0%

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 alluminio
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 %**
Aluminium profile*	0,31	17	0
Glass	0,60	0	0
Gaskets	0,04	0	0
Hardware	0,03	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-05526*

Specific weight of the product per surface unit: 40,18 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	**3,13**	0,01	0,08	3,22	0,31	0,02	0	6,26E-03	-1,31
Global warming (GWP bio-genico)	kg CO2 eq	**0,03**	1,77E-05	-4,26E-04	0,03	4,59 E-03	7,76E-05	0	5,90E-05	-4,07E-03
Global warming (GWP-luluc)	kg CO2 eq	**2,98 E-02**	2,61E-06	4,22E-05	0,03	2,56 E-05	1,20E-05	0	2,11E-06	-2,60E-02
Global warming (GWP-totale)	kg CO2 eq	**3,19**	0,01	0,08	3,28	0,32	0,02	0	6,32E-03	-1,34
Ozone layer depletion (ODP)	kg CFC-11 eq	**2,82 E-07**	1,39E-09	4,46E-09	2,88E-07	4,40 E-08	4,74E-09	0	1,89E-09	-9,44E-08
AP	Mol H^+ eq	**0,02**	2,45E-05	3,10E-04	0,02	1,19 E-03	8,43E-05	0	4,58E-05	-0,01
EP fresh water	kg $PO4^{3-}$ eq	**3,00 E-03**	1,51E-06	6,02E-05	3,06E-03	0,32	6,60E-06	0	2,64E-06	-1,61E-03
EP fresh water	kg P eq	**9,77 E-04**	4,92E-07	1,96E-05	9,97E-04	5,76 E-05	2,15E-06	0	8,60E-07	-5,25E-04
EP aquatic	Kg N eq	**3,33 E-03**	7,30E-06	6,08E-05	3,40E-03	2,10 E-04	2,38E-05	0	1,59E-05	-1,36E-03
EP land	Mol N eq	**3,57 E-02**	7,95E-05	6,24E-04	0,04	2,22 E-03	2,59E-04	0	1,73E-04	-0,01
POFP	Kg NMVOC eq	**0,01**	2,44E-05	2,60E-04	0,01	6,40 E-04	8,05E-05	0	5,14E-05	-4,63E-03
ADP mineral/metal	kg Sb eq	**3,59 E-05**	2,98E-08	3,20E-07	3,62E-05	2,52 E-07	1,44E-07	0	1,78E-08	-2,15E-05
ADP (fossil fuels)	MJ	**39,70**	0,09	1,86	41,66	4,82	0,33	0	0,14	-12,63
WDP	M^3	**1,13**	2,83E-04	0,04	1,17	0,03	1,16E-03	0	-7,41E-04	-0,38

Other environmental indicators

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	**3,08**	0,01	0,07	3,16	0,31	0,03	0	0,01	-1,29

Consumption of resources

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Renewable primary energy (energy carrier)	MJ	**11,73**	1,51E-03	0,08	11,81	0,25	0,01	0	2,91E-03	-9,23
Renewable primary energy (raw materials)	MJ	**0**	0	0	0	0	0	0	0	0
Renewable primary energy TOTAL	MJ	**11,73**	1,51E-03	0,08	11,81	0,25	0,01	0	2,91E-03	-9,23

Non-renewable primary energy (energy carrier)	MJ	**37,77**	0,09	1,05	38,91	4,82	0,33	0	0,14	-12,63
Non-renewable primary energy (raw materials)	MJ	**1,94**	0	0,81	2,75	0	0	0	0	0
Non-renewable primary energy TOTAL	MJ	**39,71**	0,09	1,86	41,66	4,82	0,33	0	0,14	-12,63
SM	kg	**0,15**	0	0	0,15	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	**8,61E-03**	0	0	8,61E-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	**1,20E-02**	0	0	1,20E-02	0	0	0	0	0
Non-Hazardous waste disposed	Kg	**32,40**	0	0	32,40	0	0	0	0	0
Radioactive waste disposed	kg	**1,48E-04**	6,37E-07	2,43E-06	1,51E-04	0	2,21E-06	0	8,55E-07	-5,73E-05

Output flows

IMPACT	UNIT	A1	A2	A3	Tot. A1-A3	C1	C2	C3	C4	D
Components for reuse	kg	0	0	0	0	-	0	0	0	0
Recycling material	kg	0	0	0	0	-	0	0,23	0	0
Materials for energy recovery	kg	0	0	0	0	-	0	0	0	0
Energy exported, electricity	MJ	0	0	0	0	-	0	0	0	0
Exported energy, thermal	MJ	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. The coating is carried out in accordance with the technical specifications and guidelines of the QUALICOAT[1] quality label for coated aluminium in architecture, which does not use substances that are harmful to humans or the environment.

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.
- 42120 – Doors, windows and their frames and thresholds for doors, of iron, steel or aluminium
- 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
- "Environmental Profile Report for the European Aluminium Industry – Life Cycle inventory data for aluminium production and transformation processes in Europe", EAA, Febbraio 2018
- Position paper "Recycled content vs. End of Life recycling rate", rev. 1, 26.5.2016

[1] http://www.qualital.eu/QUALICOAT.php

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