Environmental Product Declaration

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

Mullion and Frameless Partition Wall Systems

TRIMline interiors

EPD INTERNATIONAL EPD SYSTEM

TÜRKİYE EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

Programme	: The International Epd® System
Programme operator	: EPD International AB
Licensee	: EPD Türkiye
Type of EPD	: EPD of multiple products, based on a representative product
EPD registration number	: EPD-IES-0005821:001
Version Date	: 2026-01-07
Validity Date	: 2031-01-07

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see ww.environdec.com

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): ***< PCR 2019:14 Construction Products, Version 2.0.1 and UN CPC code (4212)>***
PCR review was conducted by: ***The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via e-mail (support@environdec.com)***
c-PCR, if applicable: ***<name, registration number, version>. <In case of an adopted c-PCR, the information shall state the name and version number of the original c-PCR document as well as the name and version number given to the c-PCR after adoption in International EPD System>.***

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: < *Mamoru Yanagisawa EPA Corporation* >    Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Tirim İnşaat Mimarlık Taah. San. ve Tic. A.Ş.
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Address and contact information of the LCA practitioner commissioned by the EPD owner, if applicable: ANKA SÜRDÜRÜLEBİLİRLİK BİLİŞİM EĞİTİM DANIŞMANLIĞI HİZMETLERİ LİMİTED ŞİRKETİ-Burcu Şimşek-Dilan Arslan

Description of the organisation:
TRIMline Interiors is a leading Turkish manufacturer specializing in the design, engineering, and production of high-performance aluminium and glass façade systems, including Mullion and Frameless Partition Wall Systems, sliding doors, and architectural glazing solutions.
The company's state-of-the-art facility in Balıkesir, Türkiye integrates precision aluminium processing, powder coating, glass bonded, and assembly operations under a unified production system.
With its focus on innovation, quality, and environmental responsibility, TRIMline provides façade systems for commercial, residential, and public buildings across Türkiye, the EU, and the Middle East.
All production is conducted under an integrated management approach emphasizing energy efficiency, occupational safety, and life-cycle–based environmental performance.

Product-related or management system-related certifications: TRIMline Interiors operates under a certified Integrated Management System (IMS) covering:

- ISO 9001:2015 – Quality Management System

The company's production complies with relevant European façade standards including:

- EN 13830:2015 – Curtain walling – Product standard
- EN 1096-1:2012 – Glass in building – Coated glass
- EN 17213:2020 – Recycled glass cullet for the production of glass

PRODUCT INFORMATION

Product name: Mullion and Frameless Partition Wall System

Product identification: Aluminium–glass partition and curtain wall systems composed of powder-coated aluminium profiles, flat glass panels (single or double glazing), and accessory components including steel fasteners, polymer elements, EPDM gaskets, sealing foams, and packaging materials.

The systems are designed and manufactured in accordance with EN 13830:2015 (Curtain walling – Product standard). All aluminium profiles, glass units, and system components are processed, assembled, and packaged at TRIMline Interiors' Balıkesir production facility under certified management systems (ISO 9001).

This Environmental Product Declaration (EPD) covers a family of mullion-based and frameless aluminium–glass systems, represented by the SNAP STANDARD DOUBLE GLAZED configuration, selected as the representative product in accordance with PCR 2019:14 v2.0.1.

Intended application:
Interior aluminium–glass curtain wall and partition systems for commercial, office, institutional, and mixed-use buildings, designed to provide spatial separation, transparency, acoustic performance, and architectural integration.

The systems are intended for non-load-bearing interior applications, where no operational energy or water use occurs during the use phase.

Visual representation (e.g., an image) of the product


UN CPC code: 4212

Product description:
The Mullion and Frameless Partition Wall Systems are aluminium–glass interior partition solutions designed for architectural applications requiring transparency, modularity, and acoustic performance. The systems consist of powder-coated aluminium profiles, flat glass panels (single or double glazing), and accessory components, and are manufactured and assembled at TRIMline Interiors' Balıkesir facility under certified management systems (ISO 9001).

The systems comply with EN 13830:2015 (Curtain walling – Product standard) and are intended for non-load-bearing interior applications in commercial and institutional buildings.

This EPD has been developed in accordance with PCR 2019:14 – Construction Products (version 2.0.1), applying a cradle-to-gate with end-of-life system boundary (Modules A1–A3, C1–C4, and D).

Brief manufacturing description:
The systems are manufactured using extruded aluminium profiles that are precision-cut, machined, and powder-coated, followed by assembly with flat glass panels (single or double glazing) and accessory components. Manufacturing steps include aluminium profile processing, surface coating, glass preparation and fitting, assembly, quality control, and packaging.

All production takes place at TRIMline Interiors' Balıkesir facility using site-specific electricity (Turkish grid supplemented by rooftop photovoltaic systems). Aluminium and glass production scrap is segregated and routed to recycling. Packaging materials (cardboard, wooden pallets, LDPE film) are included as integral parts of the product system.

Name and location of production site(s): Tirim İnşaat Mimarlık Taah. San. ve Tic. A.Ş.-Gaziosmanpaşa OSB Mah. 6. Cad No 4 Altıeylül / Balıkesir

Covered products: This EPD covers a family of Mullion and Frameless Partition Wall Systems manufactured by TRIMline Interiors at the Balıkesir facility, Türkiye. The declaration is based on a representative product approach, with SNAP Standard Double Glazing selected as the representative configuration for the 2024 reference year, in accordance with PCR 2019:14 v2.0.1. Detailed information on the covered product models, production volumes, and indicative GWP-fossil (A1–A3) results is provided in Annex 1.

CONTENT DECLARATION

The mass (weight) of one declared unit: 1 m² of assembled Mullion and Frameless Partition Wall System, represented by the SNAP Standard Double Glazing configuration, with a declared mass of 30.21 kg/m², based on 2024 production data. Depending on the system configuration (single or double glazing, frameless or mullion-based design), the total product mass may vary within the declared product family.

Information on the environmental and hazardous/toxic properties of substances contained in the product:
SVHC statement: No substances listed on the current ECHA Candidate List of Substances of Very High Concern (SVHC) are present above 0.1% w/w in the product or its packaging.

All materials used (aluminium profiles, flat glass, powder coating, metal and polymer accessories, elastomeric sealing components, and packaging materials) comply with applicable REACH and RoHS requirements regarding hazardous substances.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Aluminium Profiles	2.8605	0	0	0
Flat Glass	26.8270	0	0	0
Powder Coating (aluminium)	0.149	0	0	0
Metal Accessories (Steel)	0.312	0	0	0
Plastic Accessories (PP)	0.0046	0	0	0
Rubber Accessories	0.027	0	0	0
Foam Accessories	0.027	0	0	0
TOTAL	**30.21**	**0**	**0**	**0**

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Wooden pallet	2.095	6.93 %	0.9218
Cardboard corner protector (35×35×3 mm)	0.508	1.68 %	0.2286
Stretch film (LDPE)	0.013	0.04 %	0.0000
Sum	**2.616**	**8.65 %**	**1.1504**

Note: 1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

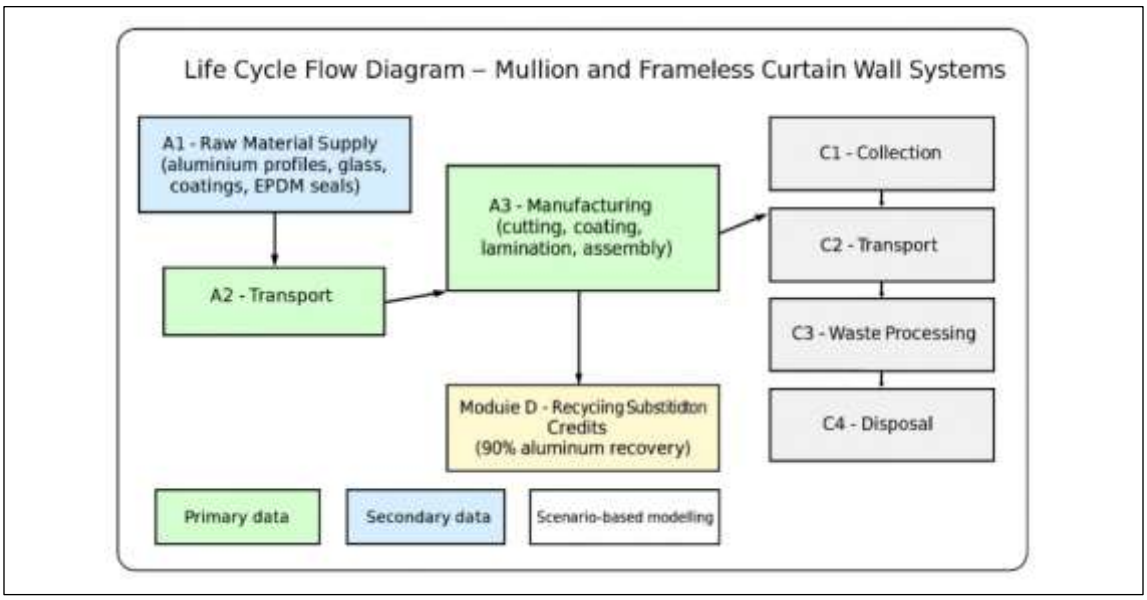
Biogenic carbon accounting (packaging): Based on the packaging inventory per 1 m² declared unit, the renewable packaging materials contain 1.1504 kg biogenic CO_2 (wooden pallet: 0.9218 kg CO_2, cardboard corner protector: 0.2286 kg CO_2, LDPE film: 0.0000 kg CO_2). As Module A5 is not declared, biogenic carbon balancing is performed within Module A3 in accordance with PCR 2019:14 v2.0.1, Annex 2, by reporting a –1.1504 kg CO_2 biogenic uptake and a corresponding +1.1504 kg CO_2 balancing emission in A3. Consequently, GWP-biogenic for Modules A1–A3 equals 0 kg CO_2 eq. as presented in the EPD.

LCA INFORMATION

Declared unit: 1 m² of assembled **Snap Standard Double Glazed Partition Wall System** at the factory gate
Time representativeness: 1 January 2024 – 31 December 2024
Geographical scope: Global
Database(s) and LCA software used: Ecoinvent v3.11

EPD/LCA Tool used: SimaPro 10.2 Craft
Description of system boundaries: Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules).

Process flow diagram:



More information:

Allocation was not applied, as all Mullion and Frameless Partition Wall Systems are produced on the same manufacturing lines with no co-products or multi-output processes.

All primary manufacturing data (cutting, machining, powder coating, glass preparation, and assembly) are directly attributable to the declared unit (1 m² of partition wall system).

Aluminium and glass scrap generated during manufacturing is segregated and routed to recycling; no economic or mass-based allocation is therefore required.

No recycled aluminium input is assumed in Module A1. Upstream datasets represent market-average virgin aluminium profiles, flat glass, powder coating materials, and metal and polymer accessories.

Infrastructure and capital goods (e.g. machinery, production lines, and buildings) are excluded in accordance with EN 15804+A2 and PCR 2019:14 v2.0.1, as their contribution per declared unit is below the 5% materiality threshold. Embedded infrastructure burdens within background datasets are retained.

Electricity consumed in Module A3 is supplied by a combination of purchased grid electricity and on-site photovoltaic (PV) electricity generated and consumed at the TRIMline Balıkesir facility. For the declared unit of 1 m², purchased grid electricity consumption is 2.66 kWh and on-site photovoltaic electricity consumption is 3.35 kWh. Purchased grid electricity is modelled using the Ecoinvent v3.11 dataset “Electricity, medium voltage {TR} | market for electricity, medium voltage | Cut-off, S”, while the on-site photovoltaic electricity is modelled using the Ecoinvent v3.11 dataset “Electricity, low voltage {TR} | electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, S”. The photovoltaic electricity is treated as behind-the-meter supply and therefore reduces the corresponding purchased grid electricity demand in Module A3. No contractual instrument or residual electricity mix was applied in the LCA model; the modelling reflects the physical electricity flows consumed on site during the 2024 reporting period. Based on the GWP-GHG indicator, the climate impact of purchased grid electricity is 0.573 kg CO_2 eq./kWh and the climate impact of on-site photovoltaic electricity is 0.072 kg CO_2 eq./kWh. The weighted average climate impact of the specific electricity mix consumed in Module A3 is 0.294 kg CO_2 eq./kWh.

Primary-Secondary Data

A1 – Upstream materials (aluminium profiles, glass, coatings, accessories):

Approximately 35 % primary data, representing product-specific information on material weights and supplier origins provided by TRIMline.

As no supplier-specific LCA or EPD datasets were available, upstream processes (aluminium extrusion, flat glass production, powder coating materials, and accessories) were modelled using secondary datasets from Ecoinvent v3.11 (Cut-off, U).

These datasets represent market-average European or RoW conditions. The resulting uncertainty for Module A1 is considered moderate and consistent with façade-sector practice.

A2 – Transport and packaging materials:

Approximately 60 % primary data, based on actual supplier distances and transport modes collected from TRIMline logistics records.

Environmental burdens were modelled using secondary Ecoinvent v3.11 datasets for EURO 5 road freight, wooden pallets, cardboard corner protectors, and LDPE stretch film.

Transport distances and modes are primary data, while emission factors are secondary.

A3 – Manufacturing (cutting, machining, coating, glass preparation, assembly):

Based entirely on site-specific primary data (100 %) collected for the 2024 reporting period at TRIMline’s Balıkesir facility.

Data include electricity consumption, process scrap rates, coating operations, assembly activities, packaging quantities, and process descriptions.

No process water is used. Aluminium and glass scrap generated during manufacturing is segregated and routed to recycling, in line with EN 15804+A2 and PCR 2019:14 v2.0.1.

Overall share of primary data:
The production-weighted average across Modules A1–A3 is approximately 14 %, satisfying the representativeness requirements of PCR 2019:14 v2.0.1.
This balance between site-specific data and high-quality secondary datasets ensures a complete and methodologically consistent inventory for the declared product system.

End-of-life scenario
At end of life, 100 % of the Mullion and Frameless Partition Wall Systems is assumed to be collected during building renovation or demolition.
The applied end-of-life scenario reflects typical Turkish construction and demolition waste (CDW) management practices:

- **C1 – Deconstruction / Collection:** Manual dismantling of aluminium–glass systems; energy demand is negligible.
- **C2 – Transport:** 80 km by EURO 5 heavy-duty diesel truck to sorting and treatment facilities (PCR default).
- **C3 – Waste processing:** Approximately 90 % of the total mass is sent to sorting, with high recovery of aluminium and steel and partial recovery of glass cullet.
- **C4 – Final disposal:** Residual inert fractions (mainly non-recyclable glass and mixed residues) are landfilled.

No incineration, energy recovery, or biogenic carbon flows occur in the end-of-life stage.

Module D – Beyond the system boundary
Module D reports potential environmental benefits from material recycling, calculated using the substitution approach in accordance with EN 15804+A2 and PCR 2019:14 v2.0.1.
Credits are assigned for recovered secondary materials replacing virgin production, including:

- Secondary aluminium substituting primary aluminium,
- Recycled steel substituting primary low-alloy steel,
- Recovered glass cullet substituting primary construction glass.

This represents a conservative recycling scenario, aligned with current Turkish CDW practices.
Alternative end-of-life scenarios (100 % recycling and 100 % landfill) are provided for information only in Annex 2, in accordance with PCR 2019:14 v2.0.1 §4.3.9 and Annex D.

Annex 2. Alternative End-of-Life Scenarios (Informative)

Scenario	C1	C2	C3	C4	Module D	Description / Remarks
Declared (Mix)	As modelled in main results	As modelled	Approx. 90 % of total mass sent to sorting, with recovery of aluminium and steel and partial recovery of glass (≈ 36 % effective recycling)	≈ 64 % landfill, mainly non-recyclable glass and mixed residues	As reported in main tables	Default declared end-of-life scenario in this EPD, reflecting realistic industrial practice and Turkish construction and demolition waste (CDW) management conditions for aluminium–glass curtain wall systems.
100 % Recycling	Same as declared	Same as declared	100 % recycling of all recoverable materials (aluminium, steel, glass)	0 % landfill	Increased substitution credits due to full material recovery	Idealised scenario assuming complete recovery of all materials without losses; illustrates the maximum potential benefit reported in Module D.
100 % Landfill	Same as declared	Same as declared	0 % recycling	100 % landfill of all materials	No substitution credit (Module D = 0)	Conservative sensitivity scenario assuming no recycling or recovery; included for transparency and comparison purposes.

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

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage					Beyond product life cycle
	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	ROW	ROW	TR	-	-	-	-	-	-	-	-	-	ROW	ROW	ROW	ROW		ROW
Share of primary data	≈14%					-	-	-	-	-	-	-	-	-	-	-		-
Variation – products	Negligible (<10%) – production-weighted average used					-	-	-	-	-	-	-	-	-	-	-		-
Variation – sites	Single site – no variation					-	-	-	-	-	-	-	-	-	-	-		-

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing (A3)	Collected data & Database	TRIMline Balıkesir / Ecoinvent v3.11	2024	Primary data	13 %
Transport of raw materials and packaging (A2)	Collected data & Database	TRIMline logistics / Ecoinvent v3.11	2024	Primary data	< 1 %
Production of aluminium profiles, glass, coatings, and accessories (A1)	Database	Ecoinvent v3.11	2024	Secondary data	0 %
Production of packaging materials (wood, cardboard, LDPE) (A3)	Database	Ecoinvent v3.11	2024	Secondary data	0 %
Manufacturing of product (direct on-site operations, scrap generation) (A3)	Collected data	TRIMline Balıkesir	2024	Primary data	< 1 %
Total share of primary data, of GWP-GHG results for A1-A3					≈14%

Note: No supplier-specific LCA or EPD data were available for upstream materials. Therefore, all environmental impacts for Module A1 are based on secondary datasets. Primary data for A1 are limited to product-specific material quantities and do not contribute to the reported share of primary data in GWP-GHG results.

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-Total	kg CO_2 eq.	1.39E+01	0.00E+00	2.61E-01	5.41E-01	1.89E-02	-3.80E+01
GWP-Fossil	kg CO_2 eq.	1.30E+01	0.00E+00	2.61E-01	5.39E-01	1.89E-02	-3.79E+01
GWP-Biogenic	kg CO_2 eq.	8.95E-01	0.00E+00	8.92E-06	8.84E-04	2.60E-06	2.54E-02
GWP-Luluc	kg CO_2 eq.	3.08E-02	0.00E+00	1.04E-04	1.32E-03	9.73E-06	-8.73E-02
ODP	kg CFC 11 eq.	1.59E-07	0.00E+00	3.84E-09	1.09E-08	5.46E-10	-2.51E-07
AP	mol H^+ eq.	7.89E-02	0.00E+00	8.89E-04	2.94E-03	1.34E-04	-2.81E-01
EP-Freshwater	kg P eq.	4.30E-03	0.00E+00	2.05E-05	4.99E-05	1.57E-06	-1.02E-02
EP- Marine	kg N eq.	1.56E-02	0.00E+00	2.92E-04	1.14E-03	5.10E-05	-4.53E-02
EP-Terrestrial	mol N eq.	1.64E-01	0.00E+00	3.18E-03	1.19E-02	5.57E-04	-4.94E-01
POCP	kg NMVOC eq.	5.20E-02	0.00E+00	1.31E-03	4.13E-03	2.00E-04	-1.49E-01
ADP-minerals&metals*	kg Sb eq.	6.03E-05	0.00E+00	7.09E-07	1.42E-06	2.95E-08	-1.44E-04
ADP-fossil*	MJ	1.59E+02	0.00E+00	3.78E+00	9.45E+00	4.63E-01	-3.69E+02
WDP*	m^3	4.08E+00	0.00E+00	1.94E-02	-2.62E-01	2.03E-02	-5.61E+00
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 reported environmental impact indicators shall be interpreted with care, as uncertainties are inherent to LCA modelling and, for certain indicators, practical experience remains limited. The results represent relative environmental performance and do not indicate absolute thresholds, safety margins, or risk levels. Results for the end-of-life stage (Modules C1–C4) shall be considered together with the product stage (Modules A1–A3) to ensure a complete life-cycle perspective.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	1.32E+01	0.00E+00	2.61E-01	5.41E-01	1.89E-02	-3.81E+01
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017							
(PM)	Disease incidence	9.00E-07	0.00E+00	2.61E-08	6.32E-08	3.04E-09	-3.34E-06
(IRP)	kBq U235 eq.	5.02E-01	0.00E+00	3.34E-03	8.96E-03	2.95E-04	-6.45E-01
(ETP-fw)	CTUe	2.41E+02	0.00E+00	1.82E+00	9.64E+02	1.27E-01	-3.06E+02
(HTP-c)	CTUh	1.01E-07	0.00E+00	2.59E-09	5.39E-09	1.71E-10	-1.62E-07
(HTP-nc)	CTUh	2.34E-07	0.00E+00	4.86E-09	2.94E-08	1.58E-10	-5.89E-07
(SQP)	Dimensionless	4.64E+02	0.00E+00	3.80E+00	1.28E+01	9.11E-01	-7.69E+01

Resource use indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8.02E+01	0.00E+00	4.79E-02	1.29E-01	4.13E-03	-3.36E+01
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	8.02E+01	0.00E+00	4.79E-02	1.29E-01	4.13E-03	-3.36E+01
PENRE	MJ	1.59E+02	0.00E+00	3.78E+00	9.45E+00	4.63E-01	-3.70E+02
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.59E+02	0.00E+00	3.78E+00	9.45E+00	4.63E-01	-3.70E+02
SM	kg	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
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.11E+00	0.00E+00	1.95E-02	-2.62E-01	2.03E-02	-5.55E+00
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 CO_2 is set to zero.

Waste indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1.05E-02	0.00E+00	0.00E+00	1.05E-02	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	1.03E-02	0.00E+00	0.00E+00	1.03E-02	0.00E+00	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Output flow indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**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
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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
Exported energy, electricity	MJ	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

Model scope and time horizon

This study is conducted in accordance with EN 15804:2012+A2:2019 and PCR 2019:14 v2.0.1 for construction products, applying a cradle-to-gate with end-of-life and Module D (Type a) system boundary.

The declared life-cycle modules include A1–A3, C1–C4, and Module D.

All impact assessment results are reported using a 100-year time horizon.

End-of-life modelling assumptions

The applied end-of-life scenario for the Mullion and Frameless Partition Wall Systems assumes:

- C2: Average transport distance of 80 km by road to waste treatment facilities,
- C3: High recovery of metallic components, with aluminium and steel routed to recycling and partial recovery of glass,
- C4: Disposal of remaining inert fractions (mainly non-recyclable glass and mixed residues) to landfill.

Module D quantifies the potential environmental benefits associated with the substitution of primary materials by recovered secondary materials, using the substitution approach in accordance with Annex D of EN 15804+A2.

Cut-off criteria and exclusions

In accordance with EN 15804+A2 (Clause 6.3.5), individual mass or energy flows contributing less than 1 % may be excluded, provided that the total contribution of such excluded flows does not exceed 5 % and no environmentally relevant flows are omitted.

The life cycle inventory includes at least 95 % of total mass and energy inputs, ensuring full representativeness of the declared product system.

Office and administrative activities, capital goods (such as buildings, production equipment, and IT infrastructure), and business travel are excluded, as their contribution per declared unit is considered

negligible. Infrastructure impacts embedded in background datasets (e.g. electricity generation and freight transport systems) remain included through the use of those datasets.

Allocation rules

A1 – Raw material supply:

No co-products are generated within the system boundary. Aluminium profiles, flat glass, coatings, and accessory materials are sourced as finished semi-products; therefore, no allocation is applied in Module A1.

A3 – Manufacturing:

At the TRIMline Balıkesir facility, aluminium and glass process scrap generated during cutting, machining, and assembly is segregated and routed to recycling. As no co-products are generated and scrap does not constitute a marketable output within the system boundary, no allocation to recovered scrap is applied.

No combined heat and power (CHP) generation occurs on site; all energy inputs are electricity-based, eliminating the need for energy allocation.

Waste stream allocation:

Manufacturing scrap is modelled within Module A3.

Packaging waste is modelled at end-of-life within the C-modules.

No credits are assigned to aluminium dross or coating residues, as these do not re-enter the declared product system.

Losses, waste, and end-of-life (Modules C and D)

Trim scrap generated during manufacturing is assumed to be recycled.

The declared end-of-life scenario assumes **100 % collection** of aluminium-containing components, with the following treatment routes:

- **C3:** High-rate recycling of aluminium through re-melting and recovery of secondary aluminium,
- **C4:** Disposal of remaining inert fractions to landfill.

Module D quantifies the potential environmental benefits from the substitution of primary aluminium with secondary aluminium recovered at end-of-life, in accordance with Annex D of EN 15804+A2 and the polluter-pays principle.

Data sources and data quality

Primary data (site-specific):

Collected at the TRIMline Balıkesir facility for the 2024 reporting year, covering electricity consumption, manufacturing processes, scrap rates, coating and assembly operations, packaging quantities, and internal recycling practices.

Secondary data:

Modules A1, A2, C1–C4, and D are modelled using Ecoinvent v3.11 (Cut-off, U) datasets representing European or RoW average conditions.

Background datasets include aluminium extrusion, flat glass production, powder coating, transport, waste treatment, and metal accessories.

Representativeness and data quality:

- All background datasets are less than 10 years old,
- Data completeness ≥95 % for mass and energy flows,
- GWP impact coverage >90 %,
- A consolidated data quality assessment confirms acceptable temporal, geographical, and technological representativeness.

Unit processes by module

A1 – Raw material supply:

Raw materials include aluminium extrusion profiles, flat glass panels, powder coatings, adhesives, elastomeric seals, and stainless-steel fasteners.

Product-specific material quantities and sourcing information were provided by TRIMline. Environmental modelling of upstream production processes (aluminium extrusion, glass production, coating resins, and metal fasteners) is based on Ecoinvent v3.11 (Cut-off, U) background datasets representing market-average conditions.

No co-products arise in this stage.

A2 – Transport to manufacturing

Average inbound transport distances were determined based on TRIMline logistics records. Road freight is the dominant transport mode, with limited sea transport assumed for selected imported accessories.

Packaging materials (wooden pallets, cardboard corner protectors, and LDPE stretch film) are included in this module.

A3 – Manufacturing

Manufacturing processes at the TRIMline Balıkesir facility include cutting, machining, coating, glass preparation, assembly, inspection, and packaging of aluminium–glass partition wall systems.

On-site operations include:

- Electricity consumption supplied by the Turkish grid with a minor contribution from on-site photovoltaic systems,
- Generation of aluminium and glass process scrap and routing to recycling,
- Use of coatings, adhesives, and auxiliary materials,
- No process water consumption.

No co-products are generated, and internal scrap does not constitute a marketable output within the system boundary.

C1–C4 – End-of-life

Low-intensity deconstruction and collection are assumed at end of life.

- **C2:** Average transport distance of **80 km** by road to recycling and landfill facilities,
- **C3:** High-rate recycling of aluminium components,
- **C4:** Disposal of remaining inert fractions (mainly non-recyclable glass and mixed residues) to landfill.

Module D – Beyond the system boundary

Potential environmental benefits associated with secondary aluminium recovered at end of life are modelled using the substitution method, in accordance with Annex D of EN 15804+A2.

A conservative processing loss is applied to recovered materials.

Module D results are reported separately to avoid double counting.

Sensitivity and uncertainty (qualitative)

The results are most sensitive to the electricity mix applied in Module A3:

- A more carbon-intensive grid increases GWP results,
- A lower-carbon grid or higher share of photovoltaic electricity reduces GWP results.

Variations in transport distances have a minor influence on overall results.

Assumptions related to recycling rates and substitution references in Module D have a moderate influence on reported benefits. Alternative end-of-life scenarios are presented for information in Annex 2.

Multiple products and variations

This EPD covers a family of Mullion and Frameless Curtain Wall Systems manufactured on the same production line using identical processes, materials, and system boundaries.

Variations between individual system configurations are limited and do not materially affect environmental performance indicators. A production-weighted average approach is therefore applied.

Detailed information on the covered product models, reference weights, and production volumes is provided in Annex 1.

Where applicable, conservative assumptions are applied.

This EPD does not claim compliance with ISO 21930; therefore, individual reporting of product variants above a defined variation threshold is not required.

ANNEX I - ARTICLES COVERED BY THIS EPD

MODEL	WEIGHT	SALES AMOUNT (m2)	GWP-fossil, A1-A3 [kg CO2e/1m2]
SNAP Standard Single Glazing	25,77	7326,00	12,61
SNAP Standard Double Glazing	30,21	10000,00	13,18
SNAP Bonded	31,23	1832,00	14,46
PURE Bonded	34,57	44,68	19,22
SNAP Frameless	42,20	8814,62	18,38
SNAP Frameless Recessed	7,42	1904,01	8,11
Slimline	26,13	2712,65	16,98
PURE Frameless Double Glazing	49,93	927,00	19,92
PURE Frameless Single Glazing	5,02	24,68	9,74

ANNEX 2- Additional End-of-Life Scenario Results

Additional End-of-Life Scenario Results (100% Recycling)

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-Total	kg CO_2 eq.	1.39E+01	0.00E+00	2.61E-01	6.01E-01	0.00E+00	-4.22E+01
GWP-Fossil	kg CO_2 eq.	1.30E+01	0.00E+00	2.61E-01	5.99E-01	0.00E+00	-4.22E+01
GWP-Biogenic	kg CO_2 eq.	8.95E-01	0.00E+00	8.92E-06	9.82E-04	0.00E+00	2.82E-02
GWP-Luluc	kg CO_2 eq.	3.08E-02	0.00E+00	1.04E-04	1.46E-03	0.00E+00	-9.70E-02
ODP	kg CFC 11 eq.	1.59E-07	0.00E+00	3.84E-09	1.21E-08	0.00E+00	-2.79E-07
AP	mol H^+ eq.	7.89E-02	0.00E+00	8.89E-04	3.26E-03	0.00E+00	-3.12E-01
EP-Freshwater	kg P eq.	4.30E-03	0.00E+00	2.05E-05	5.55E-05	0.00E+00	-1.13E-02
EP- Marine	kg N eq.	1.56E-02	0.00E+00	2.92E-04	1.26E-03	0.00E+00	-5.04E-02
EP-Terrestrial	mol N eq.	1.64E-01	0.00E+00	3.18E-03	1.33E-02	0.00E+00	-5.49E-01
POCP	kg NMVOC eq.	5.20E-02	0.00E+00	1.31E-03	4.59E-03	0.00E+00	-1.65E-01
ADP-minerals&metals*	kg Sb eq.	6.03E-05	0.00E+00	7.09E-07	1.57E-06	0.00E+00	-1.60E-04
ADP-fossil*	MJ	1.59E+02	0.00E+00	3.78E+00	1.05E+01	0.00E+00	-4.11E+02
WDP*	m^3	4.08E+00	0.00E+00	1.94E-02	-2.91E-01	0.00E+00	-6.23E+00
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						

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO_2 eq.	1.32E+01	0.00E+00	2.61E-01	6.01E-01	0.00E+00	-4.23E+01
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017							
(PM)	Disease incidence	9.00E-07	0.00E+00	2.61E-08	7.02E-08	0.00E+00	-1.65E-01
(IRP)	kBq U235 eq.	5.02E-01	0.00E+00	3.34E-03	9.96E-03	0.00E+00	-7.17E-01
(ETP-fw)	CTUe	2.41E+02	0.00E+00	1.82E+00	1.07E+03	0.00E+00	-3.40E+02
(HTP-c)	CTUh	1.01E-07	0.00E+00	2.59E-09	5.99E-09	0.00E+00	-1.80E-07
(HTP-nc)	CTUh	2.34E-07	0.00E+00	4.86E-09	3.26E-08	0.00E+00	-6.55E-07
(SQP)	Dimensionless	4.64E+02	0.00E+00	3.80E+00	1.42E+01	0.00E+00	-8.55E+01

Resource use indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8.02E+01	0.00E+00	4.79E-02	1.43E-01	0.00E+00	-3.74E+01
PERM	MJ	0.000	0.000	0.000	0.000	0.00E+00	0.000
PERT	MJ	8.02E+01	0.00E+00	4.79E-02	1.43E-01	0.00E+00	-3.74E+01
PENRE	MJ	1.59E+02	0.00E+00	3.78E+00	1.05E+01	0.00E+00	-4.11E+02
PENRM	MJ	0.000	0.000	0.000	0.000	0.00E+00	0.000
PENRT	MJ	1.59E+02	0.00E+00	3.78E+00	1.05E+01	0.00E+00	-4.11E+02
SM	kg	0.000	0.000	0.000	0.000	0.00E+00	0.000
RSF	MJ	0.000	0.000	0.000	0.000	0.00E+00	0.000
NRSF	MJ	0.000	0.000	0.000	0.000	0.00E+00	0.000
FW	m^3	4.11E+00	0.00E+00	1.95E-02	-2.91E-01	0.00E+00	-6.17E+00
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						

[2] 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 CO_2 is set to zero.

Waste indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1.05E-02	0.00E+00	0.00E+00	1.05E-02	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	1.03E-02	0.00E+00	0.00E+00	1.03E-02	0.00E+00	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Output flow indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**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
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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
Exported energy, electricity	MJ	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

Additional End-of-Life Scenario Results (100% Landfill)

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-Total	kg CO_2 eq.	1.39E+01	0.00E+00	2.61E-01	0.00E+00	1.89E-01	0.00E+00
GWP-Fossil	kg CO_2 eq.	1.30E+01	0.00E+00	2.61E-01	0.00E+00	1.89E-01	0.00E+00
GWP-Biogenic	kg CO_2 eq.	8.95E-01	0.00E+00	8.92E-06	0.00E+00	2.60E-05	0.00E+00
GWP-Luluc	kg CO_2 eq.	3.08E-02	0.00E+00	1.04E-04	0.00E+00	9.73E-05	0.00E+00
ODP	kg CFC 11 eq.	1.59E-07	0.00E+00	3.84E-09	0.00E+00	5.46E-09	0.00E+00
AP	mol H^+ eq.	7.89E-02	0.00E+00	8.89E-04	0.00E+00	1.34E-03	0.00E+00
EP-Freshwater	kg P eq.	4.30E-03	0.00E+00	2.05E-05	0.00E+00	1.57E-05	0.00E+00
EP- Marine	kg N eq.	1.56E-02	0.00E+00	2.92E-04	0.00E+00	5.10E-04	0.00E+00
EP-Terrestrial	mol N eq.	1.64E-01	0.00E+00	3.18E-03	0.00E+00	5.57E-03	0.00E+00
POCP	kg NMVOC eq.	5.20E-02	0.00E+00	1.31E-03	0.00E+00	2.00E-03	0.00E+00
ADP-minerals&metals*	kg Sb eq.	6.03E-05	0.00E+00	7.09E-07	0.00E+00	2.95E-07	0.00E+00
ADP-fossil*	MJ	1.59E+02	0.00E+00	3.78E+00	0.00E+00	4.63E+00	0.00E+00
WDP*	m^3	4.08E+00	0.00E+00	1.94E-02	0.00E+00	2.03E-01	0.00E+00
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						

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO_2 eq.	1.32E+01	0.00E+00	2.61E-01	0.00E+00	1.89E-01	0.00E+00
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017							
(PM)	Disease incidence	9.00E-07	0.00E+00	2.61E-08	0.00E+00	3.04E-08	0.00E+00
(IRP)	kBq U235 eq.	5.02E-01	0.00E+00	3.34E-03	0.00E+00	2.95E-03	0.00E+00
(ETP-fw)	CTUe	2.41E+02	0.00E+00	1.82E+00	0.00E+00	1.27E+00	0.00E+00
(HTP-c)	CTUh	1.01E-07	0.00E+00	2.59E-09	0.00E+00	1.71E-09	0.00E+00
(HTP-nc)	CTUh	2.34E-07	0.00E+00	4.86E-09	0.00E+00	1.58E-09	0.00E+00
(SQP)	Dimensionless	4.64E+02	0.00E+00	3.80E+00	0.00E+00	9.11E+00	0.00E+00

[3] 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 CO_2 is set to zero.

Resource use indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8.02E+01	0.00E+00	4.79E-02	0.00E+00	4.13E-02	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	8.02E+01	0.00E+00	4.79E-02	0.00E+00	4.13E-02	0.00E+00
PENRE	MJ	1.59E+02	0.00E+00	3.78E+00	0.00E+00	4.63E+00	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.59E+02	0.00E+00	3.78E+00	0.00E+00	4.63E+00	0.00E+00
SM	kg	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
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.11E+00	0.00E+00	1.95E-02	0.00E+00	2.03E-01	0.00E+00
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						

Waste indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1.05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	1.03E-02	0,00E+00	0,00E+00	0,00E+00	3.02E+01	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flow indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**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
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	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
Exported energy, electricity	MJ	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

ADDITIONAL ENVIRONMENTAL INFORMATION

No additional environmental information is declared for this EPD.

ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

No additional social or economic information is declared for this EPD.

INFORMATION RELATED TO SECTOR EPD

Not applicable. This EPD is company-specific and does not represent a sector-wide declaration.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
ISO	International Organization for Standardization
CEN	European Committee for Standardization
GPI	General Programme Instructions
PCR	Product Category Rules
EPD	Environmental Product Declaration
LCA	Life Cycle Assessment
LCIA	Life Cycle Impact Assessment
EF 3.1	Environmental Footprint reference package, version 3.1
GWP	Global Warming Potential
GWP-fossil	Global Warming Potential from fossil sources
GWP-biogenic	Global Warming Potential from biogenic carbon
GWP-luluc	Global Warming Potential from land use and land use change
AP	Acidification Potential
EP-freshwater	Eutrophication Potential (freshwater)
EP-marine	Eutrophication Potential (marine)
EP-terrestrial	Eutrophication Potential (terrestrial)
POCP	Photochemical Ozone Creation Potential
ODP	Ozone Depletion Potential
ADP-fossil	Abiotic Depletion Potential – Fossil Fuels
ADP-minerals & metals	Abiotic Depletion Potential – Minerals & Metals
WDP	Water Deprivation Potential
A1-A3	Product Stage: Raw material supply, Transport, Manufacturing
C1-C4	End-of-Life Stage: Deconstruction, Transport, Waste processing, Disposal
Module D	Beyond the System Boundary – benefits and loads from recycling
DU	Declared Unit
SVHC	Substances of Very High Concern
ND	Not Declared
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GRI	Global Reporting Initiative
CPC	Central Product Classification
SimaPro	Life Cycle Assessment Software used for modelling
Ecoinvent	Background database used for LCA modelling

REFERENCES

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VERSION HISTORY

Original Version of the EPD, 2026-01-07

INTERNATIONAL EPD SYSTEM

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