Environmental Product Declaration

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

Anodized Aluminium Profile

from

Alcas Metal Sanayi A.Ş.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Licensee:	EPD Türkiye
Type of EPD:	EPD of a single product from a manufacturer/service provider
EPD registration number:	EPD-IES-0029252:003
Version date:	2026-05-13
Validity date:	2031-03-11
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see 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

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
PCR 2019:14 Construction products (EN 15804+A2) version 2.0.1 UN CPC Code: 41532; Bars, rods and profiles, of aluminium
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact.
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: Dr.-Ing. Nikolay Minkov, Greentability Ltd. Approved by: The 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 this 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.

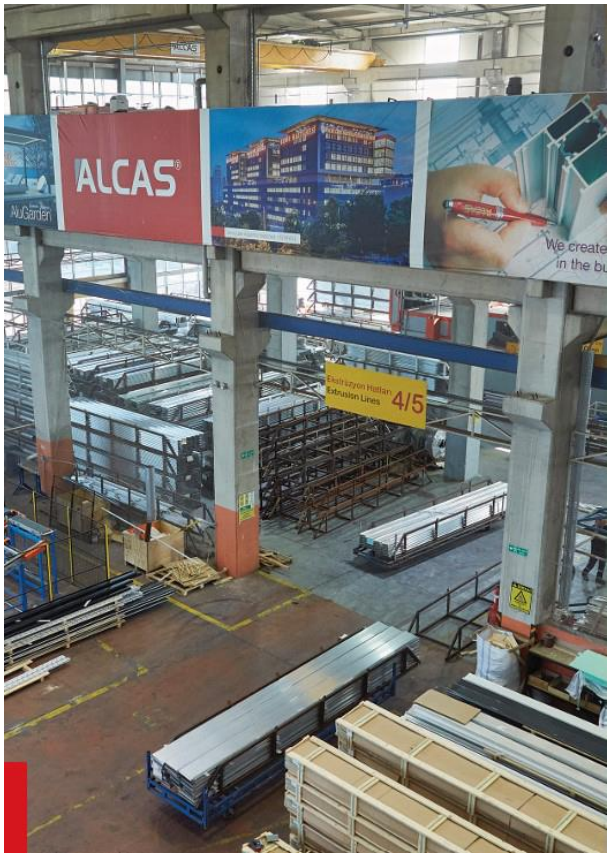
INFORMATION ABOUT EPD OWNER

Owner of the EPD: ALCAS METAL SANAYİ A.Ş.	Contact: Endam BENGÜ, endam.bengu@alcas.com.tr
Address: Velimeşe OSB 129 Sokak No:11/1 Ergene, Tekirdağ/Türkiye	Address and contact information of the LCA practitioner commissioned by the EPD owner: Imnera Sustainability Consulting, info@imnera.com

Description of the organisation:

ALCAS METAL: High-Quality Aluminium Profile Production & Global Excellence

ALCAS extrusion facility, established on a 42 000 m² land with a closed area of 36 000 m² in Tekirdağ, Türkiye, has been specially designed for aluminium profile production. Within the facility, 420 qualified personnel are employed, and five extrusion presses with pressing capacities of 4400 UST, 2750 UST, 1800 UST, 1540 UST, and 880 UST are operated. The annual production capacity has reached 34 000 tons, enabling the production of profiles with widths ranging from 5 mm to 410 mm. The maximum mill finish surface, aged to T6 profile length, is 13.6 meters. All molds for the aluminium profiles are produced in-house using high-tech CNC machines in the company's fully equipped mold shop. The annual capacity of the extrusion die shop is 2 400 dies, ensuring precise and high-quality mold production.



High-Quality Aluminium Extrusion with Advanced Technology

A wide range of 6xxx group aluminium alloys, including EN AW-6063, 6060, 6101B, 6106, 6061, 6005, 6005A, 6463, 6082, and 1xxx group aluminum alloys like 1070A, can be extruded. High-strength profiles made from hard alloys such as EN AW-6082-T6 (F31) are produced, utilizing the pressurized air and water quenching units installed on the extrusion presses. All extruded products comply with the EN 755-1 standard. Precision profiles conforming to the EN 12020-1 standard can also be manufactured upon request.

Innovation, R&D, and System Development

The company's expert technical team specializes in aluminium curtain wall, door, and window systems, continuously working on new system

development and improvements. All systems undergo rigorous testing, and the R&D department is dedicated to delivering flawless solutions by swiftly responding to customer needs.

Surface Treatment & Machining Capabilities

The anodizing plant operates with an annual capacity of 11 000 tons. The maximum anodizing length is 7.60 meters, and the maximum anodizing layer thickness is 20 microns. A variety of anodizing finishes, including natural, polished bright, brushed matt, and electrochemical bright dip anodizing, can be applied in silver, yellow, bronze, and black colors. The powder coating line has an annual capacity of 18 000 tons. Profiles with a maximum length of 13.4 meters can be powder-coated with epoxy, polyester, epoxy-polyester, and metallic powders in 180 different RAL colors, as well as custom solid and textured finishes. In the advanced machining department, processes such as cutting, punching, drilling, bending, deburring, CNC machining, and barcoding are performed. Profiles are processed according to customer specifications and packaged as requested.

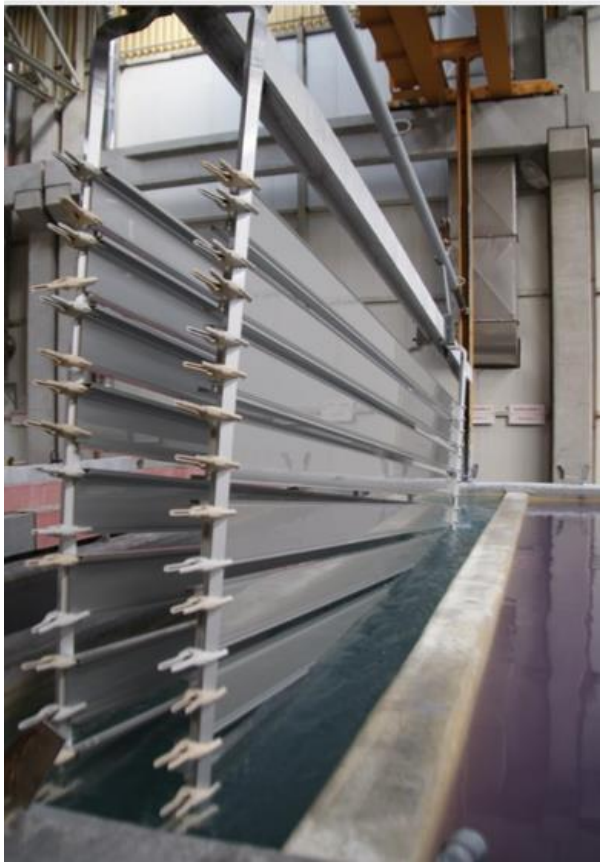
Global Presence & Certifications

With 85% of its production exported to 34 countries, primarily in the USA and Europe, ALCAS ensures fast, local, and reliable service through its global network of offices and partners. With its high-capacity production facility, extensive profile range, and decades of industry expertise, ALCAS is committed to delivering the best aluminium profile systems and outstanding after-sales service.

Product-related or management system-related certifications: ISO 9001:2015, IATF 16949:2016, ISO 14001:2015 and ISO 45001: 2018, UKCA, EN 15088:2005 (CE), ISO 50001:2018, QUALANOD, QUALICOAT, TSE

Name and location of production site(s): ALCAS METAL SAN. A.Ş., Velimese Organize Sanayi Bolgesi Mah. 129. Sok. No:11/1 Ergene, Tekirdag/ TURKİYE.

PRODUCT INFORMATION



Product name: Anodized Aluminium Profile

Actual or technical lifespan: 30 years

Product identification: Aluminium profile treated with electrochemical anodizing process to enhance corrosion resistance, surface hardness, and aesthetic appeal.

Product description: Anodizing is the process of electrochemically controlling, accelerating and enhancing oxidation of an aluminium substrate. The anodizing process, because it is an integral part of the substrate, produces an oxide film that is uniform, hard and protects the rest of the aluminium substrate from deterioration providing excellent wear and abrasion resistance with minimal maintenance in most environments. Anodized aluminium resists the ravages of time, temperature, corrosion, humidity and warping, adding to it's long life cycle. Anodized aluminium is an inert material that is not combustible, 100% recyclable and poses no health risks. Sulfuric acid anodizing is defined in ISO 7583 as anodizing in an electrolyte based on sulfuric acid. Architectural anodizing is the anodizing to produce an architectural finish to be used in permanent, exterior and static situations where both appearance and long life are important. Anodized aluminium profiles undergo an electrochemical process that thickens the natural oxide layer on the aluminium surface. This treatment enhances corrosion resistance, surface hardness, and allows for various aesthetic finishes. It offers aesthetic versatility, being available in a range of colors and finishes, including polished, brushed, and matte.

Product application areas: Anodized profiles are commonly used in architectural applications such as building facades, window frames, and curtain walls, where both durability and appearance are important.

Product standards: ISO 9001:2015, IATF 16949:2016, ISO 14001:2015, and ISO 45001:2018, UKCA, EN 15088:2005 (CE), ISO50001:2018, QUALANOD, QUALICOAT, TSE (Turkish Standards Institution). In addition, chemicals with REACH and RoHS reports are used.

Product technical data: The aluminium profiles can be anodized with a maximum length of 7 600 mm, and the maximum anodizing layer thickness is 20 microns.

Anodizing Specification for Silver (natural) anodizing surface

Standard	QUALANOD, Sulfuric Acid-Based Anodizing of Architectural Aluminium profiles
Surface Description	Clear Anodizing or Natural Anodizing
Anodizing type	H_2SO_4 based Anodizing
Sealing type	Cold Sealing
Film Thickness Class	AA10 to AA20

Standard Values for anodized surface

Tests	Method/Standard	Required Value	Tolerance	Unit
Film Thickness	EN ISO 2178	10*	min. 8*	µm
Colour Control	EN 12373-1			Scale
Spot Test	EN 12373-4	max.1	0-1	Scale
Visual Control	Qualanod	OK/NOK		Visual
Mass Loss	EN 12373-7	max.30	0-30	mg/dm2

*Please see “Typical anodizing thickness classes” table for the required values of other anodizing thickness classes.

Natural anodizing E6 surface pretreatment

Symbol	Type of pretreatment	Characteristics and comments
E6	Etching	• applied after degreasing • satin or matt appearance • mechanical surface defects reduced • defects due to corrosion can be made visible • defects due to corrosion can be removed by mechanical pretreatment before E6 but it is preferable to handle and store the metal so that corrosion cannot occur • usually followed by desmutting

Typical anodizing thickness classes

Thickness class	Minimum average thickness (µm)	Minimum local thickness (µm)
AA10	10	8
AA15	15	12
AA20	20	16
AA25	25	20

Reference: QUALANOD Specifications Edition 27.01.2025

The alloys used for anodized aluminium profile products in 2024 were EN AW-6063 and EN AW-6061 and this was reflected on LCA results. EN AW-6063 and EN AW-6060, EN AW-6463, EN AW-6005, EN AW-6005-A, EN AW-6061, EN AW-6082, EN AW-6101B, EN AW-6106 and EN AW-1070A due to EN 573-3 standard can also be used for anodized aluminium profiles. Chemical compositions of each alloy type are presented below. Anodized aluminium profiles contained 55 primary and 45% secondary aluminium in 2024. Primary aluminium billets do not contain recycled content while recycled aluminium billets contain 100% pre-consumer scrap. Mechanical properties of the aluminium profiles are suitable for EN 755-2 standard. Visit https://alcas.com.tr/en for more information.

Chemical Composition (weight % elements) of the alloys that can be used for Anodized Aluminium Profile products

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Remarks	Al
EN AW-6060	0.3 0.6	0.1 0.3	0.1	0.1	0.35 0.6	0.05	0.15	0.1	-	Balance
EN AW-6063	0.2 0.6	0.35	0.1	0.1	0.45 0.9	0.1	0.1	0.1	-	Balance
EN AW-6463	0.2 0.6	0.15	0.2	0.05	0.45 0.9	0.05	0.05	0.05	-	Balance
EN AW-6082	0.7 1.3	0.5	0.1	0.4 1.0	0.6 1.2	0.25	0.2	0.1	-	Balance
EN AW-6061	0.4 0.8	0.7	0.15 0.4	0.15	0.8 1.2	0.04 0.35	0.25	0.15	-	Balance
EN AW-6005	0.6 0.9	0.35	0.1	0.1	0.4 0.6	0.1	0.1	0.1	-	Balance
EN AW-6005 A	0.5 0.9	0.35	0.3	0.5	0.4 0.7	0.3	0.2	0.1	Mn+Cr 0.12 0.5	Balance
EN AW-6101B	0.3 0.6	0.1 0.3	0.05	0.05	0.35 0.6	0.03	0.03	0.03		Balance
EN AW-6106	0.3 0.6	0.35	0.25	0.05 0.2	0.4 0.8	0.2	0.1	0.05	-	Balance
EN AW-1070A	0.2	0.25	0.03	0.03	0.03	0.03	0.07	0.03		Balance

Single values mean maximum % weight content. Two values in one cell mean minimum and maximum %weight content.

UN CPC code: 41532 – Bars, rods and profiles, of aluminium

CONTENT DECLARATION

The declared unit of the study is 1 kg of anodized aluminium profiles supplied to the client.

Product components	Mass, kg	Post-consumer material, weight-%	Biogenic material, mass-% of product	Biogenic material, kg C/kg
Aluminium profile	1.000	44.56%	0%,	0
TOTAL	1.000	44.56%	0%	0

Packaging materials	Mass, kg	Mass-% (versus the product)	Mass biogenic carbon, kg C/kg
[1]Wood (pallet)	0.04	4%	0.0164
[2]Cardboard	0.002	0.2%	0.008
Polyester fabric	0.04	4%	-
Red PE film	0.0015	0.15%	-
Paper	0.0010	0.1%	0.0004
PE film	0.0010	0.1%	-
TOTAL	0.0855	8.55%	0.0176

The product does not contain any REACH SVHC substances in amounts greater than 0.1% (1000 ppm).

LCA INFORMATION

Declared unit: In accordance with the PCR, the declared unit is 1 kg of anodized aluminium profile.

Reference service life: The reference service life of the product is assumed to be 30 years.

Time representativeness: Primary data was collected internally. The production data refers to the average of the year 2024.

Geographical scope: Module A2 and A3 has been modelled to represent Türkiye. For the remaining modules (A1, C1-C4 and D) geographical scope is Global.

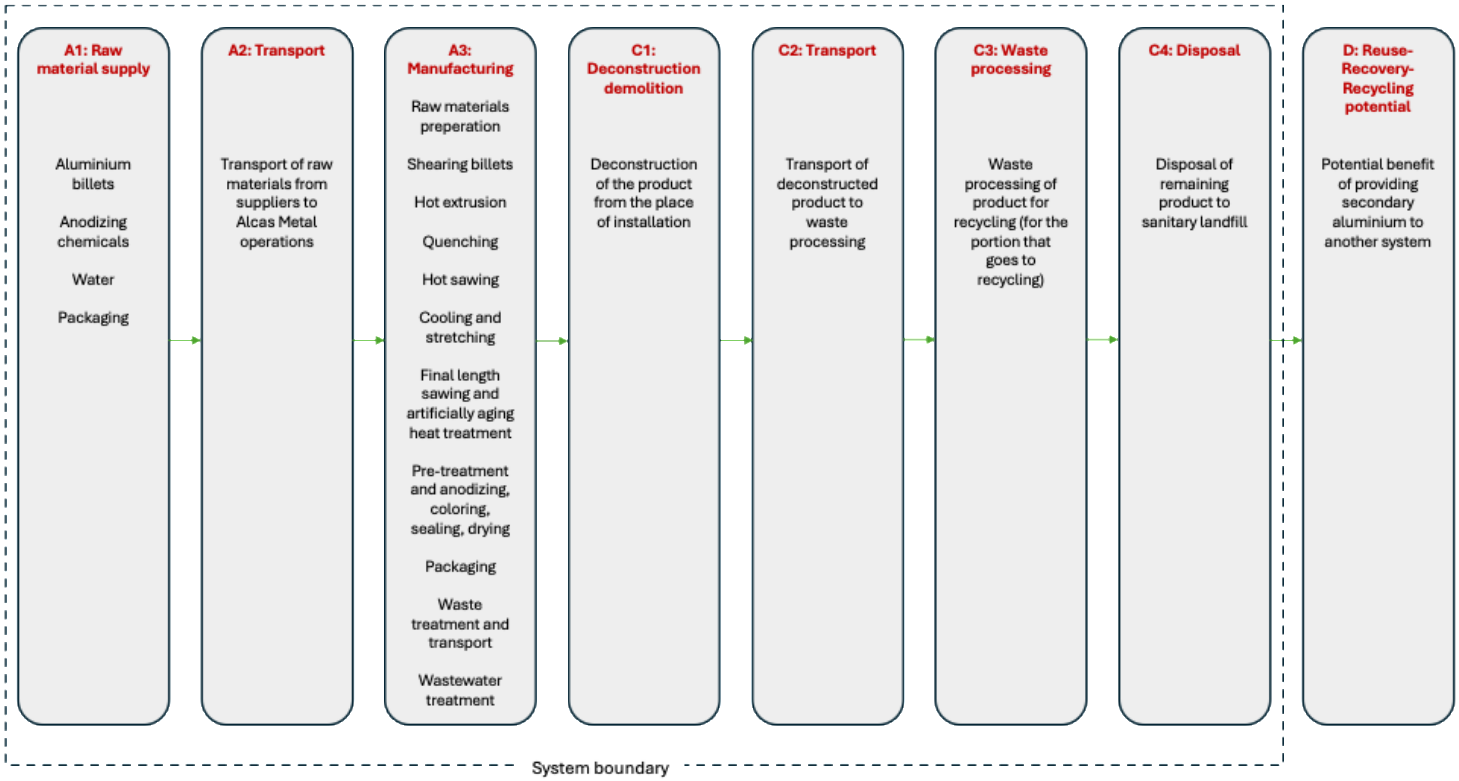
Database(s) and LCA software used: The Ecoinvent database provides the life cycle inventory data for the raw and process materials obtained from the background system. The used database is Ecoinvent 3.11. The LCA software used is OpenLCA 2.5.

Characterisation methods: Impact categories and their associated methods are retrieved from the International EPD System's characterization factors webpage. Methods are present in OpenLCA within EN15804+A2 (EF v3.1) method.

Description of system boundaries: Cradle-to-gate with modules C1-C4 and module D (A1-A3 + C + D).

Justification for modules not declared (MND): Module A4 (transport to building site), Module A5 (construction installation) and modules B1–B7 (use stage) are not declared as they are outside the defined system boundary of this EPD. Anodized aluminium profiles require no energy or water during the use stage and no maintenance is foreseen.

Process flow 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**	MND	MND	MND	MND	MND	MND	MND	MND	MND	**x**	**x**	**x**	**x**	**x**
Geography	GLO	GLO	TR	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	10.39%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	ND			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundary (X = Included in LCA; MND = Module Not declared)

Cut-off criteria: All elementary flows to and from the product systems as defined by the PCR are included in this study; therefore, no cut-off criteria have been applied. Business travel of personnel, travel to and from work by personnel, and research and development activities are excluded. The study does not exclude any hazardous materials or substances.

Electricity modeling: Alcas Metal uses electricity from the Turkish grid. The carbon impact of residual electricity mix is 0.986 kg CO2 eq./kWh.

Allocation, estimates and assumptions:

During the manufacturing process, aluminium shavings and scrap occurs. These aluminium shavings and scrap are sold to other companies at values greater than 25% of the sale price of aluminium profiles. Due to this, these shavings and scrap are treated as co-products and economic allocation was done to split the impacts of aluminium input between shavings, scrap and the product. The amounts and sale prices are obtained from Alcas Metal. Total economic value is calculated by multiplying sale price with mass of the product. Impact allocation share for each output is calculated by dividing economic value of the output to total economic value of all outputs.

To reflect 2024's manufacturing conditions, 2024's production amounts for Anodized Aluminium Profiles with each type of aluminium billets were obtained from Alcas Metal. The amounts of each type of alloy that was used for the product was obtained and allocated to 1 kg. Electricity, natural gas use and waste outputs were obtained from factory averages for these products.

Upstream road transportation is assumed to be carried out with EURO 5 motor vehicles with a size class of > 32 metric tonnes where distances are acquired through distance.to website. Transport of

manufacturing waste is based on an estimated value of 50 km. Downstream road transportation is assumed to be carried out with EURO 5 motor vehicles with a size class of 16-32 metric tonnes where a 80 km distance for the waste transport at the C2 stage is assumed.

Data quality assessment:

All primary data used for describing the LCI (amounts for inputs, departure and arrival locations for transport) were specific data, gathered from Alcas Metal's production plant, averaged for the period of 2024. The only exceptions are the manufacturing waste distribution distance, which is based on an estimated value of 50 km and the distance between installation site and waste treatment location, which was taken from the PCR as 80 km. Primary data collected for A1, A2 and A3 modules were specific to site, meaning they were not averaged over several sites. Period of data collection is 2024, which is the most recent year available for data collection. Primary data is less than 2 years old.

Secondary data, which describes the environmental impacts of each process is obtained from Ecoinvent 3.11 EN15804. Ecoivent 3.11 was published on December 2024. This version of the database is less than 2 years old

In addition, a data quality assessment that covers all processes contributing to the declared environmental impact indicators was conducted. This assessment covers geographical, technical and temporal representativeness of the data, and that accounts for the precision, completeness, consistency and sources of the data was conducted. The assessment was conducted using OpenLCA's Data Quality feature and Ecoinvent's Data Quality System pedigree matrix. Ecoinvent assigns a score between 1 and 5 to each dimension of data quality (Reliability (R), Completeness (C), Temporal Correlation (T), Geographical Correlation (G) and Further Technological Correlation (F)).

Shares of primary data:

Shares of primary data on GWP-GHG indicator for Anodized Aluminium Profiles are provided below.

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
6063 aluminium billet production	Database	Ecoinvent v3.11	2024	Secondary data	0%
6061 aluminium billet production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Anodizing chemicals production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Sodium hydroxide production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Sulfuric acid production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Tap water production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Textile packaging production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Pallet packaging production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Packaging film production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Corrugated box production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Paper packaging production	Database	Ecoinvent v3.11	2024	Secondary data	0%
Generation of electricity used in manufacturing of product (residual mix)	Database	Ecoinvent v3.11	2024	Primary data, secondary data	5.73%
Production and consumption of natural gas during manufacturing	Database	Ecoinvent v3.11	2024	Primary data, secondary data	3.86%
Wastewater treatment	Database	Ecoinvent v3.11	2024	Secondary data	0%
Waste treatment of paper waste	Database	Ecoinvent v3.11	2024	Secondary data	0%
Land transport of paper waste	Database	Ecoinvent v3.11	2024	Secondary data	0%
Sea transport of raw materials	Database	Ecoinvent v3.11	2024	Primary data, secondary data	0.49%
Land transport of raw materials	Database	Ecoinvent v3.11	2024	Primary data, secondary data	0.31%
TOTALSHARE OF PRIMARY DATA, of GWP-GHG RESULTS FOR A1-A3	10.39%				

Information on LCA Modules

A1: Raw material supply: This module considers the extraction and processing of raw materials. The main material used in the products are aluminium billets. Wood, cardboard, plush paper, cloth and nylon are used for packaging. All locally sourced aluminium alloys including 6061 alloy that is used for Anodized Aluminium profiles, and 35% of the 6063 alloy—are produced from secondary (recycled) aluminium. The remaining 65% of the 6063 alloy is imported and contains only 8% secondary aluminium, remaining is made from primary aluminium.

A2 Transportation: Transportation module includes the transportation of raw materials to the manufacturing site. 65% of the EN AW-6063 aluminium billets are sourced from Malaysia, with the remaining 35% supplied from Türkiye. All other input materials, including other aluminium alloys are sourced locally.

A3 Manufacturing: Manufacturing module includes all processes required to transform raw materials into products. It also includes waste transport and treatment of waste that occurs during manufacturing. This waste includes waste metal, packaging and chemicals. Transport distance for packaging and chemical waste is assumed to be 50 km. These waste streams are collected by the municipality. Packaging waste is sent to recycling and chemical waste is sent to incineration.

C1: Deconstruction demolition

Data on deconstruction, dismantling and demolition specific to the intended market is missing. Default value of modelling C1 stage is taken from Table 4 of the PCR, which is 1.1 kWh/tonne of diesel is used to model deconstruction stage.

C2: Transport

It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed to have the same weight as the declared product. All the end-of-life products are assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is taken from the default values from Table 4 of the PCR as 80 km and the transportation method is assumed as EURO5 motor vehicle, 16-32 tonne lorry (EURO 5).

C3: Waste processing

According to the International Aluminium Institute factsheet, “The global Recycling Efficiency Rate (RER) of aluminium is currently 76%.”. It is assumed that 76% of the waste aluminium profiles are recycled.

C4: Disposal

The remaining 24% fraction of aluminium and additionally the residual portion of the product is projected to be handled as municipal solid waste scrap and disposed to sanitary landfill.

D: Reuse-Recovery-Recycling-potential: In the context of end-of-life scenario D, 76% of the waste aluminium is recovered, subsequently fully recycled into post-consumer aluminium scrap and has been modelled to avoid the use of primary materials.

Additional scenarios declared for modules C3, C4 and D:

The PCR states that if any of the declared scenarios is a mix of end-of-life alternatives, which is the case (recycling and landfill present), the corresponding 100% scenarios shall be declared. Due to this rule, a scenario named S1 where 100% of the aluminium is recycled and scenario named S2 where 100% of the aluminium is landfilled are declared additionally.

ENVIRONMENTAL PERFORMANCE

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

The declared unit of the study is 1 kg of the product supplied to the client.

Mandatory impact category indicators according to EN 15804

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	4.33E-02	4.00E-03	-3.07E+00
GWP-biogenic	kg CO_2 eq.	-2.37E-02	8.07E-08	5.14E-06	1.60E-02	7.65E-03	4.28E-03
GWP-luluc	kg CO_2 eq.	2.92E-02	4.08E-08	7.24E-06	1.08E-04	4.39E-06	-9.00E-03
GWP-total	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	5.94E-02	1.17E-02	-3.08E+00
ODP	kg CFC 11 eq.	7.58E-07	5.92E-12	2.05E-10	5.21E-10	8.28E-11	-1.89E-08
AP	mol H^+ eq.	1.18E-01	3.56E-06	5.52E-05	2.95E-04	2.49E-05	-2.11E-02
EP-freshwater	kg P eq.	7.08E-04	1.39E-09	2.01E-07	1.15E-06	6.16E-08	-9.92E-05
EP-marine	kg N eq.	1.89E-02	1.66E-06	1.72E-05	9.66E-05	1.01E-05	-3.32E-03
EP-terrestrial	mol N eq.	2.11E-01	1.82E-05	1.90E-04	1.02E-03	9.91E-05	-3.70E-02
POCP	kg NMVOC eq.	6.56E-02	5.43E-06	7.48E-05	3.21E-04	3.28E-05	-1.15E-02
ADP-minerals&metals*	kg Sb eq.	7.90E-05	1.47E-10	5.44E-08	3.96E-07	9.06E-09	-3.79E-05
ADP-fossil*	MJ	1.89E+02	5.19E-03	2.24E-01	5.43E-01	7.63E-02	-3.12E+01
WDP*	m^3	3.07E+00	1.34E-05	1.19E-03	5.53E-03	3.49E-03	-8.46E-01
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 declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	5.60E-02	4.01E-03	-3.08E+00

Resource use indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1.41E+01	3.27E-05	3.11E-03	0.00E+00	7.14E-03	4.03E+00
PERM	MJ	1.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.56E+01	3.27E-05	3.11E-03	0.00E+00	7.14E-03	4.03E+00
PENRE	MJ	1.84E+02	5.19E-03	2.24E-01	0.00E+00	3.18E-01	3.75E+01
PENRM	MJ	4.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.89E+02	5.19E-03	2.24E-01	0.00E+00	3.18E-01	3.75E+01
SM	kg	5.37E-01	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	7.51E-02	3.33E-07	3.00E-05	0.00E+00	-3.76E-03	2.92E-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						

Waste indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	2.65E-01	0.00E+00	0.00E+00	0.00E+00	2.40E-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 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	3.10E-01	0.00E+00	0.00E+00	7.60E-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
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

Scenario named S1 where 100% of the aluminium is recycled and scenario named S2 where 100% of the aluminium is landfilled are declared additionally.

Scenario 1

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	5.70E-02	0.00E+00	-4.59E+00
GWP-biogenic	kg CO_2 eq.	-2.37E-02	8.07E-08	5.14E-06	2.37E-02	0.00E+00	6.39E-03
GWP-luluc	kg CO_2 eq.	2.92E-02	4.08E-08	7.24E-06	1.42E-04	0.00E+00	-1.34E-02
GWP-total	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	8.08E-02	0.00E+00	-4.60E+00
ODP	kg CFC 11 eq.	7.58E-07	5.92E-12	2.05E-10	6.85E-10	0.00E+00	-2.82E-08
AP	mol H^+ eq.	1.18E-01	3.56E-06	5.52E-05	3.89E-04	0.00E+00	-3.15E-02
EP-freshwater	kg P eq.	7.08E-04	1.39E-09	2.01E-07	1.52E-06	0.00E+00	-1.48E-04
EP-marine	kg N eq.	1.89E-02	1.66E-06	1.72E-05	1.27E-04	0.00E+00	-4.96E-03
EP-terrestrial	mol N eq.	2.11E-01	1.82E-05	1.90E-04	1.34E-03	0.00E+00	-5.53E-02
POCP	kg NMVOC eq.	6.56E-02	5.43E-06	7.48E-05	4.22E-04	0.00E+00	-1.72E-02
ADP-minerals&metals*	kg Sb eq.	7.90E-05	1.47E-10	5.44E-08	5.21E-07	0.00E+00	-5.66E-05
ADP-fossil*	MJ	1.89E+02	5.19E-03	2.24E-01	7.14E-01	0.00E+00	-4.66E+01
WDP*	m^3	3.07E+00	1.34E-05	1.19E-03	7.27E-03	0.00E+00	-1.26E+00
GWP-GHG	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	7.37E-02	0.00E+00	-4.60E+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						

Scenario 2

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	0.00E+00	1.67E-02	0.00E+00
GWP-biogenic	kg CO_2 eq.	-2.37E-02	8.07E-08	5.14E-06	0.00E+00	2.37E-02	0.00E+00
GWP-luluc	kg CO_2 eq.	2.92E-02	4.08E-08	7.24E-06	0.00E+00	1.83E-05	0.00E+00
GWP-total	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	0.00E+00	4.04E-02	0.00E+00
ODP	kg CFC 11 eq.	7.58E-07	5.92E-12	2.05E-10	0.00E+00	3.45E-10	0.00E+00
AP	mol H^+ eq.	1.18E-01	3.56E-06	5.52E-05	0.00E+00	1.04E-04	0.00E+00
EP-freshwater	kg P eq.	7.08E-04	1.39E-09	2.01E-07	0.00E+00	2.57E-07	0.00E+00
EP-marine	kg N eq.	1.89E-02	1.66E-06	1.72E-05	0.00E+00	4.22E-05	0.00E+00
EP-terrestrial	mol N eq.	2.11E-01	1.82E-05	1.90E-04	0.00E+00	4.13E-04	0.00E+00
POCP	kg NMVOC eq.	6.56E-02	5.43E-06	7.48E-05	0.00E+00	1.37E-04	0.00E+00
ADP-minerals&metals*	kg Sb eq.	7.90E-05	1.47E-10	5.44E-08	0.00E+00	3.78E-08	0.00E+00
ADP-fossil*	MJ	1.89E+02	5.19E-03	2.24E-01	0.00E+00	3.18E-01	0.00E+00
WDP*	m^3	3.07E+00	1.34E-05	1.19E-03	0.00E+00	1.45E-02	0.00E+00
GWP-GHG	kg CO_2 eq.	1.80E+01	3.99E-04	1.62E-02	0.00E+00	1.67E-02	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						

ABBREVIATIONS

EPD - Environmental Product Declaration

PCR - Product Category Rules

LCA - Life Cycle Assessment

EN - European Norm (Standard)

EF - Environmental Footprint

GPI - General Programme Instructions

ISO - International Organization for Standardization

CEN - European Committee for Standardization

CLC - Co-location centre

CPC - Central product classification

SVHC - Substances of Very High Concern

ROHS - Restriction of Hazardous Substances in Electrical and Electronic Equipment

TR - Türkiye

GLO - Global

ND Not Declared

REFERENCES

Standards and PCR

General Programme Instructions of the International EPD® System. Version 5.0.1

PCR 2019:14, Construction products, version 2.0.1

EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment principles and frameworks.

ISO 14044:2006/Amd.1:2017 Environmental management. Life cycle assessment requirements and guidelines.

Ecoinvent database v3.11 (2024)- www.eco-invent.org

world-aluminium.org, Aluminium Recycling – By the International Aluminium Institute (IAI) - https://international-aluminium.org/wp-content/uploads/2024/03/wa_factsheet_final.pdf

VERSION HISTORY

Original Version – 2026-03-11

Version 002 – 2026-05-07 – Updated The International EPD System Logo

Version 003 – 2026-05-13 – Updated biogenic carbon in A1-A3

Contact Information

Programme & Programme Operator	EPD INTERNATIONAL EPD SYSTEM	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com
Licensee	TÜRKİYE EPD INTERNATIONAL EPD SYSTEM	EPD Türkiye NEF09 B Blok No:7/15, 34415 Kağıthane/İstanbul, Türkiye www.epdturkey.org info@epdturkey.org
Owner of Declaration	ALCAS®	Alcas Metal Sanayi A.Ş. Endam BENGÜ, endam.bengu@alcas.com.tr Velimeşe Organize Sanayi Bölgesi Mah. 129. Sok. No:11/1 Ergene/ Tekirdağ, Türkiye www.alcas.com.tr alcas@alcas.com.tr
LCA Practitioner	imnera impact-driven new era	Imnera Sustainability Consulting A. Nafiz Gürman Mh. Haldun Taner Sk. Platform Merter D Blok No:2/18 34173 Güngören/ İstanbul, Türkiye www.imnera.com info@imnera.com


32
"We produce
A CLASS"
ALCAS