ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804+A1 for:

MILL FINISHED AND COATED ALUMINIUM PROFILES

EPD Program	The International EPD® System
CPC Code	41532 Bars, rods and profiles, of aluminium
Based on	PCR 2012:01 v2.3 Construction products and construction services. EPD System.
Registration number	S-P-01728
Publication/registration date	2019-10-23
EPD expire on	2024-10-22
Market coverage	Worldwide
Representativeness	Spain

summary

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ITESAL

ITESAL, is a leading business company at national level, and increasingly international, which offers Aluminum Solutions, standing out for Quality, Service, Sustainability and generation of well-being in people.

Since 1992, we have been designing, manufacturing and marketing Aluminum Solutions for Architecture, and also for the industrial sector, generating an economic, important and lasting advantage for our Stakeholders

Our business strategy is based on sustainability, finding a balance between economic growth, social welfare and respect for the environment:

• Establishing initiatives to implement prevention and integrate it into all our activities and decisions

• Seeking the systematic reduction of the impacts that our activities can generate

• Making a responsible consumption of resources

• Setting ambitious goals and targets

Itesal is certified ISO 9001, ISO 14001 and QUALICOAT.

For more information you can check our website www.itesal.es

PRODUCT

Product description

This EPD covers a wide range of aluminum extrusion products manufactured by ITESAL members in Spain, not considering a burden for scrap or credit for the EoL (End of Life) . The products considered in this declaration are as follows:

- Mill finished aluminium profile

- Coated aluminium profile

- Thermal break mill finished aluminium profile

- Thermal break coated aluminium profile

It excludes downstream fabrication operations such as machining and assembly due to the wide diversity of such operations.

The results are an average representative of all aluminium profiles produced for ITESAL. Averages are obtained through the production and total consumption in ITESAL facilities.

Applications

Aluminium profiles are primarily used in building and construction applications, including windows, doors, curtain walls, façade systems, skylights, canopies, etc.

Technical data

Technical data is representative of 6000 series aluminium alloys (6xxx alloy, tempers T1-T6), which is the predominant production at ITESAL.

Composition

Aluminium profiles can be produced as standard or customer design so there is a wide variety of profiles. Therefore, the composition of the final product can also be very different between designs. This EPD covers four product groups with an average composition as shown below. The product does not contain any substance included in the list of Substances of Very High Concern with concentrations higher than 0.1% in weight.

Packaging

Aluminium profiles are packaged using lumber, plastic film, plastic strapping and cardboard. Packaging is often per customer specification. All packaging materials are recyclable and/or reusable following delivery to the customer. Packaging materials are included in the scope of this EPD; packaging disposal and raw materials packaging, however, are outside the scope.

Property	Value	
Young's modulus	68 - 80 GPa	UNE-EN ISO 6892
Yield strength (elastic limit)	95 - 610 Mpa	UNE-EN ISO 6892
Tensile strength	180 - 620 Mpa	UNE-EN ISO 6892
Hardness - Vickers	60 - 160 HV	UNE-EN ISO 6507
Fatigue strength (10^7 cycles)	57 - 210 Mpa	UNE 7118
Density	2550 – 2900 kg/m^3	
Melting point	495 - 640 °C	
Thermal conductivity	118 - 174 W/m.°C	
Specific heat capacity	890 - 1020 J/kg.°C	

Reference service life and use phase

Service life for products will vary depending on the final application, but is typically long due to aluminium´s high corrosion resistance. It can accept a service life of 50 years according to bibliography. Similarly, further processing (other than coating or thermal improvement), assembly and/or installation of extruded aluminum products are outside the scope of this EPD.

Recycling and disposal

Aluminium products are highly recyclable. During aluminium profile production, all post-industrial scrap (extrusion drop-offs from cutting, unfit material and discards, etc.) is fed back into the billet production process.

In the same way, when an aluminium building product reaches the end of its life, it is systematically and selectively collected and sent to recycling facilities for secondary billet production. A collection rate for aluminium products next to 95% is well documented in construction sector.

In both cases recycling rate depends on smelting yield that includes metal losses during scrap preparation and melting. Smelting yield is highy influenced by the presence of non aluminium material (as TBB and/or coating) and the origin of the scrap (post-industrial or post-consumer).

Hence, aluminium supply at the beginning of the product system has a content of recycled material from post- industrial and post-consumer scrap with the consequent reduction of environmental burdens. In module D are reported only the net benefits of recycling, i.e. the recycling benefits at the end of life minus the benefits already considered in the module A1 due to secondary aluminium content. In this EPD, the scrap not collected at the end of life is sent to landfill.

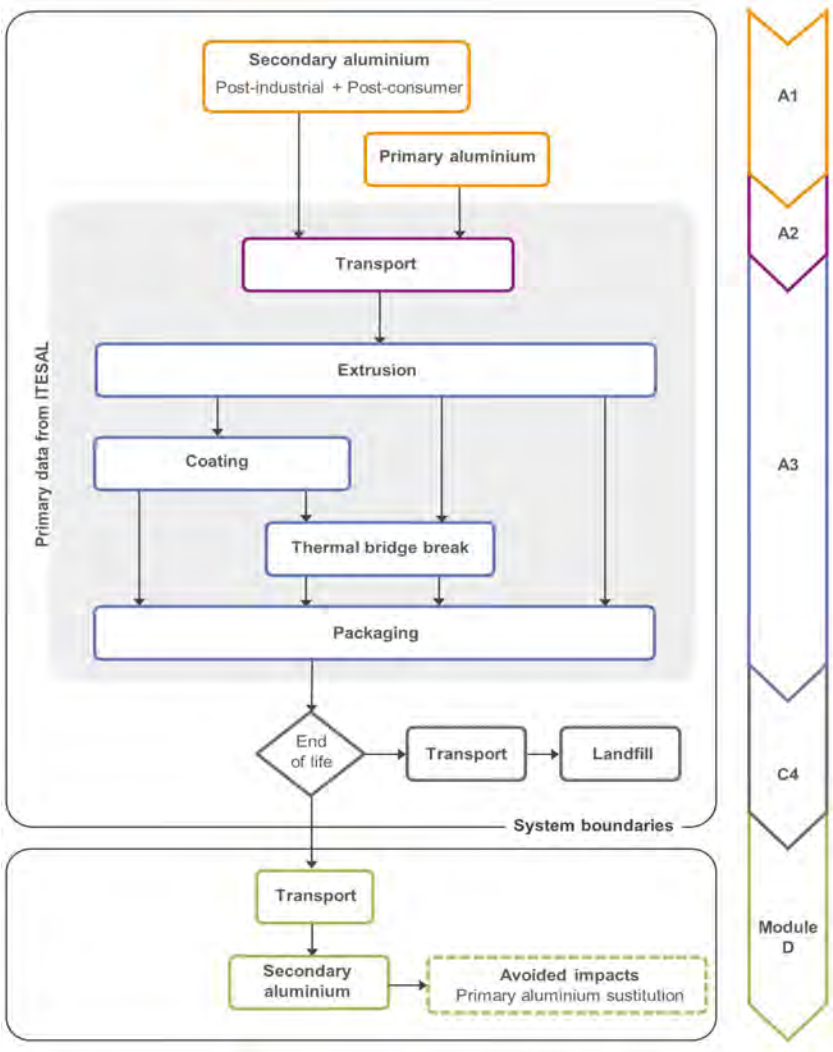
	MILL FINISHED PROFILE	COATED PROFILE	THERMAL BREAK MILL FINISHED PROFILE	THERMAL BREAK COATED PROFILE
Aluminium profile	100%	~95,6%	~89,5%	~85,2%
Aluminium	93-96%			
Magnesium	0,5-1,5 %			
Silicon	0,5-1,5 %			
Others	<0,2%			
Coating (polyester)	-	~4,4%	-	~4,4%
Thermal Break	-	-	~10,5%	~10,5%
Polyamide	-	-	75%	75%
Glass fiber	-	-	25%	25%

The average metal composition, based on metal feedstock information collected from the companies participating in this EPD, is shown in the following table.

Aluminium Source	%
Primary aluminium (including alloying elements)	21,9
Secondary aluminium from post-industrial scrap	51,4
Secondary aluminium from post-consumer scrap	26,6

System boundaries

The scope of the study is set to be "Cradle-to-gate with options". Processes included in the assessment are presented on the diagram below.



LCA INFORMATION

Declared unit

The declared unit is the production of 1 kg of aluminium profile for construction use including the surface treatment (coating or anodization) and the optional thermal bridge break.

To obtain the environmental information referred to a 1 meter of profile, conversion factors are provided for 4 products: mill finished profile, 0.592 kg/m; thermal break mill finished profile, 0.550 kg/m; coated profile, 0.576 kg/m; and thermal break coated profile, 0.534 kg/m.

Goal and scope

This EPD evaluates the environmental impacts of 1 kg aluminium profile product from cradle to gate with option (disposal). This EPD is the basis for B2B communication. Intended use clients and relevant stakeholders within the building sector.

System boundaries

This EPD provides information on the production stage of the aluminium profiles (raw material supply, transport to plants and manufacturing) with disposal at end-of-life. Recycling potential of aluminium with burdens saving due to use in a second product systems is also reported (module D).

All environmental aspects (related to the products under study) detected in the environmental management system implemented in ITESAL have been included in the study and therefore no cut-off rules have been applied.

Time representativeness

All primary data used in this EPD are based on the 2016, 2017 and 2019 production data for aluminium profiles manufactured by ITESAL in their facilities.

Database(s) and LCA software used

The data for primary aluminium billet and for scrap remelting (secondary aluminium billet) are based on LCI dataset published by European Aluminium in february 2018 and are the best available. For transport processes the ELCD 3.2 database was consulted. Other LCI datasets were sourced from the Ecoinvent v3.3. In the case of thermal bridge break profiles, the manufacturers supplying to ITESAL have provided EPDs (fulfilling 15804 specifications) of their products

The LCA study was performed using an excel-based model. The impact assessment results were calculated using characterization factors published by the University of Leiden's Centre of Environmental Sciences (CML 2001) obtained from Simapro software.

Data Quality

In order to achieve precision, consistency and representativeness and to ensure reliable results, first-hand industry data were used. All foreground data were collected from ITESAL for their facilities using customized data collection templates. It was created representative production-weighted inventories. These inventories are intended to represent average of aluminium profile production for building by ITESAL. The age of these data is less than three years. As for bibliographic data, none has been used with a year of publication lower than 2011.

Regionally specific datasets were used to model the energy consumption (electricity, natural gas or diesel). For the processes of transport, production of raw materials or end-of-life, datasets were chosen according to their technological and geographical representation of the actual process. The technological and geographical representativeness of 64% of the processes included in the LCA is guaranteed, among which are the most contributing to final results. For 21% of the processes, only geographical or technological representativeness is guaranteed. For the rest of the processes, proxy datasets were used to address the lack of data for a specific process or for a specific geographical region.

Estimates and Assumptions

Billets are made from 100% primary aluminium or nearly 100% secondary aluminium (from post-industrial and post-consumer scrap). Billet manufatures have provided production data for both in order to calculate the recycled content in the aluminum input to the product system.

All scrap was modeled as burden free when entering the system but it was included transport to the recycling sites for post-industrial scrap from ITESAL.

Disposal and recovery rates for building are modelled based on figures reported by the European Aluminium Association (see references). It was assumed a 95% for recovery rate while the remaining 5% goes to landfill.

Allocation

It was not possible to distinguish the consumption of electricity and natural gas between the production stages of profiles. Based on the total energy consumption in the plants, electricity and natural gas used in the different stages

Production			Construction		Use							End-of-life				Resource recovery
Raw Materials Supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction and demolition	Transport	Waste processing	Disposal	Reuse, recovery or recycling potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X

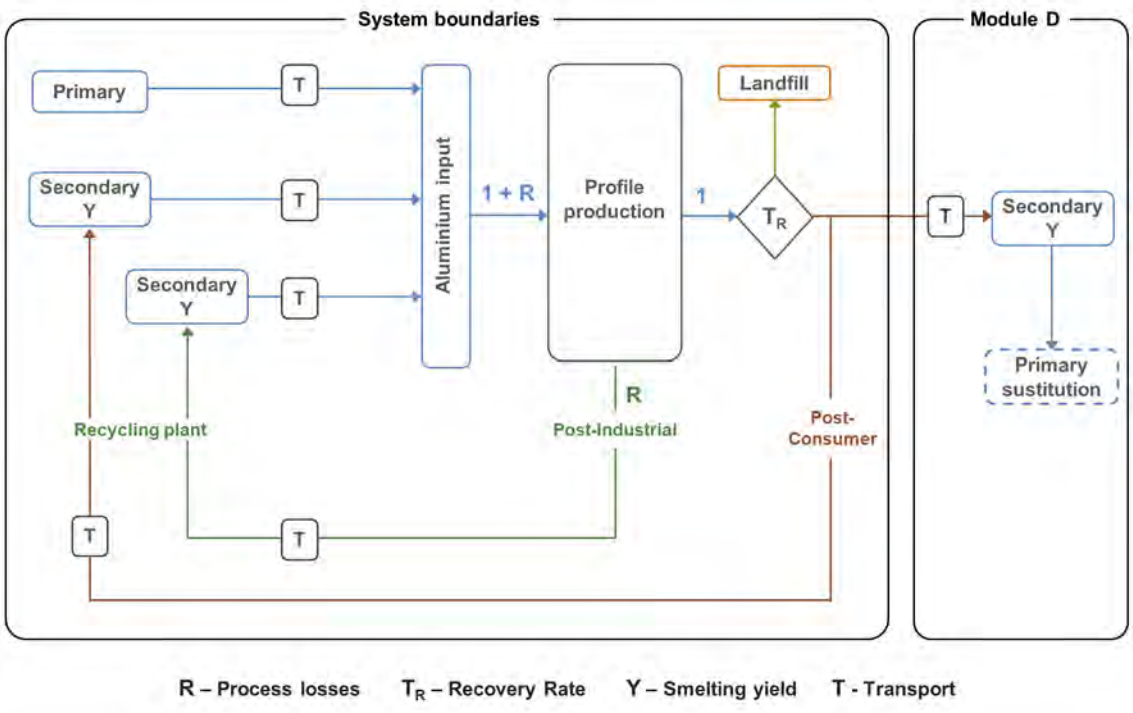
X = declared module; MND = module not declared

was estimated under the criteria of the technical staff of plants. Total energy consumption was attributed entirely to extrusion, coating and thermal bridge break. The contribution of packaging to electricity consumption is not relevant (but it is included in the rest of processes).

Once the energy consumption was attributed to these processes it was apportioned among the total production of semi-finished products for each stage. It has proceeded in the same way for raw materials and waste generation.

Because tens of different chemicals are used for surface treatments before coating, their consumption were modeled based on the surface of an average profile. The surface treatments chosen are the most complete and those that require the use of the greatest amount of chemicals per square meter of treated surface, thus attending to a conservative assumption.

Scrap inputs to the production stage are subtracted from scrap to be recycled at end of life in order to obtain the net scrap output from the product system. This remaining net scrap is then sent to recycling. Module D report the environmental aspects of recycled scrap generated at the end of life minus that used at the production stage. Loads and benefits are assessed at the point of functional equivalence, i.e. where the substitution of primary aluminium takes place. In the recycling process, smelting yield for each scrap fraction was taken into account.



RESULTS

		MILL FINISHED PROFILE (1 Kg)			COATED ALUMINIUM PROFILE (1 Kg)		
ENVIRONMENTAL IMPACTS	UNIT	A1-3	C4	D	A1-3	C4	D
GWP	kg CO_2 eq	2,83	3,91E-03	-6,90E-01	3,31	3,91E-03	-3,22E-01
ODP	kg CFC-11 eq	6,85E-08	6,45E-11	-6,06E-12	1,54E-07	6,45E-11	-2,83E-12
AP	kg SO_2 eq	1,28E-02	4,24E-06	-3,51E-03	1,55E-02	4,24E-06	-1,64E-03
EP	kg PO_4^{-3} eq	8,72E-04	1,75E-05	-2,06E-04	1,14E-03	1,75E-05	-9,59E-05
POCP	kg C_2H_4 eq	7,21E-04	3,97E-07	-1,87E-04	1,09E-03	3,97E-07	-8,70E-05
ADPE	kg Sb eq	1,70E-06	2,63E-10	-3,35E-07	3,34E-06	2,63E-10	-1,56E-07
ADPF	MJ	35,8	1,16E-02	-7,24	46,2	1,16E-02	-3,38
RESOURCE USE	UNIT	A1-3	C4	D	A1-3	C4	D
PERE	MJ	14,8	3,49E-04	-3,88E+00	16,4	3,49E-04	-1,81E+00
PERM	MJ	0	0	0	0	0	0
PERT	MJ	14,8	3,49E-04	-3,88E+00	16,4	3,49E-04	-1,81E+00
PENRE	MJ	40,7	1,21E-02	-8,51E+00	51,8	1,21E-02	-3,97E+00
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	40,7	1,21E-02	-8,51E+00	51,8	1,21E-02	-3,97E+00
SM	kg	9,31E-01	0	8,49E-02	8,93E-01	0	3,96E-02
RSF	MJ	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0
FW	m^3 eq	2,25	1,13E-03	-3,03E-02	4,86	1,13E-03	-1,41E-02
WASTE CATEGORIES	UNIT	A1-3	C4	D	A1-3	C4	D
HWD	kg	1,42E-01	1,68E-08	-4,50E-02	1,43E-01	1,68E-08	-2,10E-02
NHWD	kg	6,73E-01	7,50E-03	-2,09E-01	6,57E-01	7,50E-03	-9,73E-02
RWD	kg	1,82E-03	0	-5,10E-04	1,75E-03	0	-2,38E-04
OUTPUT FLOWS	UNIT	A1-3	C4	D	A1-3	C4	D
CRU	kg	0	0	0	0	0	0
MFR	kg	2,06E-01	0	0	2,01E-01	0	0
MER	kg	0	0	0	0	0	0
EE	MJ	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS. GWP: Global warming potential; ODP: Ozone depletion potential; AP: Acidification potential of land and water; EP: Eutrophication potential; POCP: Photochemical ozone creation potential; ADPE: Abiotic depletion potential for non-fossil resources; ADPF: Abiotic depletion potential for fossil resources.

RESOURCE USE. PERE: Renewable primary energy as energy carrier; PERM: Renewable primary energy resource as material utilization; PERT: Total use of renewable primary energy resources; PENRE: Non-renewable primary energy as energy carrier; PENRM: Non-renewable primary energy as material utilization; PENRT: Total use of non-renewable primary energy resources; SM: Use of secondary materials; RSF: Use of renewable secondary fuels; NRSF: Use of non-renewable secondary fuels; FW: Use of net fresh water.

WASTE CATEGORIES. HWD: Hazardous waste disposed; NHWD: Non-hazardous waste disposed; RWD: Radioactive waste disposed.

OUTPUT FLOWS. CRU: Components for re-use; MFR: Materials for recycling; MER: Materials for energy recovery; EE: Exported energy per energy carrier.

		THERMAL BREAK MILL FINISHED PROFILE (1 Kg)			THERMAL BREAK COATED PROFILE (1 Kg)		
ENVIRONMENTAL IMPACTS	UNIT	A1-3	C4	D	A1-3	C4	D
GWP	kg CO_2 eq	3,54	3,91E-03	-3,02E-01	3,97	3,91E-03	-2,90E-01
ODP	kg CFC-11 eq	6,46E-08	6,45E-11	-2,66E-12	1,41E-07	6,45E-11	-2,55E-12
AP	kg SO_2 eq	1,41E-02	4,24E-06	-1,54E-03	1,65E-02	4,24E-06	-1,48E-03
EP	kg PO_4^{-3} eq	1,37E-03	1,75E-05	-9,01E-05	1,62E-03	1,75E-05	-8,64E-05
POCP	kg C_2H_4 eq	1,10E-03	3,97E-07	-8,17E-05	1,43E-03	3,97E-07	-7,84E-05
ADPE	kg Sb eq	5,26E-06	2,63E-10	-1,47E-07	6,73E-06	2,63E-10	-1,41E-07
ADPF	MJ	48,8	1,16E-02	-3,17	58,2	1,16E-02	-3,04
RESOURCE USE	UNIT	A1-3	C4	D	A1-3	C4	D
PERE	MJ	16,4	3,49E-04	-1,70E+00	17,9	3,49E-04	-1,63E+00
PERM	MJ	0	0	0	0	0	0
PERT	MJ	16,4	3,49E-04	-1,70E+00	17,9	3,49E-04	-1,63E+00
PENRE	MJ	53,3	1,21E-02	-3,73E+00	63,3	1,21E-02	-3,58E+00
PENRM	MJ	0	0	0	0	0	0
PENRT	MJ	53,3	1,21E-02	-3,73E+00	63,3	1,21E-02	-3,58E+00
SM	kg	8,38E-01	0	3,72E-02	8,04E-01	0	3,57E-02
RSF	MJ	2,47E-04	0	0	2,47E-04	0	0
NRSF	MJ	2,57E-03	0	0	2,57E-03	0	0
FW	m^3 eq	4,59	1,13E-03	-1,33E-02	6,94	1,13E-03	-1,27E-02
WASTE CATEGORIES	UNIT	A1-3	C4	D	A1-3	C4	D
HWD	kg	1,28E-01	1,68E-08	-1,97E-02	1,29E-01	1,68E-08	-1,89E-02
NHWD	kg	1,67	7,50E-03	-9,14E-02	1,65	7,50E-03	-8,77E-02
RWD	kg	2,15E-03	0	-2,23E-04	2,08E-03	0	-2,14E-04
OUTPUT FLOWS	UNIT	A1-3	C4	D	A1-3	C4	D
CRU	kg	0	0	0	0	0	0
MFR	kg	1,92E-01	0	0	1,87E-01	0	0
MER	kg	1,20E-03	0	0	1,20E-03	0	0
EE	MJ	3,64E-03	0	0	3,64E-03	0	0

ENVIRONMENTAL IMPACTS. GWP: Global warming potential; ODP: Ozone depletion potential; AP: Acidification potential of land and water; EP: Eutrophication potential; POCP: Photochemical ozone creation potential; ADPE: Abiotic depletion potential for non-fossil resources; ADPF: Abiotic depletion potential for fossil resources.

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WASTE CATEGORIES. HWD: Hazardous waste disposed; NHWD: Non-hazardous waste disposed; RWD: Radioactive waste disposed.

OUTPUT FLOWS. CRU: Components for re-use; MFR: Materials for recycling; MER: Materials for energy recovery; EE: Exported energy per energy carrier.

In most impact categories and indicators, coated profiles have greater values than mill finished profiles. This is because the coating process is intensive in the use of natural gas, electricity and chemical substances used in the surface treatment.

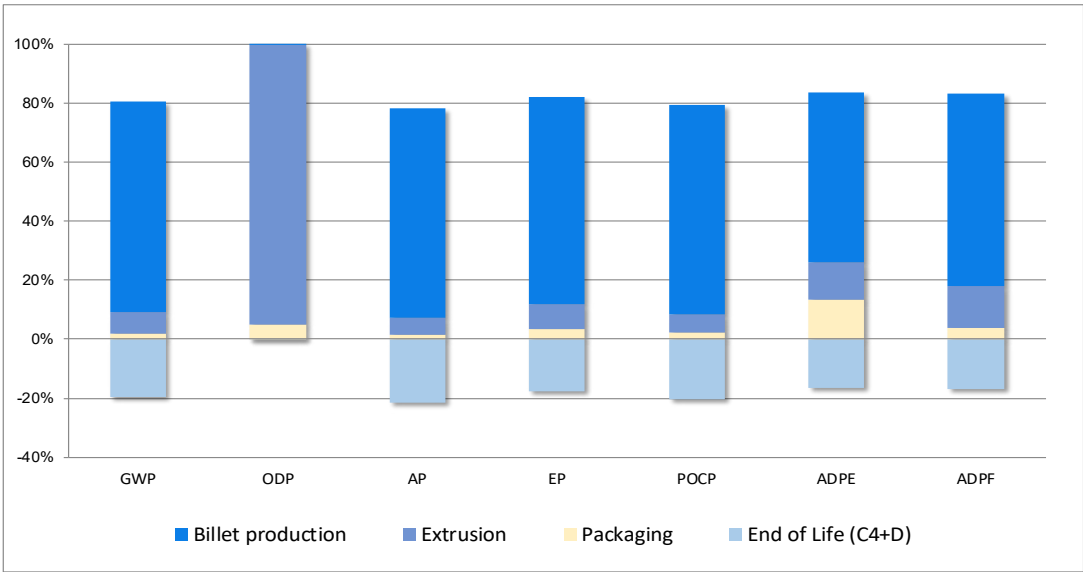
TBB inclusion, either in mill finished or coated profile, does not affect the overall result in relation to the coated and mill finished profiles. The TBB presence replaces part of the aluminium in profile. Not only less starting aluminium is used (as raw material) but also it is necessary to extrude less amount of profile, or coat less aluminium surface. This explains the slight decrease in some impacts categories of thermal break aluminium profiles in relation to the coated and mill finished profiles.

It is also noteworthy that the presence of plastic components in the profile (powder coating and/ or TBB) reduces the useful amount of aluminium to be recycled at the end of life (the avoided impacts are reduced - module D-) and it supposes a greater problem in the landfill (increasing impacts reported in C4). However, module D is in all cases a very significant reduction in all indicators due to the replacement of primary aluminum.

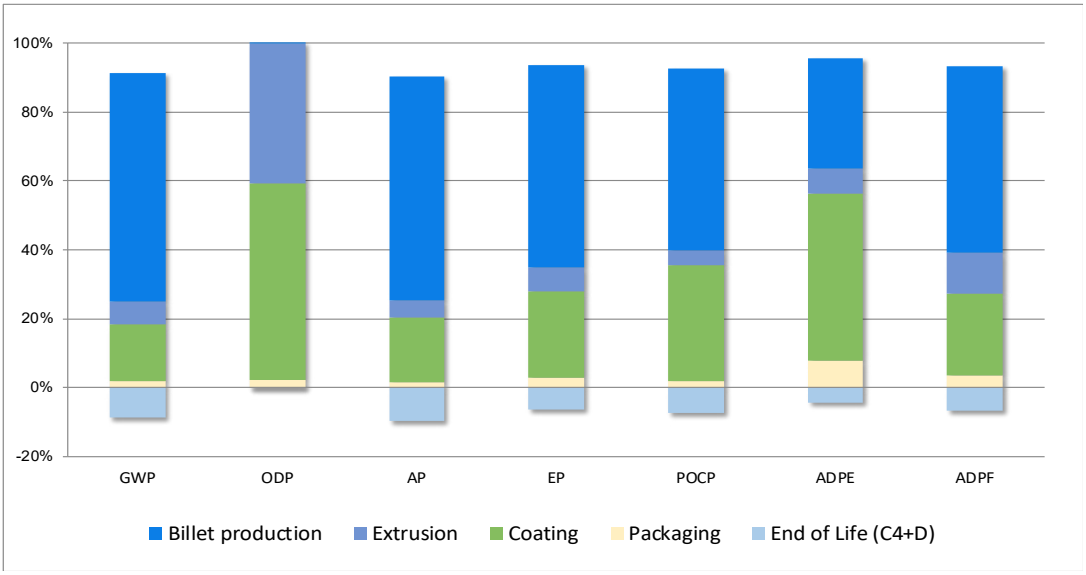
SUPPLEMENT INFORMATION

The following figures show the contribution of each product stage for the aluminium profiles under study in this DAP.

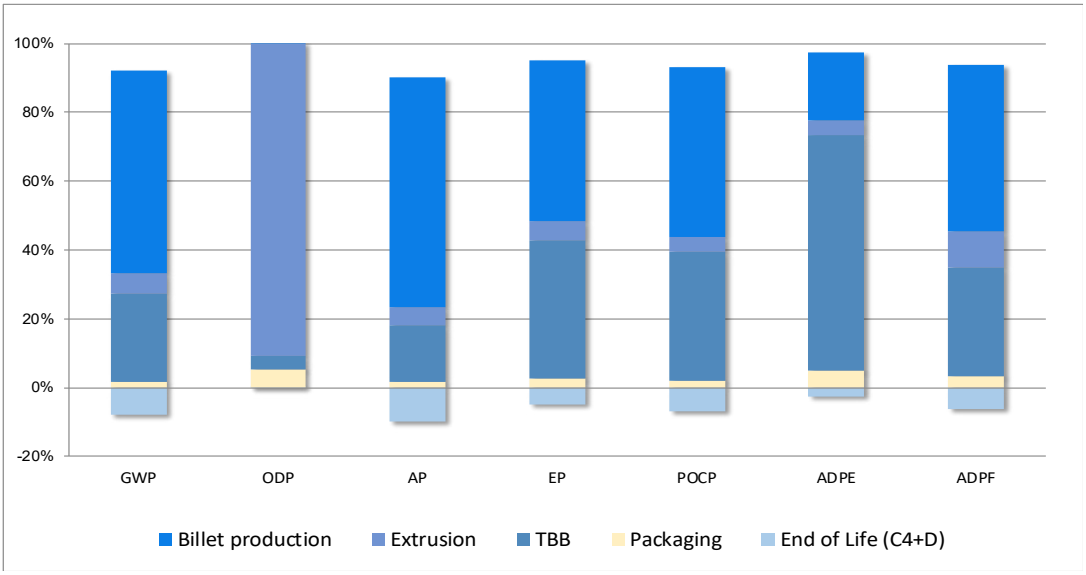
MILL FINISHED ALUMINIUM PROFILE



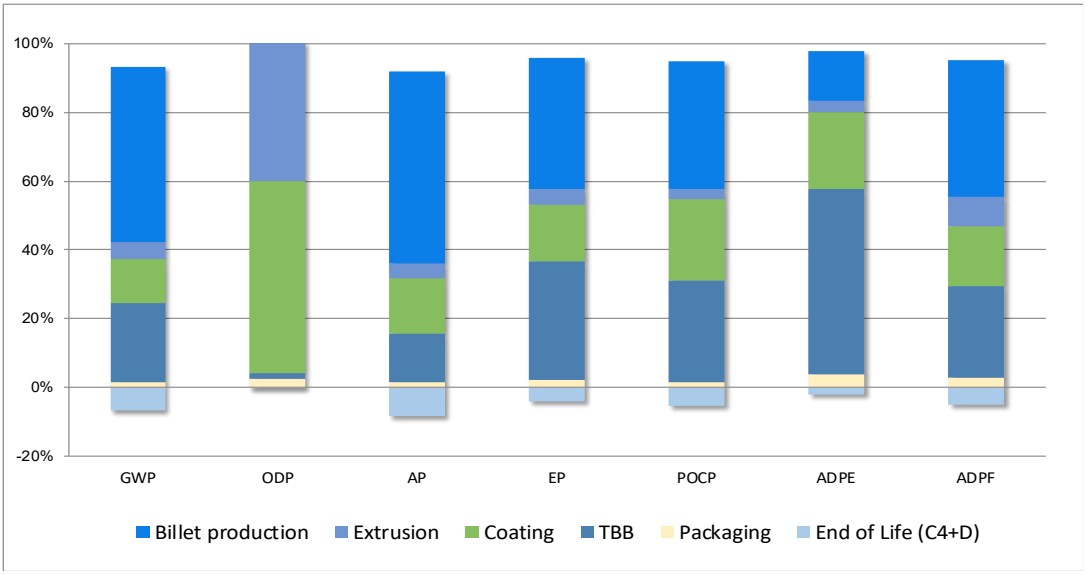
COATED ALUMINIUM PROFILE



THERMAL BREAK MILL FINISHED ALUMINIUM PROFILE



THERMAL BREAK COATED ALUMINIUM PROFILE



Although they are not in accordance with the International EPD System product category rules for construction products, the indicators obtained from the ILCD 2011 Midpoint + methodology (defined in European Commission Recommendation 2013/179/EU of April 9, 2013), are also included in this DAP as these indicators do form part of the new standard EN 15804: 2012 + A1.

		MILL FINISHED PROFILE (1 Kg)			COATED PROFILE (1 Kg)		
ENVIRONMENTAL IMPACTS	UNIT	A1-3	C4	D	A1-3	C4	D
CC-total	kg CO_2 eq	2,77	4,33E-03	-6,59E-01	3,31	4,33E-03	-3,07E-01
CC-fossil	kg CO_2 eq	2,77	4,33E-03	-6,59E-01	3,30	4,33E-03	-3,07E-01
CC-biogenic	kg CO_2 eq	1,23E-03	9,30E-07	-1,65E-04	1,69E-03	9,30E-07	-7,71E-05
CC-luluc	kg CO_2 eq	1,10E-03	2,48E-07	-1,29E-04	3,43E-03	2,48E-07	-6,00E-05
OD	kg CFC-11 eq	7,64E-08	9,26E-11	-2,51E-12	1,74E-07	9,26E-11	-1,17E-12
A	mol H^+ eq	1,49E-02	6,77E-06	-4,05E-03	1,82E-02	6,77E-06	-1,89E-03
EAF	kg P eq	5,80E-05	7,90E-08	-3,12E-07	2,19E-04	7,90E-08	-1,46E-07
EAM	kg N eq	2,39E-03	7,26E-06	-5,83E-04	2,88E-03	7,26E-06	-2,72E-04
ET	mol N eq	2,58E-02	2,69E-05	-6,34E-03	3,07E-02	2,69E-05	-2,96E-03
POF	kg NMVOC eq	7,22E-03	7,46E-06	-1,75E-03	9,13E-03	7,46E-06	-8,16E-04
AD-non fossil	kg Sb eq	1,29E-06	7,84E-10	-1,57E-07	3,77E-06	7,84E-10	-7,30E-08
AD-fossil	MJ	40,8	1,47E-02	-8,53E+00	51,9	1,47E-02	-3,98E+00
WU	m^3 eq	15,6	7,01E-04	-7,42E-02	35,7	7,01E-04	-3,46E-02
PM	Disease incidence	1,87E-07	5,43E-11	-5,66E-08	1,96E-07	5,43E-11	-2,64E-08
IR	kBq U235 eq	3,57E-01	4,71E-05	-9,75E-02	3,84E-01	4,71E-05	-4,55E-02
EF	CTUe	1,95	6,80E-01	-3,08E-02	6,57	6,80E-01	-1,44E-02
HT-c	CTUh	5,85E-04	2,37E-10	-1,12E-09	1,98E-03	2,37E-10	-5,21E-10
HT-nc	CTUh	1,08E-03	7,09E-09	-2,88E-08	7,52E-03	7,09E-09	-1,34E-08
LU	Dimensionless	7,95	7,42E-03	-1,63E-01	12,42	7,42E-03	-7,58E-02

ENVIRONMENTAL IMPACTS. CC-total: Climatic Change - total; CC-fossil: Climatic Change - fossil; CC-biogenic: Climate change - biogenic; CC-luluc: Climate change - land use and land use change; OD: Ozone depletion; A: Acidification ; EAF: Eutrophication aquatic freshwater; EAM: Eutrophication aquatic marine; ET: Eutrophication terrestrial; POF: Photochemical ozone formation; AD- non fossil: Abiotic resource depletion - minerals and metals; AD-fossil: Abiotic resource depletion - fossils; WU: Water use; PM: Particulate matter emissions; IR: Ionising radiation; EF: Ecotoxicity - freshwater; HT-c: Human toxicity, cancer effects; HT-nc: Human toxicity, non-cancer effects; LU: Land use.

ENVIRONMENTAL IMPACTS	UNIT	THERMAL BREAK MILL FINISHED PROFILE (1 Kg)			THERMAL BREAK COATED PROFILE (1 Kg)		
		A1-3	C4	D	A1-3	C4	D
CC-total	kg CO_2 eq	3,48	4,33E-03	-2,89E-01	3,97	4,33E-03	-2,77E-01
CC-fossil	kg CO_2 eq	3,48	4,33E-03	-2,89E-01	3,96	4,33E-03	-2,77E-01
CC-biogenic	kg CO_2 eq	1,15E-03	9,30E-07	-7,24E-05	1,56E-03	9,30E-07	-6,94E-05
CC-luluc	kg CO_2 eq	1,12E-03	2,48E-07	-5,64E-05	3,22E-03	2,48E-07	-5,41E-05
OD	kg CFC-11 eq	7,15E-08	9,26E-11	-1,10E-12	1,60E-07	9,26E-11	-1,06E-12
A	mol H^+ eq	1,70E-02	6,77E-06	-1,77E-03	2,00E-02	6,77E-06	-1,70E-03
EAF	kg P eq	9,81E-05	7,90E-08	-1,37E-07	2,43E-04	7,90E-08	-1,31E-07
EAM	kg N eq	3,31E-03	7,26E-06	-2,55E-04	3,75E-03	7,26E-06	-2,45E-04
ET	mol N eq	2,91E-02	2,69E-05	-2,78E-03	3,35E-02	2,69E-05	-2,67E-03
POF	kg NMVOC eq	8,47E-03	7,46E-06	-7,66E-04	1,02E-02	7,46E-06	-7,35E-04
AD-non fossil	kg Sb eq	1,61E-06	7,84E-10	-6,85E-08	3,85E-06	7,84E-10	-6,58E-08
AD-fossil	MJ	49,1	1,47E-02	-3,74E+00	59,2	1,47E-02	-3,59E+00
WU	m^3 eq	449,0	7,01E-04	-3,25E-02	467,1	7,01E-04	-3,12E-02
PM	Disease incidence	1,86E-07	5,43E-11	-2,48E-08	1,95E-07	5,43E-11	-2,38E-08
IR	kBq U235 eq	3,32E-01	4,71E-05	-4,27E-02	3,56E-01	4,71E-05	-4,10E-02
EF	CTUe	3,85	6,80E-01	-1,35E-02	8,01	6,80E-01	-1,29E-02
HT-c	CTUh	5,27E-04	2,37E-10	-4,89E-10	1,78E-03	2,37E-10	-4,69E-10
HT-nc	CTUh	9,69E-04	7,09E-09	-1,26E-08	6,78E-03	7,09E-09	-1,21E-08
LU	Dimensionless	9,91	7,42E-03	-7,12E-02	13,94	7,42E-03	-6,83E-02

ENVIRONMENTAL IMPACTS. CC-total: Climatic Change - total; CC-fossil: Climatic Change - fossil; CC-biogenic: Climate change - biogenic; CC-luluc: Climate change - land use and land use change; OD: Ozone depletion; A: Acidification ; EAF: Eutrophication aquatic freshwater; EAM: Eutrophication aquatic marine; ET: Eutrophication terrestrial; POF: Photochemical ozone formation; AD- non fossil: Abiotic resource depletion - minerals and metals; AD-fossil: Abiotic resource depletion - fossils; WU: Water use; PM: Particulate matter emissions; IR: Ionising radiation; EF: Ecotoxicity - freshwater; HT-c: Human toxicity, cancer effects; HT-nc: Human toxicity, non-cancer effects; LU: Land use.

VERIFICATION

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and the requirements given in the product category rules document for Construction Products and Construction Services (EN 15804) and the general program guidelines by The International EPD® System. The results shown in this EPD are based on the LCA for ITESAL products according to standard 14044.

This EPD is not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages or are based on different Product Category Rules. EPDs of construction products may not be comparable if they do not comply with EN 15804. The EPD owner is responsible for its content, as well as to preserve supporting documentation during the period of validity that justifies the data and statements that are included.

EPD Programme	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number	S-P-01728
EPD owner	ITESAL Sistemas
Declared unit	1 kg of coated aluminium profile, mill finished aluminium profile, thermal break coated aluminium profile and thermal break mill finished aluminium profile
System boundaries	Cradle to gate with options
Published	2019 - 10 - 23
Valid until	2024 - 10 - 22
Reference year for data	2016-2017-2018
Geographical scope	Wordwide
Product group classification	UN CPC Code: 41532 Bars, rods and profiles, of aluminium
Product Category Rules	PCR 2012:01 Construction products and Construction services. Version 2.3. 2017-05-30. Based on CEN standard EN 15804
PCR review was conducted by	Technical Committee of The International EPD® System www.environdec.com info@environdec.com
Independent verification of the declaration and data, according to ISO 14025:2006	[X] External [ ] Internal [ ] EPD®
Third-party verifier	Centro Tecnológico de Miranda de Ebro www. ctme.es evamtz@ctme.es
EPD prepared by	IDNÓVAM Innovación y desarrollo para el ambiente info@idnovam.com

REFERENCES

- General Programme Instructions of The International EPD® System. Version 3.0.
- PCR 2012:01. Construction products and construction services - Version 2.3.
- EN 15804:2012+A1:2013, Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products
- ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental
- ISO 14040-44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment-Principles
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