



ENVIRONMENTAL PRODUCT DECLARATION

for

Coated Aluminium Profiles

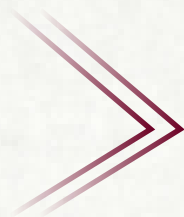
In accordance with ISO 14025 and EN 15804:2012+A2:2019

Programme :	The International EPD® System www.environdec.com
Programme Operator :	EPD International AB Stockholm, Sweden
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Geographical Scope:	Global





Quality and Development
in Aluminium Production



Programme Information

Programme

The International EPD® System

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Product Category Rules (PCR): 2019:14 Version 1.1, 2019-09-14 Construction Products
EN 15804:2012 + A2:2019 Sustainability of Construction Works

Independent third-party verification of the declaration and data, according to ISO 14025:2006

EPD process certification

☐ EPD verification



Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA

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 the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.



About the Company

Altaiseer Aluminium Company was established in 1976 as a fabricator to manufacture doors, windows and kitchen cabinets. From its humble beginning, the company has continued to diversify and expand to manufacture world-class façade & architectural aluminium works in 1983. With this progress, we were able to move to a larger space in 2nd industrial area of Riyadh. The company did not stop to innovate and strengthen its abilities to develop its strategies and techniques. As a result, we achieved our first milestone, to commence the processing of powder coating, the first ever commercial powder coating line in Saudi Arabia in 1989.

The company continues its progress and diversity in the field by introducing and achieving further progress by commencement of production of aluminium extrusion in 1994. At present, there are 6 extrusion lines from SMS Germany.

It is the policy of Altaiseer Aluminium Company (TALCO) to provide products that meet the needs and expectations of customers and are "Fit for Purpose".

TALCO is committed towards the quality management system and as such recognizes the need for process assurance through all stages of our activities, from the initial inquiry through delivery.

The policy acknowledges that everyone has a part to play in achieving quality and customer's satisfaction, that prevention not detection, is the right approach, and that the Quality Management System is adequately resourced with competent Staff, infrastructure and better product systems.

The management of TALCO identify company's objectives and regularly review performance of the set objectives and that of the Quality Management Systems to ensure continuing suitability and effectiveness including, opportunities for continual improvement. TALCO ensures that products conform not only to the specification of the customer, but also meets to fit the purpose.

It is our vision to build upon our technology, employee satisfaction, and value, and the participate in those field of interest that offer opportunities for continuing growth and profitability.

Talco has been certified for ISO 9001:2015, ISO 14001:2015, SA8000 and strictly follows the ISO 45001:2018 Standard. TALCO is actively involved in "Made in Saudi" initiative that aims to help local businesses grow, by encouraging local consumers to buy more locally made products, and helping businesses increase their exports to priority markets. TALCO has imbibed the Cradle-to-Cradle Principle within its business operations and follows the C2C principle in all aspects of the Organization.



60 000

metric tons/ year

production capacity

distribution to over

40

countries

6

extrusion
presses



About the Product

The surface decorative finishes are supported by highly sophisticated state of the art latest 4 vertical lines and 2 horizontal lines. All powder coating lines are following the specifications of Qualicoat.

The standard length is 7.00 m, however, the lines can be processed upon request with a premium up to 9.5 m length. The powder coating lines are capable of processing polyester powder, super durable powder, hyper durable kynar, metallic finishes. The production capacity is over 40,000 metric tonnes per annum.

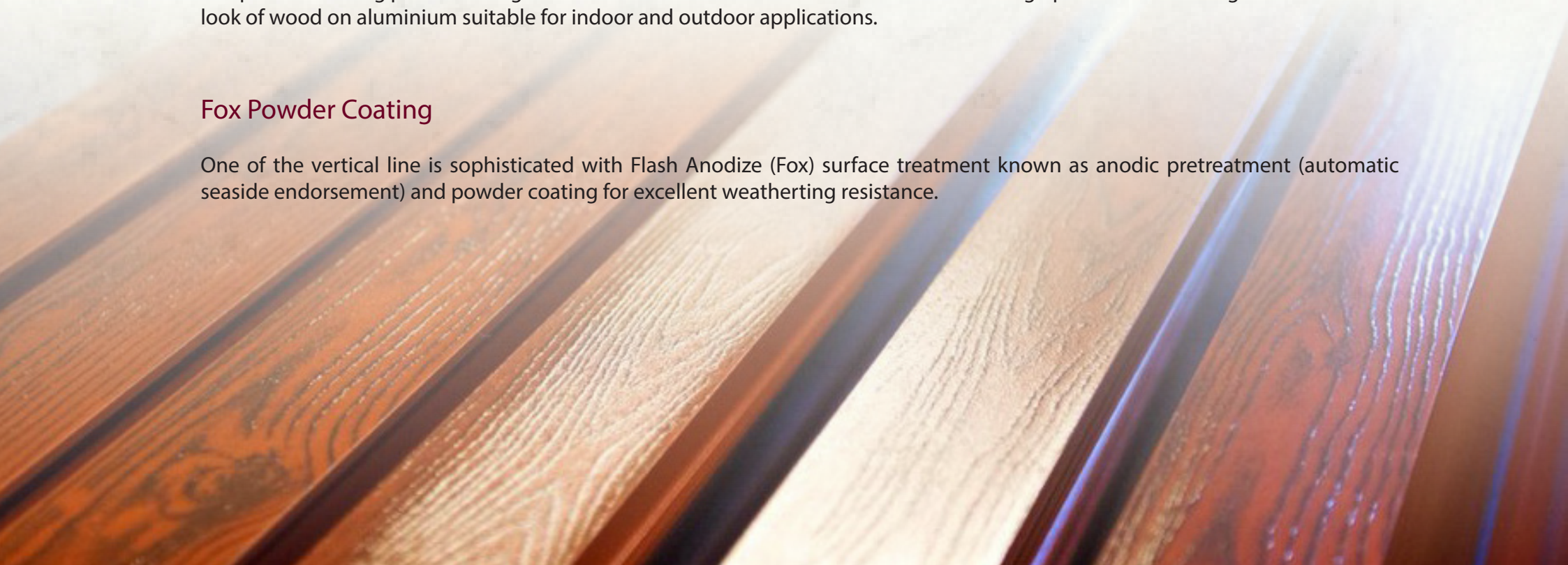
The polyester powder performance warranty 12 year and follow AAMA 2603 standards.

The super durable powder coating guarantee for 25 years process in accordance to AAMA 2604. The powder's based on Kynar Hyper is guarantee for 30 years and process in accordance to AAMA 2605.

The powder coating product along with various colour choices also have wood finish design products enhancing natural aesthetic look of wood on aluminium suitable for indoor and outdoor applications.

Fox Powder Coating

One of the vertical line is sophisticated with Flash Anodize (Fox) surface treatment known as anodic pretreatment (automatic seaside endorsement) and powder coating for excellent weatherting resistance.



Technical Specifications

Alloys	Si %	Fe %	Cu %	Mn %	Mg %	Cr %	Zn %	Ti %	Others %		Min. Al %
									Each	Total	
19500	0.25	0.40	0.05	0.05	0.05	-	0.05	0.03	0.03	-	99.50
6060	0.30-0.60	0.10-0.30	0.10	0.10	0.35-0.60	0.05	0.15	0.10	0.05	0.15	Rem.
6063	0.20-0.60	0.35	0.10	0.10	0.45-0.90	0.10	0.10	0.10	0.05	0.15	Rem.
6061	0.40-0.80	0.70	0.15-0.40	0.15	0.8-1.20	0.04-0.35	0.25	0.15	0.05	0.15	Rem.
6082	0.40-0.80	0.50	0.20	0.10	0.7-1.10	0.10	0.25	0.10	0.05	0.15	Rem.

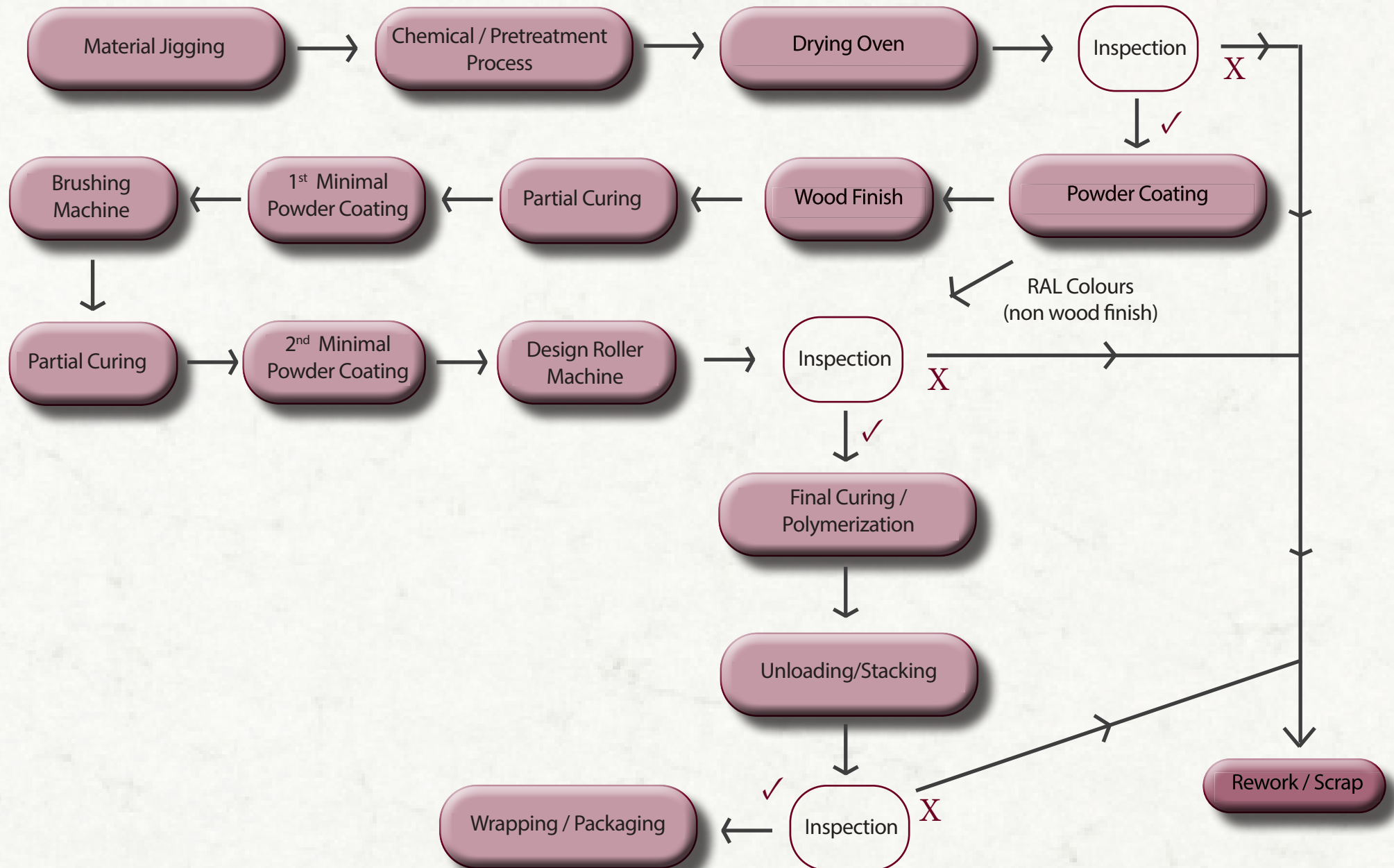
UN CPC Code: 41532

Note: All the above is percentage maximum by weight unless a range is shown.

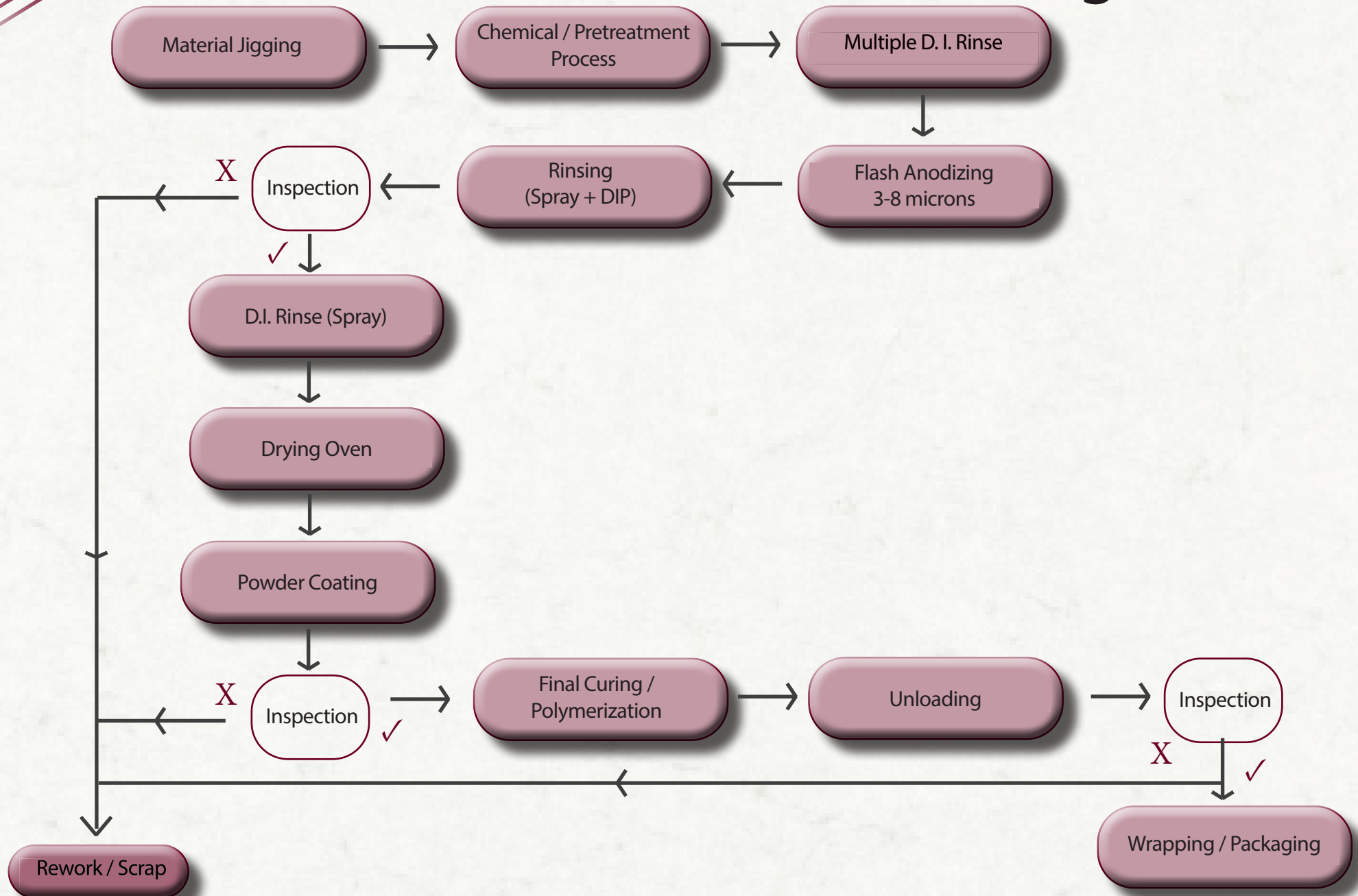
Alloy 6082 of EN 573-3 is equivalent or alloy 6351 & alloy 1050 (A) is equivalent to Alloy 19500



Process Flow (RAL Colours & Wood Finish Process)



Process Flow (Fox Powder Coating)









LCA Information

Declared Unit 1 tonne of coated aluminium profile

Time Representativeness 2020

Database(s) and LCA Software Used Ecoinvent 3.5
SimaPro 9.0

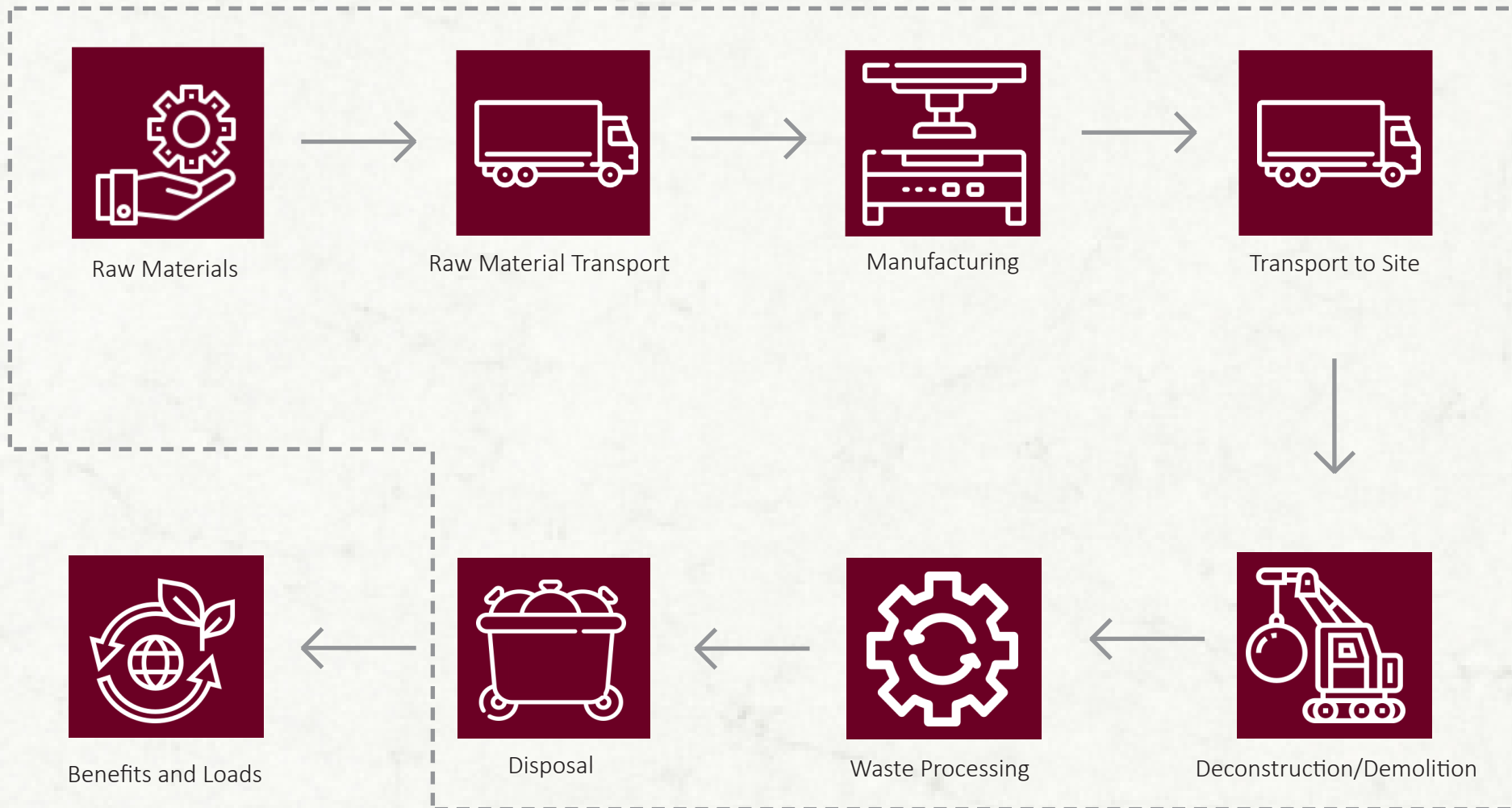
The inventory for the LCA study is based on the 2020 production figures for aluminium extrusion products manufactured by Al Taiseer Aluminium Company in Riyadh.

This EPD's system boundary has been defined as cradle to gate with options, covering A1 - A3 product stages, A4 construction process stage, C1 - C4 end of life stages, and D benefits and loads stage.

Product Stage			Construction Process Stage	Use Stage								End of Life Stage				Benefits and Loads
Raw Material Supply	Transport	Manufacturing	Distribution	Construction / Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Included in LCA, ND = Not Declared

>> System Boundary



-- System Boundary



System Boundary

A1: Raw Material Supply

Raw material supply includes raw material extraction/preparation and pre-treatment processes before production.

A2: Transportation

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. Transport of raw materials to production site is taken as the weight average values for transport from raw material suppliers in 2020.

A3: Manufacturing

Manufacturing stage starts with melting of aluminium and is followed by extrusion process. For both processes, the required energy is supplied from electricity and natural gas use.

A4: Distribution

Distribution of end products to customer is taken as the weight average values for transport from Talco for the year of 2020.

C1: Deconstruction and Demolition

For deconstruction stage, it is assumed that 0.239 MJ/kg of energy is consumed (Gervasio and Dimova, 2018).

C2: Waste Transport

A distance of 100 km is assumed for the transport of the deconstructed material to the disposal area.

C3: Waste Processing

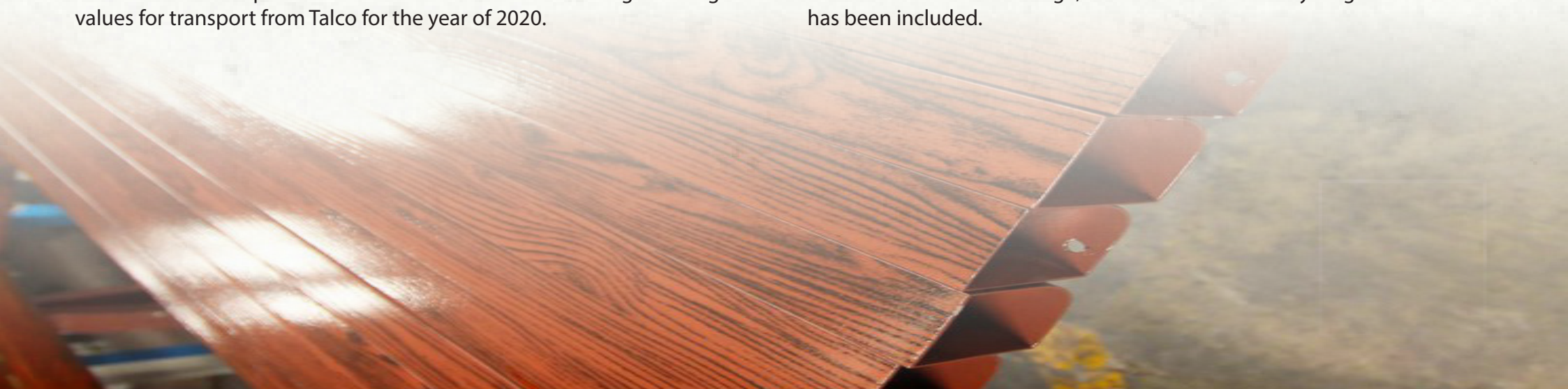
Waste is going to landfill or incineration, hence, there is no need for any waste process.

C4: Disposal

Disposal is the final stage of product life. It is assumed that the 90% of the product is recycled and the remained is sent to landfill.

D: Benefits and Loads

For benefits and loads stage, the benefits of the recycling of aluminium has been included.





More Information

Production Plants and Allocations

Al Taiseer Aluminium Company has production facilities for coated aluminium extrusion profile products in Riyadh and Jeddah. Raw material contents are modeled for Riyadh factory. Water consumption, energy consumption and raw material transportation were weighted according to production figures for the year 2020.

In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation in 2020.

Packaging

Products manufactured by Al Taiseer Aluminium Company are delivered to end users in film plastic packaging, corrugated board, and nylon strap coil. The packaging of the final product is included in the LCA.

Cut-Off Criteria

%1 cut-off applied in the study. Data for elementary flows and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH Regulation are present in the product, either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

LCA Modeling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR.

There are no co-product allocations within the LCA study underlying this EPD.

SimaPro 9.0 LCA software and the Ecoinvent 3.5 LCA database were used to calculate the environmental impacts. The regional energy datasets were used for all energy calculations.

Data related to raw materials, energy and water consumption, waste and material and product transport are collected from Al Taiseer Aluminium Company. All primary data collected from Al Taiseer Aluminium Company is representative for the year of 2020.

Geographical Scope

The geographical scope of this EPD is global. The assumptions of the end of life (C modules) and benefit (D module) stages can be referred to as the global.



LCA Results

Environmental Impacts for 1 tonne of Coated Aluminium Profile

Impact Category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - Fossil	kg CO ₂ eq	16.3E+3	83.7E+0	71.8E+0	21.5E+0	0	4.64E+0	-7.09E+3
GWP - Biogenic	kg CO ₂ eq	-22.8E+0	17.8E-3	22.0E-3	4.32E-3	0	8.63E+0	-5.86E+0
GWP - Luluc	kg CO ₂ eq	2.28E+0	24.7E-3	3.45E-3	7.54E-3	0	3.44E-3	-579E-3
GWP - Total	kg CO ₂ eq	16.3E+3	83.7E+0	71.8E+0	21.5E+0	0	13.3E+0	-7.10E+3
ODP	kg CFC-11 eq	1.12E-3	19.1E-6	13.2E-6	4.77E-6	0	531E-9	-469E-6
AP	mol H+ eq	69.1E+0	353E-3	524E-3	86.2E-3	0	29.4E-3	-30.4E+0
EP - Freshwater	kg P eq	2.38E+0	6.64E-3	1.50E-3	1.96E-3	0	1.56E-3	-903E-3
EP - Freshwater	kg PO ₄ eq	7.28E+0	20.3E-3	4.60E-3	6.01E-3	0	4.77E-3	-2.76E+0
EP - Marine	kg N eq	10.4E+0	102E-3	71.5E-3	24.3E-3	0	23.6E-3	-4.41E+0
EP - Terrestrial	mol N eq	112E+0	1.12E+0	783E-3	268E-3	0	76.2E-3	-47.8E+0
POCP	kg NMVOC	38.3E+0	339E-3	232E-3	81.6E-3	0	24.1E-3	-15.8E+0
ADPE	kg Sb eq	57.7E-3	246E-6	14.6E-6	84.6E-6	0	2.66E-6	-7.15E-3
ADPF	MJ	240E+3	1.27E+3	1.02E+3	321E+0	0	63.3E+0	-96.8E+3
WDP	m ³ depriv.	2.05E+3	8.64E+0	7.21E+0	2.24E+0	0	1.78E+0	-438E+0
PM	disease inc.	683E-6	5.85E-6	3.75E-6	1.32E-6	0	384E-9	-313E-6
IR	kBq U-235 eq	266E+0	6.00E+0	3.27E+0	1.56E+0	0	400E-3	-76.5E+0
ETP - FW	CTUe	211E+3	908E+0	500E+0	236E+0	0	62.0E+3	-96.2E+3
HTTP - C	CTUh	16.5E-6	26.5E-9	19.9E-9	7.84E-9	0	3.77E-9	-8.59E-6
HTTP - NC	CTUh	315E-6	1.04E-6	245E-9	264E-9	0	113E-9	-160E-6
SQP	Pt	26.3E+3	849E+0	98.6E+0	186E+0	0	75.3E+0	-2.59E+3
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.							
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A4: Distribution of the end product, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary, A1-A3: Sum of A1-A3.							
Disclaimer: EP-freshwater indicator has also been calculated as “kg P eq” as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml) in addition to “kg PO4 eq” as stated in the standard.								

Biogenic Carbon Content	Unit	A1-A3
Biogenic carbon content in product	kg C / t product	0
Biogenic carbon content in packaging	kg C / t packaging	0

Resource Use for 1 tonne of Coated Aluminium Profile								
Impact Category	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	3.54E+3	12.6E+0	2.71E+0	3.76E+0	0	3.41E+0	-715E+0
PERM	MJ	0	0	0	0	0	0	0
PERT	MJ	3.54E+3	12.6E+0	2.71E+0	3.76E+0	0	3.41E+0	-715E+0
PENRE	MJ	240E+3	1.27E+3	1.02E+3	321E+0	0	63.3E+0	-96.8E+3
PENRM	MJ	0	0	0	0	0	0	0
PENRT	MJ	240E+3	1.27E+3	1.02E+3	321E+0	0	63.3E+0	-96.8E+3
SM	kg	1.00E+3	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m³	53.7E+0	215E-3	159E-3	53.7E-3	0	47.0E-3	-22.4E+0

Waste & Output Flows for 1 tonne of Coated Aluminium Profile								
Impact Category	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	508E-3	0	0	0	0	0	0
NHWD	kg	462E-3	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0

PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.



References

/GPI/ General Programme Instructions of the International EPD® System. Version 3.0

/ISO 9001/ Quality management systems – Requirements

/ISO 14001/ Environment Management System- Requirements

/EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14020:2000/ Environmental labels and declarations — General principles

/ISO 14025/ ISO 14025:2006 Preview Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures

/ISO 14040-44/ ISO 14040:2006-10, Environmental management - Life cycle assessment -Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)

/ISO 45001/ Occupational Health & Safety Management System Certification - Requirements

/PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency,

/Ecoinvent/ Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

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