Environmental Product Declaration

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

Extruded aluminium profiles

from

NEXT EXTRUSION SRL

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at 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

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): construction products, PCR 2019:14, VERSION 1.2.5
PCR review was conducted by: Claudia A. Peña, the review panel may be contacted via info@environdec.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by third-party verifier: RINA Services S.p.a. – Via Corsica 12, I – 16128 Genova (Italia) Tel: +39.010.53851 – Fax: +39.010.5351000 – www.rina.org Accredited by: Accredia 001H 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 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.

Company information

Owner of the EPD: Next Extrusion s.r.l.
Contact:
Luciano Barbetta
lbarbetta@nextextrusion.it
Description of the organisation: Next Extrusion was born in 2017, from the idea of its founder Luciano Barbetta, who, with the support of a leading partner in the sector, created the fourth trafileria in Southern Italy.

Commercial division
The plant of a press of 1800 tons allows to extrude aluminum profiles with a daily production of up to 30 tons. The profiles produced by Next Extrusion are used in different market sectors: building and construction, but also automotive and transport, general engineering.

Logistic division
Next Extrusion ensures quality, precision in the delivery of finished products based on fixed weekly dates, favouring a capillary and efficient distribution network.

Product-related or management system-related certifications: Next Extrusion pursues its high standard production internal goals for the testing, inspection, and certification of its own quality management system in compliance with UNI EN ISO 9001/UNI EN ISO 14001 and its own production process according to EN 1090-1.

Name and location of production site(s): The production site is based in Paolo di Nella Street (without street number), Nardò (Lecce), Italy.

Product information

Product name: extruded aluminium profiles

Product identification: the aluminium profiles produced by Next Extrusion are manufactured starting from billets of aluminium (externally purchased), with a diameter of 178 mm. The production phase includes the extrusion of the profiles by presses. Extruded profiles undergo a manufacturing process, cutting and assembly processes. The extrusion process to produce aluminium profiles takes place at the production site of Next Extrusion. The production processes include the phase of preheating matrices, washing matrices and packaging.

Composition
The composition of the input metal for the aluminium profiles made by Next Extrusion is based both on the information declared in the EPDs of the reference suppliers, and on European and world average data from Ecoinvent databases 3.8.

Product description: the profiles produced by Next Extrusion are used in different market sectors: building and construction, but also automotive and transport, general engineering.

The reference CPC code is 41532 “Bars, rods and profiles, of aluminium”.

LCA information

Functional unit/declared unit: 1 kg of aluminium profile, plus its packaging.

Time representativeness: the reference year for the LCA calculation is 2022.

Database(s) and LCA software used: Ecoinvent 3.8, SimaPro 9.3.0.3

Description of system boundaries:
The system boundaries are cradle to gate with options, modules C1–C4, module D and with A4 as optional module (A1–A4 + C + D and additional modules). Modules A5 and B1 to B7 are excluded as they are strongly dependent on the specific application case.

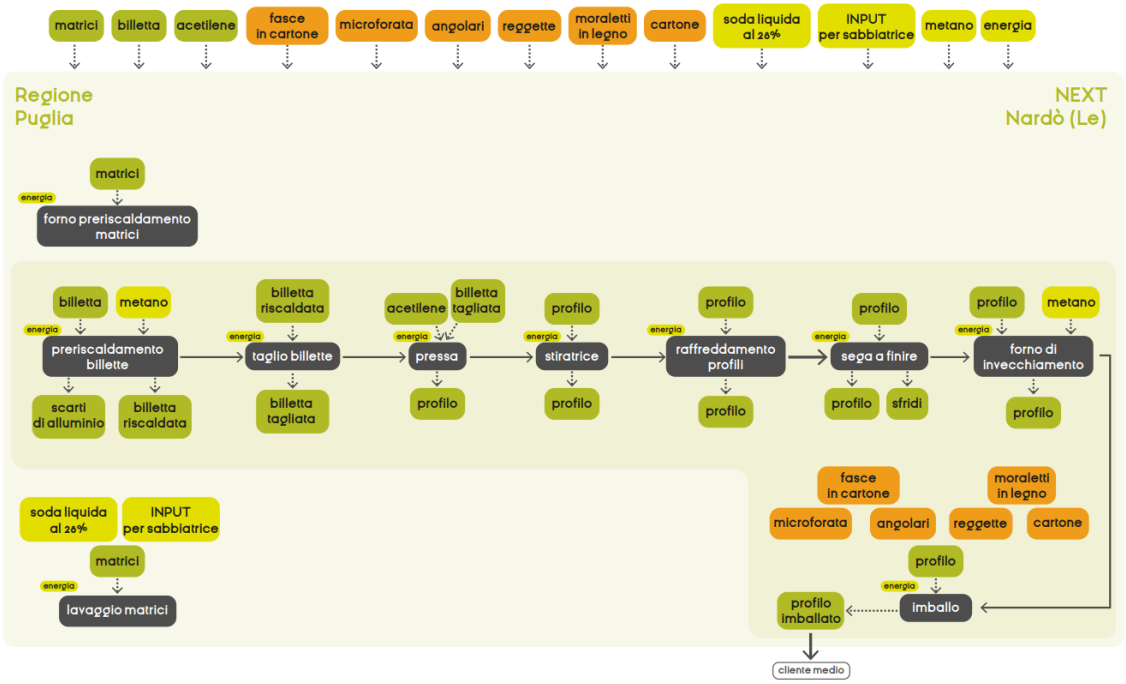
The following stages are included in the study:

Product stage
Module A1: the extraction and processing of raw materials, such as paper and board, polyethylene, raw materials used in the products (billets) as well as the production of energy carriers used in the production process;
Module A2: the transport of the raw materials and packaging to the gate of the Next Extrusion production site;
Module A3: includes the extrusion phase, the production of primary packaging, auxiliary materials; the treatment of waste generated by production processes and the production of packaging for finished products;
Module A4: transport to the relevant market for the finished product and recycling and disposal of the packaging.

End of life stage
Module C1: demolition/deconstruction;
Module C2: transport from collection to waste processing and disposal site;
Module C3: waste processing;
Module C4: disposal (landfill and incineration) of unrecovered material fractions of waste (not sent for recycling/re-use).

Module D: load and benefit due to recycling of aluminum (95% of the product mass).

System 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	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU, extra-EU, GLO	EU, extra-EU, GLO	ITA	EU, extra-EU, GLO	ND	ND	ND	ND	ND	ND	ND	ND	EU, extra-EU, GLO	EU, extra-EU, GLO	EU, extra-EU, GLO	EU, extra-EU, GLO	EU, extra-EU, GLO
Specific data used	7%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Data quality

Data used for the manufacturing phase are based on the production year 2022. For two suppliers of aluminum billets, primary data of recycled content of aluminium from producer (EPD) are used, for missing information of the other producers, global data are used.

Based on the information provided by the company, raw materials were considered to be transport with trucks for some raw materials, with van for others.

The real distances have been taken for the transport of raw materials to the factory (module A2). All background data used in the study are from LCI database and are not older than 5 years. With specific reference to the electricity used in the manufacturing processes, the electricity residual mix is used.

Allocation

The allocation is made in accordance with the provisions of EN 15804. Energy, resources (water and ancillary) and packaging in input and waste and emissions in output are allocated to the profile production and to the aluminium scrap production (due to profile cutting) based on the economic allocation.

Cut-offs criteria and main assumption

Raw and packaging materials are basically fully included as well as the energy for manufacturing. In the same way, all auxiliaries, and chemical products such as soda, nitrogen, ammonia, manufacturing waste (including hazardous waste) and air emissions are accounted for.

The following have not been considered:
- some packing materials used to transport the components to the main production service, structure;
- the construction of the production site (capital goods);
- plant maintenance as quantities is limited.

Scenarios for optional modules

For module A4, specific distance to Next Extrusion's clients referred to 2022 have been used (98% to Italy, 2% to other countries), considering a weighted average distance of 613 km by lorry.
The module A4 considers also the packaging sent for recycling and landfill. A percentage of steel (95%), paper and cardboard (87%), plastic (48%) is sent for recycling. The remainder percentage is sent to landfill: steel (5%), paper and cardboard (13%), plastic (52%).

The end-of-life scenario is Global-based. No impacts of de-construction demolition processes are allocated to the profiles (C1).

C2: for the end-of-life transport, the average distance considered is 50 km.

After collection, a percentage of aluminium (95%) is sent for recycling (C3 module). The remainder percentage is sent to landfill: aluminium (5%) (C4 module).

Module D address loads and benefit from net output flows leaving the product system, i.e. from flows leaving the product system, lowered of the recycled content of aluminium (76%) initially included in the product.

LCA practitioners
This EPD and the supporting LCA study has been performed by:
Forethinking Srl Società Benefit; info@forethinking.com; www.forethinking.com

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Aluminium	1	ND	-
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Wood flat pallet	2,80E-02	< 1%	0,009
Steel strip	1,16E-04	< 1%	-
PET strip	1,11E-04	< 1%	-
Cardboard	9,67E-04	< 1%	-
Cardboard corners	1,35E-02	< 1%	-
Cardboard strip	3,37E-03	< 1%	-
Micro-perforated	1,34E-03	< 1%	-
Film	1,89E-03	< 1%	-
Scotch	9,15E-06	< 1%	-

TOTAL	2,41E-02	< 1%	-

*higher detail on Hydro and Pandolfo billet composition is available in the related EPD.

The content of substances included in the Candidate List of Substances of Very High Concern (SVHC) in the products does not exceed 0,1 % of their weights.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	7,4E+00	0,0E+00	0,0E+00	6,4E-02	0,0E+00	7,8E-04	-1,2E+00
GWP-fossil	kg CO_2 eq.	7,4E+00	0,0E+00	0,0E+00	6,4E-02	0,0E+00	6,5E-04	-1,2E+00
GWP-biogenic	kg CO_2 eq.	1,7E-02	0,0E+00	0,0E+00	5,7E-05	0,0E+00	1,2E-04	-7,1E-03
GWP-luluc	kg CO_2 eq.	2,1E-02	0,0E+00	0,0E+00	7,1E-06	0,0E+00	2,1E-07	-3,1E-02
ODP	kg CFC 11 eq.	7,2E-07	0,0E+00	0,0E+00	1,4E-08	0,0E+00	1,9E-10	-1,3E-07
AP	mol H^+ eq.	4,6E-02	0,0E+00	0,0E+00	4,0E-04	0,0E+00	5,3E-06	-6,8E-03
EP-freshwater	kg P eq.	2,7E-03	0,0E+00	0,0E+00	1,2E-06	0,0E+00	9,0E-08	-6,2E-04
EP-marine	kg N eq.	7,9E-03	0,0E+00	0,0E+00	1,6E-04	0,0E+00	2,0E-06	-1,0E-03
EP-terrestrial	mol N eq.	8,1E-02	0,0E+00	0,0E+00	1,8E-03	0,0E+00	2,2E-05	-9,0E-03
POCP	kg NMVOC eq.	2,4E-02	0,0E+00	0,0E+00	6,3E-04	0,0E+00	6,3E-06	-3,5E-03
ADP-fossil*	MJ	8,2E+01	0,0E+00	0,0E+00	8,7E-01	0,0E+00	1,5E-02	-1,9E+01
ADP-minerals&metals*	kg Sb eq.	1,1E-04	0,0E+00	0,0E+00	5,6E-08	0,0E+00	3,5E-09	3,3E-05
WDP*	m^3	1,7E+00	0,0E+00	0,0E+00	7,9E-04	0,0E+00	8,3E-05	1,4E-02
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							

*The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator."

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	7,42E+00	0,00E+00	0,00E+00	6,40E-02	0,00E+00	6,59E-04	-1,24938

Resource use indicators

	Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**A5***	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8,88	-	-	-	-	-	-	-
PERM	MJ	0,85	-	-	-	-	-	-	-
PERT	MJ	9,74	0,00	-	0,00	3,40E-03	0,00E+00	2,86E-03	-7,98
PENRE	MJ	82,27	-	-	-	-	-	-	-
PENRM	MJ	0,15	-	-0,15	-	-	-	-	-
PENRT	MJ	82,43	0,0	-	0,0	0,9	0,0	0,0	-18,9
SM	kg	0,76	-	-	-	-	-	-	-
RSF	MJ	-	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-	-
FW	m^3	5,9E-02	0,0E+00	-	0,0E+00	2,9E-05	0,0E+00	2,2E-05	-5,4E-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							

*The module A5 was added for the sole purpose of balancing the energy stored in the packing material.

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2,14E-02	0,00E+00	0,00E+00	2,36E-06	0,00E+00	1,89E-08	5,00E-04
Non-hazardous waste disposed	kg	1,54	0,00	0,00	0,00	0,00	0,05	-0,39
Radioactive waste disposed	kg	2,06E-04	0,00E+00	0,00E+00	6,16E-06	0,00E+00	1,06E-07	-1,25E-04

Output flow indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	-	-	-	-	-	-
Material for recycling	kg	0,002	-	-	0,95	-	-
Materials for energy recovery	kg	-	-	-	-	-	-
Exported energy,	MJ	-	-	-	-	-	-
Exported energy, thermal	MJ	-	-	-	-	-	-

Additional information

This EPD and the PCR 2019:14 “Construction products” are available on the website of The International EPD® System (www.environdec.com).

The verifier and the Programme Operator do not make any claim nor have any responsibility of the legality of the products included in the present EPD. The LCA study and the present EPD have been issued with the technical scientific support of Forethinking Srl Società Benefit, www.forethinking.com

References

General Programme Instructions of the International EPD® System. Version 4.0.

Forethinking Srl Società Benefit, 2023. Technical report: LCA of aluminium extrusion profiles produced by Next Extrusion

EN 15804:2012+A2:2019 “Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products”

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International EPD® System PCR 2019:14 Construction products, version 1.2.5

International Organisation for Standardization (ISO), 2006a Environmental management - Life Cycle assessment - Principles and framework. ISO 14040:2006/Amd 1:2020, Geneva

International Organisation for Standardization (ISO), 2006b Environmental management - Life Cycle assessment - Requirements and guidelines. ISO 14044:2006/Amd 2:2020, Geneva

International Organisation for Standardization (ISO), 2006c Environmental labels and declarations - Type III environmental declarations - Principles and procedures. ISO 14025:2006, Geneva

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