GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

Confía

Environmental Product Declaration

EN ISO 14025:2010
EN 15804:2012+A1:2013

elZinc Natural

Date of issue: 2020-03-28
Expiry date: 2025-03-27

GlobalEPD Code: EN15804-009

elZinc®

ASTURIANA DE LAMINADOS, S.A.

The EPD holder is responsible for the content of the Declaration. The holder is responsible for keeping the records and documents supporting the content of the Declaration

Holder of the Declaration

Asturiana de Laminados S.A.
Polígono Industrial de Villallana, Parcela 1
33695 Pola de Lena (Asturias)
Spain

Tel (+34) 984 11 63 31
Mail elzinc@aslazinc.com
Web www.elzinc.es

LCA Study

Thinkstep AG
CHauptstraße 111 - 113
70771 Leinfelden-Echterdingen
Germany

Tel +49(0) 711 34 18 17-0
Mail info@sphera.com
Web www.sphera.com

Operator of the Global EPD Programme

AENOR Internacional S.A.U.
Génova 6
28004 Madrid
España

Tel (+34) 902 102 201
Mail aenordap@aenor.com
Web www.aenor.com

AENOR is a founding member of ECO Platform, the European Association of Environmental Declarations verification Programmes

CEN standard EN 15804:2012+A1:2013 serves as the core RCP
Independent verification of the declaration and data, according to EN ISO 14025:2010 ☐ Internal ☑ **External**
Verification Body AENOR

1 General information

1.1. The organization

Asturiana de Laminados, S.A. by is one of the world's leading manufacturers of rolled zinc for architectural metal cladding.

Produced under the brand name elZinc, our zinc – copper – titanium alloy ensures a long lasting, high quality solution for building envelopes.

The natural advantages of zinc material together with the productive intelligence of elZinc offer many different and interesting products for sustainable building projects, both for new-build and refurbishment.

Building professionals can enjoy a great deal of freedom when designing with elZinc, allowing them to 'tune' the systems from an aesthetic, environmental and performance point of view, leading to innovative designs that adapt themselves to any type of architecture.

1.2. Scope of the Declaration

Within this study a life cycle analysis according to ISO 14040/44 and EN 15804 is performed for the product group elZinc Natural manufactured by Asturiana de Laminados S.A. at the production plant located in Pola de Lena (Asturias), Spain.

The life cycle analysis is based on the data declared by Asturiana de Laminados S.A. The life cycle analysis is representative for the products introduced in the declaration for the given system boundaries.

1.3. Lyfe cycle and conformity

This EPD has been drawn up and verified according to UNE-EN ISO 14025:2010 and the PCR established in the European Standard EN 15804+A1.

This EPD includes the life cycle stages indicated in table 1. Thus, this EPD is cradle to gate with options.

This EPD may not be comparable with those developed in other programs or under different reference documents; it may not be comparable with EPD that are not developed under EN 15804:2012+A1:2013 standard. In the same way, Environmental Product Declarations cannot be subject to comparison if the origin of the data is different (the databases, for example), if not all relevant information modules are included, or if they are not based on the same scenarios.

Comparison of construction products shall be based on the same function, using the same functional unit at building level (or architectural or civil engineering works), i.e. including the performance of the product during the life cycle and the requirements stated in EN ISO 14025, 6.7.2.

Product stage	A1	Raw material supply	X
	A2	Transport to the manufacturer	X
	A3	Manufacturing	X
Const.	A4	Transport to the building site	MNA
	A5	Installation / construction	MNA
Use stage	B1	Use	NR
	B2	Maintenance	MNA
	B3	Repair	NR
	B4	Replacement	NR
	B5	Refurbishment	NR
	B6	Operational energy use	NR
	B7	Operational water use	NR
End of life	C1	De-construction / demolition	NR
	C2	Transport	MNA
	C3	Waste processing	MNA
	C4	Disposal	X
	D	Reuse, recovery and/or recycling potentials	X

X = Module included in the LCA; NR = Not relevant module; MNA = Module not assessed

Table 1. System boundary. Information modules included

2 The product

2.1. Identification of the product

This Environmental Product Declaration covers elZinc® titanium zinc which is manufactured according to EN 988 and ASTM B-69 standards (these standards define the general requirements for titanium zinc strips and sheets for use in the building industry).

The alloying components are high-grade refined zinc of the highest standardised level of purity Zn 99.995 according to EN 1179, with precisely defined additions of copper and titanium. Further components, such as aluminium and other trace elements, are accurately limited and the purity of the alloy is extremely precisely monitored by regular controls.

The precision in the composition of the alloy used and the implementation controlled lamination, which define the thermo-mechanical processes and the material's micro-structural changes, are the keys to the process's and the product's excellence.

elZinc Natural is characterized by a high malleability, regardless of the direction of rolling, high stability once conformed, optimal electrowelding performance due to its low surface oil content and limited fragility at low temperatures.

elZinc® Natural is the originally metallic grey finish produced by our production process. Once exposed to the elements, elZinc® naturally develops a compact protective layer called "patina".

This patina provides exceptional resistance to corrosion, resulting in the gradual loss of its metallic lustre until it takes on its characteristic matt grey colour.

Intended use of the product

elZinc Natural is used for building applications. Its main application are :

- Roofing (E.g double lock standing seam, batten roof system, etc...).

- Facade cladding (E.g cassette panels, angle seam, flat lock panels, etc...).

- Roof drainage systems (E.g gutters, downpipes and accessories).

- Interior Design.

Technical data

Asturiana de Laminados S.A has established a quality magement system based on the standard ISO 9001.

elZinc Natural exceeds the requeriments established by the EN 988 standard, giving as result excellent mechanical properties.

The main performance characteristics of the product are declared in table 2.

Characteristic	Test method	Value	Unit
Yield strength elasticity (Rp 0,2)	EN ISO 6892-1	>110	N/mm2
Tensile strenght (Rm)	EN ISO 6892-1	>150	N/mm2
Breaking elongation (A50)	EN ISO 6892-1	>40	%
Vickers hardness (HV3)	EN ISO 6507	>45	-
Erichsen test	EN ISO 20482	mín. 7,5	mm
Remaining stretch in creeping behaviour test (Rp 0,1)	EN 204	máx. 0,1	%
Density	EN 988	7,2	g/cm3
Thicknesses tolerance	-	± 0,02	mm
Coefficient of linear thermal expansion	EN 988	22E-06	m/mK
Melting point	EN 988	aprox. 420	°C
Heat conductivity at 20 °C	EN 988	110	w/mK
Electric conductivity at 20 °C	EN 988	17	mS/m

Table 2. Performance characteristics of the product

2.2. Composition of the product

None of the end-product components are included in the Candidate List of substances of very high concern for authorisation.

Raw materials	Units
Copper	0,08 - 0,2 %
Titanium	0,07 - 0,12 %
Aluminiun	< 0,015 %
Zinc *(Z1)*	Remainder

Table 3. Composition of the product

3 Information regarding the LCA

3.1. Life cycle analysis

Within this study a life cycle analysis according to ISO 14040/44 and EN 15804 is performed for elZinc Natural manufactured by Asturiana de Laminados S.A. at the production plant located in Pola de Lena (Asturias), Spain.

The life cycle analysis is based on the data declared by Asturiana de Laminados S.A, data that comes from primary sources.

The life cycle analysis is representative for the products introduced in the declaration for the given system boundaries. The life cycle analysis covers the manufacturing of the products from cradle to gate. Detailed information can be found in the verified background report, conducted by thinkstep AG.

3.2. Functional Unit

The declared unit is 1 kg elZinc Natural.

3.3. Reference service life

The documentation of the RSL is not required for the EPD of Asturiana de Laminados since the entire life cycle is not declared (Modules A1-A3, C4 and D).

3.4. Allocation and cut-off criteria

In the assessment, all data provided by Asturiana de Laminados was considered, i.e. all raw materials used as per formulation, the tap water, the electrical energy, the required packaging materials, and all direct production waste. The manufacturers provided data on the transport expenditure for all considered input and output material. Transport expenditures for the packaging were also considered.

All inputs and outputs to a (unit) process are included in the calculation, for which data were available. The applied cut – off criteria is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of that unit process in case of insufficient input data or data gaps for a unit process. The total of neglected input flows per module, e.g. per module A, or D is a maximum of 5 % of energy usage and mass data.

3.5. Representativeness, quality and selection of datas

Data collection follows the guidance provided in /ISO 14044:2006/, clause 4.3.2. The calculation procedures described in /ISO 14044:2006/ are applied consistently throughout the study.

The background datasets refer to GaBi Database ts 8 with Service Pack 37.

The intended time reference for the study is 2018. The geographical coverage considers the production in Pola de Lena, Asturias, Spain. It represents the technology and its associated impacts of producing elZinc® titanium zinc under the EN 988 standard, which defines the general requirements for titanium zinc strips and sheets for use in the building industry.

3.6. Other calculation rules and hypotheses

The anual production volumen of the product elZinc Natural have been collected. All inputs and outpus have been scaled to 1kg output.

4 System boundaries, scenarios and additional technical information

4.1. Processes that precede manufacturig (upstream) and manufactuing of the product (A1-A3)

In this study, the product stage information modules A1, A2, and A3 are considered. These modules include production of raw material extraction and processing (A1), transport of the raw materials to the manufacturer (A2) and manufacturing of the product and the packaging materials (A3).

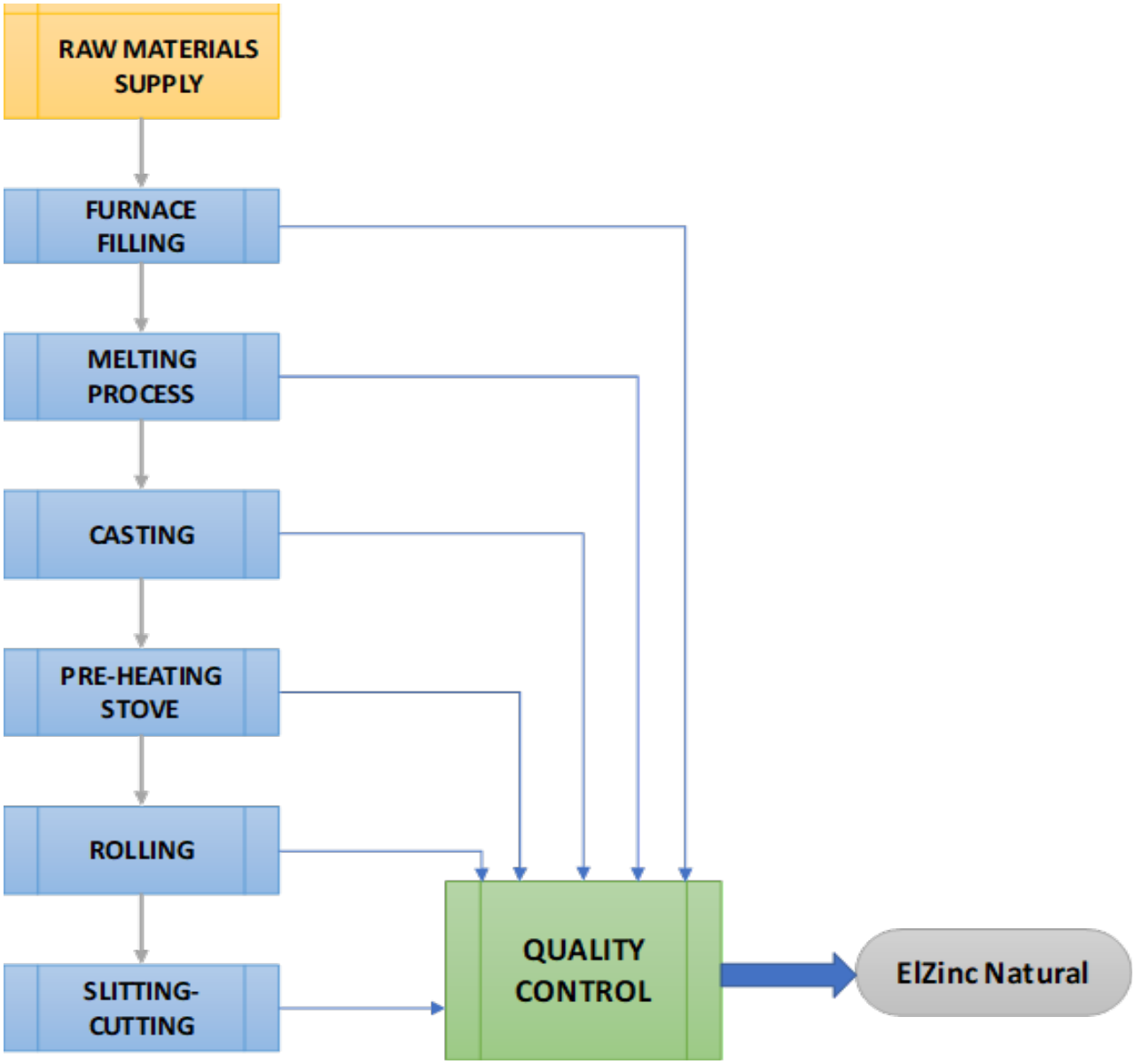

Figure 1. Product stage

Manufacturing (A3)

In modul A3, manufacturing of the product and packaging materials have been considered.

4.2. Disposal (C4)

A collection rate of 96% has been assumed. The 4% losses of zinc sheet are considered to be landfilled (Modul C4).

4.3. Benefits and loads beyond the system boundary

Module D includes reuse, recovery and/or recycling potentials. In this study the re-melting process is included in Module D. The zinc gained through re-melting is credited using the dataset of the primary zinc.

5 Declaration of the environmental parameters of the LCA and LCI

The following tables include the parameters describing the environmental impacts, resource use waste categories and output flows defined in EN 15804.

	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	3,09E+00	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	1,84E-03	-2,27E+00
ODP	-1,05E-08													6,30E-18	9,78E-09
AP	1,79E-02													5,25E-06	-1,46E-02
EP	2,63E-03													5,65E-07	2,16E-03
POCP	9,39E-04													4,81E-07	-7,32E-04
ADPE	4,24E-04													3,52E-10	-3,8E-04
ADFP	2,48E+01													2,80E-02	-1,59E+01

GWP	*[kg CO_2 eq]*	Global warming potential
ODP	*[kg CFC-11 eq]*	Depletion potential of the stratospheric ozone layer
AP	*[kg SO_2 eq]*	Acidification potential of soil and water
EP	*[kg $(PO_4)^{3-}$ eq]*	Eutrophication potential
POCP	*[kg etileno eq]*	Formation potential of tropospheric ozone
ADPE	*[kg Sb eq]*	Abiotic depletion potential for non fossil resources
ADPF	*[MJ]*	Abiotic depletion potential for fossil resources

Table 4. Parameters describing environmental impacts defined in EN 15804

	A1- A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	1,31E+01	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	-	-
PERM	3,60E-02													-	-
PERT	1,31E+01													1,99E-03	-8,66E-00
PENRE	3,27E+01													-	-
PENRM	1,36E-02													-	-
PENRT	3,27E+01													2,90E-02	-2,14E+01
SM	1,53E-02													0,00E+00	0,00E+00
RSF	0,00E+00													0,00E+00	0,00E+00
NRSF	0,00E+00													0,00E+00	0,00E+00
FW	7,01E-01													5,38E-07	-6,34E-01

PERE *[MJ]* Use of renewable primary energy excluding renewable primary energy resources used as raw materials

PERM *[MJ]* Use of renewable primary energy resources used as raw materials

PERT *[MJ]* Total use of renewable primary energy resources

PENRE *[MJ]* Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials

PERNRM *[MJ]* Use of non renewable primary energy resources used as raw materials

PERNRT *[MJ]* Total use of non renewable primary energy resources

SM *[MJ]* Use of secondary material

RSF *[MJ]* Use of renewable secondary fuels

NRSF *[MJ]* Use of non renewable secondary fuels

FW *[m³]* Net use of fresh water

Table 5. Parameters describing resource use

	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	1,26E-04	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	1,51E-10	-6,67E-06
NHWD	3,41E-01													3,95E-02	-1,41E-01
RWD	3,12E-03													3,80E-07	-2,15E-03
CRU	0,00E+00													0,00E+00	0,00E+00
MFR	0,00E+00													0,00E+00	9,26E-01
MER	0,00E+00													0,00E+00	0,00E+00
EE	0,00E+00													0,00E+00	0,00E+00
EET	0,00E+00													0,00E+00	0,00E+00

HWD	*[kg]*	Hazardous waste disposed
NHWD	*[kg]*	Non hazardous waste disposed
RWD	*[kg]*	Radioactive waste disposed
CRU	*[kg]*	Components for re-use
MFR	*[kg]*	Materials for recycling
MER	*[kg]*	Materials for energy recovery
EE	*[kg]*	Exported electric energy
EET	*[kg]*	Exported thermal energy

Table 6. Parameters describing output flows and waste categories

6 Additional environmental information

6.1. Zinc as element

- Zinc : a natural and essential element

Zinc is a mineral in nature, being found in water, air, soil and rocks. It is a natural component in the Earth's crust, and therefore an integral part of our environment. It has an average natural concentration of 70mg/kg.

Zinc is essential to the survival of any living organism, including humans. Among other things, zinc is crucial for cell regeneration, growth activation, the development of vital organs and for the immune system.

- Zinc: an abundant element

Zinc is an abundant element in the Earth´s crust. Nowadays 75% of zinc used in the combined total employed in building applications, the metallurgical industry and for medicinal purposes comes from mines. In order to increase the efficiency of zinc extraction (and therefore preserve the reserves), the mining industry is investing in new techniques and technologies. The remainder comes from recycling or from the refinement of the secondary zinc.

6.2. elZinc as material

- elZinc: a long-lasting building material

Zinc is a 'living' material, it protects itself by naturally developing a patina during the early stages of its life that guards against corrosion and gives it self-healing properties making it extremely durable. Its life span can exceed 100 years (depending on the surrounding atmosphere), indeed in wall cladding applications some experts estimate an expected life span of some 200 years. In order to guarantee the longevity of this versatile metal, correct execution of the zinc cladding is a must.

- elZinc: sustainable material

The production process is less energy intensive than other metals used in construction. Indeed, it is significantly less than in aluminium or copper production.

When used as the building envelope, it contributes to preserving natural resources through efficient use of energy, reducing greenhouse gases and minimising the use of existing zinc ore reserves.

- elZinc: recyclable material

Zinc is 100% recyclable and can be reused a practically unlimited number of times, without the loss of any of its chemical or mechanical properties, or any loss in quality.

Note: All of the zinc by-products that are generated during the elZinc® production processes are recycled and reused, either in its own production processes or externally such as in the use of zinc oxide as a catalyst in the vulcanisation of rubber.

References

[1] General Instructions of the GlobalEPD Programme, 1st revision. AENOR. February 2016

[2] EN ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures *(ISO 14025:2006)*

[3] EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

[4] Life cycle assessment according to GlobalEPD Programme for Titanium-Zink sheets for Asturiana de Laminados S.A.

Índex

AENOR
Confía

A verified enviromental declaration

GlobalEPD