

# CERTIFICATE

## EPD REGISTRATION

This document is to confirm that

**GUANGDONG JMA ALUMINIUM  
PROFILE FACTORY (GROUP) CO.,  
LTD.**

has published an Environmental Product Declaration for

**ANODIZED ALUMINIUM PROFILE**

with registration number EPD-IES-0016415  
in the International EPD<sup>®</sup> System.

The EPD has been developed in accordance with ISO 14025, the  
General Programme Instructions for the International EPD<sup>®</sup> System  
and the reference PCR 2019:14. Verification was performed by  
Matthew Fishwick.

This document is valid until 2029-09-12, or until the EPD is de-  
registered and no longer published at [www.environdec.com](http://www.environdec.com).



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Danielle Crowter Elfving  
Secretariat of the International EPD<sup>®</sup> System  
Stockholm, Sweden, 2024-09-19

# Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017 for:

## ***Anodized aluminium profiles***

from

***GuangDong JMA Aluminium Profile Factory (Group) Co., Ltd.***



Programme:	The International EPD System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company, based on the average results of the product group.
EPD registration number:	EPD-IES-0016415:002
Reversion	2
Version date:	2025-08-20
Validity date:	2030-08-19

*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](http://www.environdec.com)*



## GENERAL INFORMATION

Programme Information	
<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:support@environdec.com">support@environdec.com</a>

Product Category Rules (PCR)
<b>CEN standard EN 15804 serves as the Core Product Category Rules (PCR)</b>
<b>Product Category Rules (PCR): PCR 2019:14 Construction products, version 2.0.1 (valid until 2030-04-07), CEN standard EN 15804 serves as the core PCR. UN CPC code: 412.</b>
<b>PCR review was conducted by: Rob Rouwette (chair) and Noa Meron (co-chair) who can be contacted via <a href="mailto:support@environdec.com">support@environdec.com</a>.</b>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> <b>Individual EPD verification without a pre-verified LCA/EPD tool</b> Third-party individual verifier: <i>Matthew Fishwick from Fishwick Environmental Ltd.</i> Approved by: International EPD System
*EPD process certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on <a href="http://www.environdec.com">www.environdec.com</a> .
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

EPDs within the same product category but 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: GuangDong JMA Aluminium Profile Factory (Group) Co., Ltd.

Address: Nanhai Nonferrous Metal Industrial Park, Xiaotang, Shishan Town, Nanhai District, Foshan City, Guangdong Province, China.

Contact: Xing Shasha, jm8197@163.com

Address and contact information of the LCA practitioner commissioned by the EPD owner:  
Shuan.huang@ivl.se, Beijing City, China.

Description of the organisation: Established in 1993, GuangDong JMA Aluminium Profile Factory (Group) Co., Ltd. (hereinafter referred to as JMA) is located in the Nanhai District, Foshan City, Guangdong Province, China. This region is recognized as China's premier brand creation demonstration zone for the aluminium alloy profile industry. As an industry leader, JMA seamlessly integrates research, design, production, and sales of aluminium alloy building profiles, industrial profiles, as well as aluminium alloy doors, windows, and curtain walls. JMA's products find extensive applications across diverse sectors including architecture, industry, automotive, photovoltaics, electronic communications hardware, and overpasses.

JMA's production base spans 1200 acres and features a domestically leading, high-efficiency, energy-saving casting production lines. The company has introduced intelligent extrusion equipment, fully automatic vertical oxidation electrophoresis production lines, and fully automatic fluorocarbon spray painting production lines from Japan and Italy. JMA has built internationally advanced automated three-dimensional warehouses, mould processing centres, thermal insulation aluminium production centres, and deep processing centres. Additionally, it has acquired over 100 sets of internationally advanced testing equipment. The company has established a national enterprise technology centre, a postdoctoral research workstation, a nationally recognized laboratory, and a technical research institute, providing strong support for research and development innovation.

JMA has made significant contributions to international and national standards, having participated in formulating two international standards and led or revised 216 national and industry standards.

Product-related or management system-related certifications: ISO 9001:2015 Quality Management System Certification, ISO 14001:2015 Environmental Management Systems Certification, ISO 45001:2018 Occupational Health and Safety Management Systems Certification, ISO 50001:2018 Energy Management Systems Certification, IATF 16949:2016 Automotive Quality Management Systems Certification, Advanced Customs Certification, PED 4.3 Pressure Vessel Certification, Israel Certification, CNAS Laboratory Certification, Low Carbon Product Certification (CNCA/CTS0015-2014), Green Building Material Product Certification (T/CECS 10041-2019), CE Product Certification (EN 15088:2005), and Qualicoat Certification.

## PRODUCT INFORMATION

Product name: Anodized aluminium profile.

Product identification: GB/T 5237.2-2017, Wrought Aluminium Alloy Extruded Profiles for Architecture - Part 2: Anodized Profiles.

UN CPC code: 4153 Semi-finished products of aluminium or aluminium alloys.

**Product description:** JMA is dedicated to improving production efficiency by adopting advanced equipment and technologies to meet diverse market demands. We emphasize strict quality control to ensure consistent product excellence and significantly reduce defect rates. Additionally, we continuously optimize manufacturing processes to lower energy and raw material consumption, effectively reducing production costs. By implementing energy-efficient and resource-saving technologies, we promote responsible resource utilization and waste reduction, which not only enhances efficiency but also minimizes environmental impact. Through these innovative efforts, JMA's aluminium profile products are renowned for their superior quality, eco-friendly production methods, and high efficiency—supporting sustainable development and strengthening our position in the market.

JMA's products are manufactured strictly in accordance with customer drawings, orders, and relevant standards, resulting in variations in shape, size, wall thickness, and other specifications for each order. Overall, anodized aluminium profiles feature a finely textured and smooth sandblasted surface, coupled with a consistently thick anodic film that enhances microhardness and wear resistance. The electrodeposition of coloured metal ions within the film's pores is durable and even, contributing to superior light diffusion. These profiles are renowned for their exceptional corrosion resistance, a wide array of vibrant and uniform colours, and reliable colour reproduction. Ideal for major construction projects both at home and abroad, they are designed for a long service life, typically exceeding 15 years under standard conditions. The technical specifications of anodized aluminium profiles can be found below.

Table 1 The technical specifications of anodized aluminium profiles

Category	Unit	Value
Al	%	≥98
Mg	%	0.45-1.2
Si	%	0.20-0.8
Fe	%	≤0.35
Cu	%	≤0.40
Zn	%	≤0.10
Mn	%	≤0.15
Cr	%	≤0.35
Ti	%	≤0.15
Other elements	%	< 0.15
Tensile strength (R <sub>m</sub> )	N/mm <sup>2</sup>	≥160
Specified non-proportional extension strength (R <sub>p0.2</sub> )	N/ mm <sup>2</sup>	≥110
Elongation after fracture (A <sub>50mm</sub> )	%	≥8
Average film thickness	μm	≥10
Local film thickness	μm	≥8
Sealing quality	mg/dm <sup>2</sup>	≤30
Salt spray corrosion resistance (24h)	\	≥9
Abrasion resistance	g/μm	≥330

The production of aluminium profiles involves a lengthy process that includes melting&casting, extrusion&aging, and surface treatments (anodizing). To produce anodized aluminium profiles, aluminium ingots, aluminium scrap and alloy ingots are first placed into a smelting furnace. The molten aluminium is then poured into moulds to cast aluminium billets. After casting, the rods are saw-cut and sent to a homogenization furnace for treatment. Once homogenization is complete, the rods are heated to an appropriate temperature and extruded. The extruded profiles are then stretched and cut to a specified length before being framed and sent to an aging furnace for treatment. After aging, the profiles

undergo surface pre-treatment before proceeding to subsequent anodizing process. Once surface treatment is completed, the profiles are packaged and prepared for distribution.

Name and location of production site(s): Nanhai Non-ferrous Metal Industrial Park, Xiaotang, Shishan Town, Nanhai District, Foshan City, Guangdong Province, China.

EPD shall not include rating, judgements, or direct comparisons with other products or companies. “Other products” include previous or alternative versions of the studied product, i.e., the EPD shall not display changes in the environmental performance results of a product over time, or differences with regard to a hypothetical version of the product using, e.g., alternative production processes or input materials. “Other companies” means that the EPD shall not in any way imply that the EPD owner is, for example, “a market leader” or “more sustainable” (or similar) compared to its competitors.

## CONTENT DECLARATION

The mass (weight) of one unit of a product, as purchased or per declared unit: 1 kg.

The result of this study is calculated based on the average results of the product group. The content declaration below is in reference to average content of the product group. The content of pre-consumer scrap in this product is 69%.

Table 2 Content declaration

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic materials		
			Mass-% of product	kg C / declared unit	kg CO <sub>2</sub> / declared unit
Aluminium	1.0E+0	0.0%	0.0%	0.0	0.0
TOTAL	1.0E+0	0.0%	0.0%	0.0	0.0

Table 3 Content declaration of packaging

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/ declared unit	Biogenic material, kg CO <sub>2</sub> / declared unit
kraft paper	2.5E-02	2.5%	1.1E-02	4.0E-02
EPE foam	5.0E-03	0.5%	0.0E+0	0.0E+0
PE film	5.0E-03	0.5%	0.0E+0	0.0E+0
TOTAL	3.5E-02	3.5%	1.1E-02	4.0E-02

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO<sub>2</sub>.

For construction product EPDs compliant with EN 15804, the content declaration shall at least declare the substances contained in the product that are listed in the “Candidate List of Substances of Very High Concern for Authorization”, in case their content exceeds the limits for registration with the European Chemicals Agency (0.1% of the weight of the product). JMA declares that their products covered by the study do not contain substances of very high concern (SVHC) as defined and listed in the European Chemicals Agency (ECHA) Candidate List of substances of very high concern for Authorization, in levels above 0.01% by weight for the products.

## LCA INFORMATION

Declared unit: 1 kg of anodized aluminium profiles (based on average product results).

Time representativeness: January 2024 to December 2024.

Geographical scope: A1-A3: China; A5: Global, C1-C4: Global, D: Global.

Database(s) and LCA software used: Software: SimaPro 9.6.0.1, database: ecoinvent 3.10.1 (system boundary cut-off).

Description of system boundaries: (b) cradle-to-gate with options, modules C1-C4, module D and optional modules A5.

Process flow diagram: Process flow diagram of the product system, divided into the life-cycle stages and modules, showing the main processes included and the system boundary of the LCA.

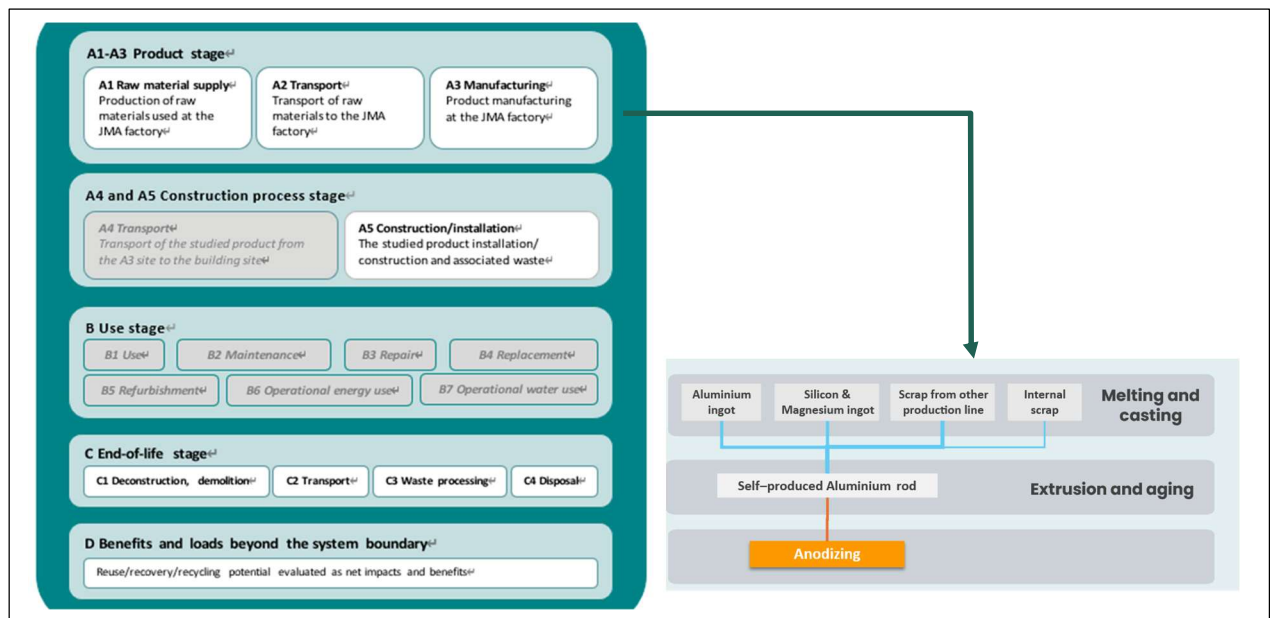


Figure 1 system diagram

More information:

### Scenarios

- Module A5: Since lacking supporting information, the environmental impact during the construction stage of the product is not considered. However, since the package contains biogenic carbon, depending on the recommendations of the PCR, it is assumed that the packaging becomes waste in this stage and is treated to end-of-life stage. So, the treatment of the packaging with the biogenic carbon dioxide is considered in this stage.
- Module C1-C4: The modeling of Module C was based on Section 4.8.4 of the PCR. The declared scenario aligns with the International Aluminium Institute's guidelines and represents a mix of recycling (90%) and landfill (10%). Corresponding scenarios for 100% recycling and 100% landfill have also been declared. The declared scenario (S0) serves as the base case, while the 100% recycling and 100% landfill scenarios (S2) are considered alternative scenarios. The C1 module is assumed that 1.1 kWh diesel would be used to demolition/deconstruction one tonne of aluminium. After C1, it is assumed that 10% of the product would be sent to C4 for landfill,

and 90% of aluminium for recycling according to International Aluminium Institute (S0). For the C2 module, the assumption has been made that all waste products would be transported for 80 km by truck. For C3, it is assumed that processes such as loading and unloading at the sorting facility (diesel consumption), mechanical sorting (electricity consumption), and further treatment (diesel consumption) are required. Additionally, it is assumed that 5% of the waste product is lost during processing. For C4, it is assumed that compacting of inert construction waste for landfills would consume diesel. According to the PCR requirements, two additional scenarios are considered in this study: 100% recycling (S1) and 100% landfill (S2).

- Module D: Since each scenario for Modules C3 or C4 corresponds to a scenario in Module D, the waste product recycling rates are set at 90% for S0, 100% for S1, and 0% for S2. To prevent double counting of benefits, secondary materials are excluded from the benefit calculation. Specifically, for S0, 855.0 g of aluminium exits Module C3 and enters Module D. Considering a scrap content of 69.1%, the net aluminium flow in Module D is 264.0 g. For S1 and S2, the net flows considered are 293.2 g and 0.0 g, respectively. Besides, the benefit (credit) could be generated by using the waste product to replace the new one. For the studied product, it could be seen as the aluminium scrap waste generated after deconstruction can be used in the production of new aluminium products, replacing primary aluminium liquid.

### Allocation

- In the studied system, co-products such as waste moulds and slags were produced alongside the main product. As these have low economic value, conservative assumptions were made and no allocation was applied, since the effort of allocation is disproportionate to any improvement in accuracy.
- The allocation of waste in this study follows the polluter-pays principle that is made operational according to the below described method, which is also called cut-off approach. The system boundary to the subsequent product system is set where the waste (e.g., the discarded product) reaches the end-of-waste state, i.e., when it has become a usable flow (e.g., for reuse, recycling and/or energy recovery). At the system boundary, cut-off allocation is applied, i.e., all unit processes before the point of end-of-waste shall be assigned to the product system generating the waste and all unit processes after the point of end-of-waste shall be assigned to the subsequent product system. Besides, where third parties pay for waste transportation, the end-of-waste state is reached before the transport.
- Aluminium scrap used as inputs are classified into 2 types: closed-loop scrap and pre-consumer scrap (different production line). For closed-loop scrap, as they are recycled internally in the same product system, thereby no co-products leave the product system, and no allocation is necessary. For pre-consumer scrap (different production line), co-production allocation is applied in accordance with PCR 4.5.3, as the scrap has economic value. Since co-product allocation is made on an economic basis, the internal material value of the aluminium scrap is used as the basis for this allocation. The GWP-GHG contribution from this scrap accounts for less than 10% of the total GWP-GHG impact in the A1-A3 stage.
- The declared unit corresponds to the average weight of the products. For this data, allocation based on physical properties was applied. Specifically, the energy use, auxiliary materials consumption, and waste generation per declared unit are calculated by dividing the usage by the total amount of the products.

### Cut-off

The cut-off criteria established by the PCR is that data for elementary flows to and from the product system contributing to a minimum of 95% of the declared environmental impacts shall be included (not including processes that are explicitly outside the system boundary). No cut-off for the studied product has been applied in the study.

### Information on the modelling of infrastructure/capital goods

The production, maintenance, and after-use treatment of capital goods, such as machines, factories, etc., “overhead” activities, such as heating of buildings and lighting, and the activities of the employees are not included in the life cycle. In this study, the infrastructure and capital goods are not included in the LCA analysis since they are used many times for several years for the product manufacturing. According to the PCR, it should be excluded.

#### Additional technical information:

- The climate impact of the electricity of A3 (GWP-GHG indicator) is 0.68 kg CO<sub>2</sub> eq./kWh, including Southern electricity grid mix (CSG, 99.66%) and photovoltaic power (0.34%). For the national grid mix, because China is relatively large and the electricity generation structure varies from province to province, the electricity data for China requires the use of a sub-national electricity mix according to the PCR requirements. Therefore, the electricity mix from CSG was used, and it is region where the plant is located. Note that the Guarantees of Origin market in China represents an extremely small proportion of production and consumption, and therefore the consumption mix is effectively the same as the residual mix. The energy source behind grid mix can be found below.

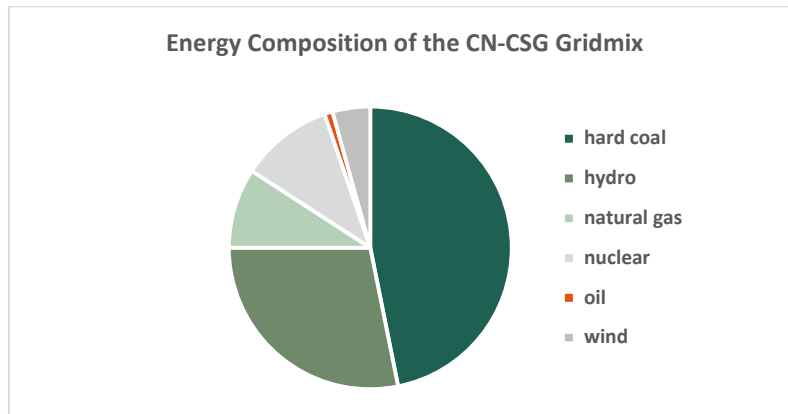


Figure 2 Energy Composition of the CN-CSG Gridmix

- The LCA analysis applied the EN 15804 as the calculation methodology. All results in this LCA analysis are calculated by EN 15804+A2. The “EN 15804 reference package” is calculated based on EF 3.1.

Table 4 Modules declared, geographical scope, share of primary 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
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CN	CN	CN	-	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Share of primary data	10.4%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	ND			-	-	-	-	-	-	-	-	-	-	-	-	-	-

### Data quality

A summary of the data quality assessment, in line with requirements of PCR in Section 4.6.4. is listed 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.

Table 5 The declaration of data sources, reference years, data categories, and share of primary data.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Production of aluminium ingot	Database	Ecoinvent 3.10.1	2023	Secondary data	0.0%
Generation of the electricity used in manufacturing of product	Collected	EPD owner	2024	Primary data	9.6%
Transportation of raw materials and packaging	Collected	EPD owner	2024	Primary data	0.0%
Emission and waste treatment	Collected	EPD owner	2024	Primary data	0.8%
Other process	Database	Ecoinvent 3.10.1	2023	Secondary data	0.0%
Total share of primary data, of GWP-GHG results for A1-A3					10.40%

The EPD covers reclaimed anodized aluminium profile from JMA's factory in Guangdong Province, China, which provided data for the period 2024-01-01 to 2024-12-31. The production process of this product includes smelting and casting, extrusion and aging, and surface treatment. Due to its wide range of applications, it is assumed that disposal of packaging waste in global, and the product's end-of-life stage is also in global. Background data was sourced from the Ecoinvent 3.10.1. The data quality assessment is based on EN15804 Annex E Table E-1 (Data quality level and criteria of the Global Guidance Principles for Life Cycle Assessment Databases (UN Environment 2011)). In general, time representation of the dataset's selection is very good for the studied product, the technical representation is good, the geographical representation is good. No fair, poor or very poor data was found during the assessment of relevant data.

## ENVIRONMENTAL PERFORMANCE

### LCA results of the products - main environmental performance results

#### Mandatory impact category indicators according to EN 15804

Results per 1 kg of anodized aluminium profiles								
Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	8.0E+00	1.8E-02	5.3E-04	1.6E-02	2.6E-03	3.8E-03	-4.3E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	-3.6E-02	4.0E-02	1.4E-06	2.7E-06	4.0E-06	1.1E-05	-6.1E-04
GWP-luluc	kg CO <sub>2</sub> eq.	3.0E-03	3.1E-06	4.1E-07	6.2E-06	2.9E-06	4.7E-06	-1.4E-03
GWP-total	kg CO <sub>2</sub> eq.	8.0E+00	5.9E-02	5.4E-04	1.6E-02	2.6E-03	3.8E-03	-4.3E+00
ODP	kg CFC 11 eq.	5.4E-08	2.2E-11	6.9E-12	2.2E-10	2.5E-11	6.9E-11	-2.3E-08
AP	mol H <sup>+</sup> eq.	5.5E-02	1.2E-05	4.0E-06	5.2E-05	1.6E-05	2.2E-05	-3.0E-02
EP-freshwater	kg P eq.	1.6E-03	1.6E-06	7.2E-08	1.2E-06	8.2E-07	6.0E-07	-8.4E-04
EP-marine	kg N eq.	8.6E-03	6.1E-06	1.6E-06	1.7E-05	4.8E-06	9.4E-06	-4.5E-03
EP-terrestrial	mol N eq.	9.0E-02	5.3E-05	1.7E-05	1.8E-04	5.1E-05	8.4E-05	-4.9E-02
POCP	kg NMVOC eq.	2.9E-02	1.4E-05	5.2E-06	7.3E-05	1.5E-05	2.6E-05	-1.6E-02
ADP-minerals&metals*	kg Sb eq.	2.6E-05	3.5E-09	3.2E-09	5.0E-08	1.5E-08	1.0E-08	-3.3E-06
ADP-fossil*	MJ	8.7E+01	1.6E-02	6.6E-03	2.2E-01	3.3E-02	6.4E-02	-4.4E+01
WDP*	m <sup>3</sup>	9.1E-01	1.4E-03	4.3E-05	9.9E-04	3.3E-04	-2.4E-02	-3.8E-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 on these results are high or as there is limited experienced with the indicator.*

*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)."*

## Additional mandatory and voluntary impact category indicators

Results per 1 kg of anodized aluminium profiles								
Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	8.0E+00	1.8E-02	5.4E-04	1.6E-02	2.6E-03	3.8E-03	-4.3E+00

## Resource use indicators

Results per 1 kg of anodized aluminium profiles								
Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	1.1E+01	3.5E-01	6.1E-04	2.8E-03	3.9E-03	1.9E-03	-5.2E+00
PERM	MJ	3.5E-01	-3.5E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	1.1E+01	4.2E-04	6.1E-04	2.8E-03	3.9E-03	1.9E-03	-5.2E+00
PENRE	MJ	8.4E+01	2.8E+00	6.6E-03	2.2E-01	3.3E-02	6.4E-02	-4.4E+01
PENRM	MJ	2.8E+00	-2.8E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ	8.7E+01	1.6E-02	6.6E-03	2.2E-01	3.3E-02	6.4E-02	-4.4E+01
SM	kg	8.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m <sup>3</sup>	2.3E-02	3.9E-05	1.3E-06	2.9E-05	1.2E-05	-5.5E-04	-9.5E-03
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							

<sup>1</sup> 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<sub>2</sub> is set to zero.

## Waste indicators

Results per 1 kg of anodized aluminium profiles								
Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.0E-03	8.1E-03	1.7E-07	5.5E-06	1.2E-06	6.9E-04	-1.0E-03
Non-hazardous waste disposed	kg	2.1E-01	3.6E-02	5.9E-05	1.0E-02	1.7E-04	1.5E-01	-9.5E-02
Radioactive waste disposed	kg	1.4E-04	5.2E-09	2.1E-09	4.4E-08	5.3E-08	3.4E-08	-7.3E-05

## Output flow indicators

Results per 1 kg of anodized aluminium profiles								
Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.6E-01	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

## Additional LCA results (other environmental performance results) of the products

Results for additional scenarios for modules C1-C4 and D: The most representative scenario (for the geographical scope of the EPD) has been declared as the main environmental performance results. And another two scenarios: 100% recycling (S1) and 100% landfill (S2) are declared here.

Indicator	Unit	C1 S1	C2 S1	C3 S1	C4 S1	D S1	C1 S2	C2 S2	C3 S2	C4 S2	D S2
GWP-fossil	kg CO <sub>2</sub> eq.	5.3E-04	1.6E-02	2.9E-03	1.3E-03	-4.8E+00	5.3E-04	1.6E-02	0.0E+00	2.6E-02	0.0E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	1.4E-06	2.7E-06	4.4E-06	3.8E-06	-6.8E-04	1.4E-06	2.7E-06	0.0E+00	7.7E-05	0.0E+00
GWP-luluc	kg CO <sub>2</sub> eq.	4.1E-07	6.2E-06	3.2E-06	1.6E-06	-1.6E-03	4.1E-07	6.2E-06	0.0E+00	3.2E-05	0.0E+00
GWP-total	kg CO <sub>2</sub> eq.	5.4E-04	1.6E-02	2.9E-03	1.3E-03	-4.8E+00	5.4E-04	1.6E-02	0.0E+00	2.6E-02	0.0E+00
ODP	kg CFC 11 eq.	6.9E-12	2.2E-10	2.7E-11	2.4E-11	-2.6E-08	6.9E-12	2.2E-10	0.0E+00	4.8E-10	0.0E+00
AP	mol H <sup>+</sup> eq.	4.0E-06	5.2E-05	1.8E-05	7.7E-06	-3.4E-02	4.0E-06	5.2E-05	0.0E+00	1.5E-04	0.0E+00
EP-freshwater	kg P eq.	7.2E-08	1.2E-06	9.1E-07	2.1E-07	-9.3E-04	7.2E-08	1.2E-06	0.0E+00	4.1E-06	0.0E+00
EP-marine	kg N eq.	1.6E-06	1.7E-05	5.3E-06	3.3E-06	-5.0E-03	1.6E-06	1.7E-05	0.0E+00	6.5E-05	0.0E+00
EP-terrestrial	mol N eq.	1.7E-05	1.8E-04	5.7E-05	2.9E-05	-5.4E-02	1.7E-05	1.8E-04	0.0E+00	5.8E-04	0.0E+00
POCP	kg NMVOC eq.	5.2E-06	7.3E-05	1.7E-05	9.1E-06	-1.7E-02	5.2E-06	7.3E-05	0.0E+00	1.8E-04	0.0E+00
ADP-minerals&metals*	kg Sb eq.	3.2E-09	5.0E-08	1.7E-08	3.5E-09	-3.7E-06	3.2E-09	5.0E-08	0.0E+00	7.1E-08	0.0E+00
ADP-fossil*	MJ	6.6E-03	2.2E-01	3.7E-02	2.2E-02	-4.9E+01	6.6E-03	2.2E-01	0.0E+00	4.4E-01	0.0E+00
WDP*	m <sup>3</sup>	4.3E-05	9.9E-04	3.7E-04	-8.2E-03	-4.2E-01	4.3E-05	9.9E-04	0.0E+00	-1.6E-01	0.0E+00

## ABBREVIATIONS

Abbreviation	Definition
<b>General Abbreviations</b>	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
<b>Environmental Impact Indicators (EN 15804)</b>	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO <sub>2</sub> eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO <sub>2</sub> eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO <sub>2</sub> eq.)
GWP-total	Total Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO <sub>2</sub> eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H <sup>+</sup> eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m <sup>3</sup> )
<b>Resource Use Indicators</b>	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)

PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m <sup>3</sup> )
<b>Waste Indicators</b>	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
<b>Output Flow Indicators</b>	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
<b>Lifecycle Stages / Modules</b>	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A5	Construction/Installation
<b>Other Relevant Terms</b>	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m <sup>3</sup>	Cubic Meter
NM VOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO <sub>2</sub> eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO <sub>2</sub> eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

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## VERSION HISTORY

**Original Version of the EPD, 2024-09-19**

**Revision 2, 2025-08-20**

Differences	Revision 2	Original Version
Version date	2025-08-20	2024-09-19
GPI version	5.0.1	4.0
PCR	PCR 2019:14 (Version 2.0.1)	PCR 2019:14 (Version 1.3.4)
Database	ecoinvent 3.10.1	ecoinvent 3.9.1
EPD format	Followed the new templates based on PCR	
Information about epd owner	Description of the organisation has been updated	
Product information	Product description has been updated	
Scenario	The scenarios for modules C and D have been updated in accordance with PCR requirements.	
Environmental performance	As the specific data collected is based on the 2024 calendar year, the results have been updated. Compared to 2023, the main difference in the 2024 production data is that a lot more internal scrap is being used as raw material.	

