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ENVIRONMENTAL PRODUCT DECLARATION

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

PRE-WEATHERED ROLLED TITANIUM-ZINC ZINTEK®

Zintek S.r.l. Via delle Industrie, 22, 30175
Venezia Porto Marghera – ITALY
www.zintek.it

Operator Program	EPDItaly
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EPD OWNER

Business name	Zintek s.r.l.
Registered office	Via delle Industrie, 22, 30175 Porto Marghera (VE), Italy
Contact details for information on the EPD	**Zintek S.r.l.** Tel. +39 041.290 1866 zintek@zintek.it
Contact details for information on how the EPD and preliminary LCA study were developed	**Prof.ssa Elisabetta Palumbo** elisabetta.palumbo@unibg.it Department of Engineering and Applied Sciences, University of Bergamo Viale Marconi, 5, 24044 Dalmine (BG), Italy

PROGRAMME OPERATOR

EPDItaly	Via Gaetano De Castillia, 10 — 20124 Milan, Italy

EPD INFORMATION

Product name	Pre-weathered rolled titanium-zinc zintek®
Site	Via delle Industrie, 22, Porto Marghera (VE), Italy
Brief description of the product(s) and technical information	Rolled titanium-zinc zintek® for architectural use, suitable for myriad application techniques
Field of application of the product(s)	Roofs, façades, sheet metal work, and building envelope
Reference standards for product(s) (if applicable)	EN 988
CPC Code (number) *https://unstats.un.org/unsd/classifications/Econ*	4154 — Semi-finished products of lead, zinc and tin or their alloys

VERIFICATION INFORMATION

PCR (title, version, publication or update date)	PCR ICMQ-001/15 rev. 3.2, Construction products and construction services, 03/11/2025 (*www.epditaly.it*)
EPDItaly regulations (version, publication or update date)	EPDItaly Regulations rev. 6.0, 30/10/2023 (*www.epditaly.it*)
LCA Report	Natural and Pre-weathered rolled titanium-zinc zintek® LCA report – Version N°. 02, 28.04.2026
Independent Verification Statement	Independent verification of the declaration and data conducted in accordance with ISO 14025:2010. ☐ Internal ✓ **External** Third-party verification conducted by: ICMQ S.p.A., Via Gaetano De Castillia, 10 — 20124 Milan, Italy. Accredited by Accredia.
Comparability Statement	Environmental declarations published within the same product category, but from different programmes, may not be comparable. In particular, construction product EPDs may not be comparable if they are not compliant with EN 15804:2012+A2:2019.
Responsibility Statement	The EPD Owner relieves EPDItaly of any responsibility for non-compliance with environmental legislation. The EPD Owner is responsible for the information and the supporting evidence provided. EPDItaly accepts no responsibility for the information, data, or results provided by the EPD Owner for the life cycle assessment.

The company

Zintek S.r.l., Venezia Porto Marghera — ITALY

Zintek S.r.l. is the Italian leader in the production and sale of rolled titanium-zinc zintek®, a material used as cladding for roofs and façades, creating beautiful and high-tech solutions.

Zintek, which has been part of the Cordifin Group since its foundation, has an 86,000 m² headquarters in Venezia Porto Marghera, and the entire production process takes place on this site, from casting the zinc through to creating and distributing the end product.

The company has a dual supply chain — it operates in both the industrial and commercial/architectural spheres — allowing it to be both a manufacturer and a design partner for the creation of sustainable and long-lasting buildings. It offers:

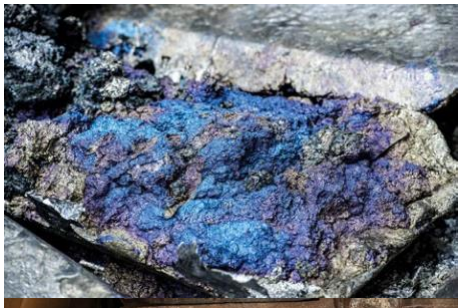
- Assistance with defining specifications
- Technical support during the construction phase

Zintek has been the Cordifin Group's sole seller of rolled zinc since 2018, and it has taken the brand to a global stage, establishing a presence in Europe, Asia, and the USA.
It has key showrooms in Amsterdam and Shanghai that enable direct dialogue with foreign markets.

CERTIFICATIONS

Product

zintek® a high-quality zinc-copper-titanium alloy



Composition and production process

Titanium-zinc zintek® is an EN 988-compliant alloy of zinc (Z1 99.995% purity), copper, and titanium. The raw materials are melted in special furnaces, and the alloy is then channelled into a continuous casting plant, emerging as a wide strip.

Once it has been subjected to the required heat treatments, the semi-finished product is rolled, pressed, and cut, before being placed in storage and/or shipped. Natural zintek® is light grey, shiny, even, and bright when freshly rolled.

When it comes into contact with oxygen and water, a protective basic zinc carbonate layer gradually forms on its surface, which remains stable over time and ensures the material's durability. By the end of the oxidation process, the zintek® has acquired a sophisticated slate grey colour.

Pre-weathering and colours

Special pre-weathering processes can be used to change zintek®'s natural appearance, giving it an attractive aged look without affecting its essential attributes of strength and durability.

Technical performance

Titanium-zinc's natural oxidation process gives it a very long lifespan. The rolled metal is not affected by any changes in temperature that occur after processing and installation. Its melting point is around 419°C and its recrystallization temperature — important for the brazing process — is 300°C.
It is non-flammable and resistant to UV light, and there are no known cases of erosion caused by wind. Zintek®'s physical and chemical properties make it highly ductile and malleable, and therefore ideal for any sheet metal work.
Zintek® is very easy to weld both using the traditional method with a tin–lead brazing alloy and with more modern TIG or induction techniques.

Product description

Zintek® Prepatinated is a rolled zinc alloy product composed of zinc, copper, and titanium. Starting from the natural version, a specific surface treatment is applied to induce a colour transformation, giving the material an appearance similar to naturally aged Zintek® Natural from the outset, while maintaining the same physical and mechanical properties as the natural version.

For this reason, it is referred to as "prepatinated" or "pre-aged". Owing to its colour stability and aesthetic qualities, it can be used interchangeably for roofing, façades, and rainwater goods applications.

The rolled metal is made from a UNI EN 988-compliant titanium-zinc alloy, with a chemical composition within the following intervals:

- Zinc Z1 (as defined by EN 1179): main component
- Copper (Cu): 0.080% – 1.000%
- Titanium (Ti): 0.060% – 0.200%.

Titanium increases resistance to permanent deformation over time, while copper enhances the tensile strength of the material. The combination of these elements contributes to reducing the thermal expansion coefficient of the alloy. The aluminium (Al) content of the alloy is equal to or less than 0.015%, in compliance with the applicable requirements.

The product does not contain substances classified as SVHC (*Substances of Very High Concern*) under the REACH Regulation.

LCA: Information on the study

Declared unit The declared unit (DU) is 1 kg of pre-weathered rolled metal

The declared unit (DU) for the study is defined as 1 kilogram (kg) of pre-weathered rolled zintek®, produced at the Porto Marghera plant and subjected to a colour treatment process by third-party contractors. The conversion factors in the table below can be used for construction sector applications, where deliveries are typically described in terms of unit area:

DU	Conversion factor
1 m^2 0.6 mm thick	4.3
1 m^2 0.65 mm thick	4.7
1 m^2 0.7 mm thick	5
1 m^2 0.8 mm thick	5.8
1 m^2 1.0 mm thick	7.2

Temporal and geographical representativeness

The primary data used in this Environmental Product Declaration were supplied directly by Zintek S.r.l. and by the various suppliers of the components used in the manufacturing of the pre-weathered rolled zintek®. These data were established over a minimum period of a year of production (2023) and updated within a period of under five years, in compliance with the requirements of standard UNI EN 15804:2019. The specific data came from Zintek's manufacturing plant in Porto Marghera (VE), while the generic data used to complete the life cycle assessment (LCA) were taken from the Ecoinvent V.3.1O database, which is representative of European production processes.

EPD type

Specific, relating solely to the products listed in the "Product description" section of this declaration.

Database and software used

The assessment was conducted using SimaPro v.9.6 software, integrated with the Ecoinvent v.3.10 database. The process modelling was conducted using the "Allocation, cut-off by classification" model supplied by Ecoinvent. The core environmental impacts were assessed using Environmental Footprint 3.1 characterization factors.

Description of system boundaries

The environmental assessment of the pre-weathered rolled zintek® was conducted using a cradle-to-gate approach (modules A1–A3), extended to the end-of-life modules (C1–C4) and module D, as illustrated in Figure 01, where:

Module A1 (upstream module): extraction of raw materials/production of the materials that make up the zintek® product;

Module A2 (upstream module): transportation of all raw materials to the Zintek factory in Porto Marghera (VE);
Module A3 (core module): internal production processes;

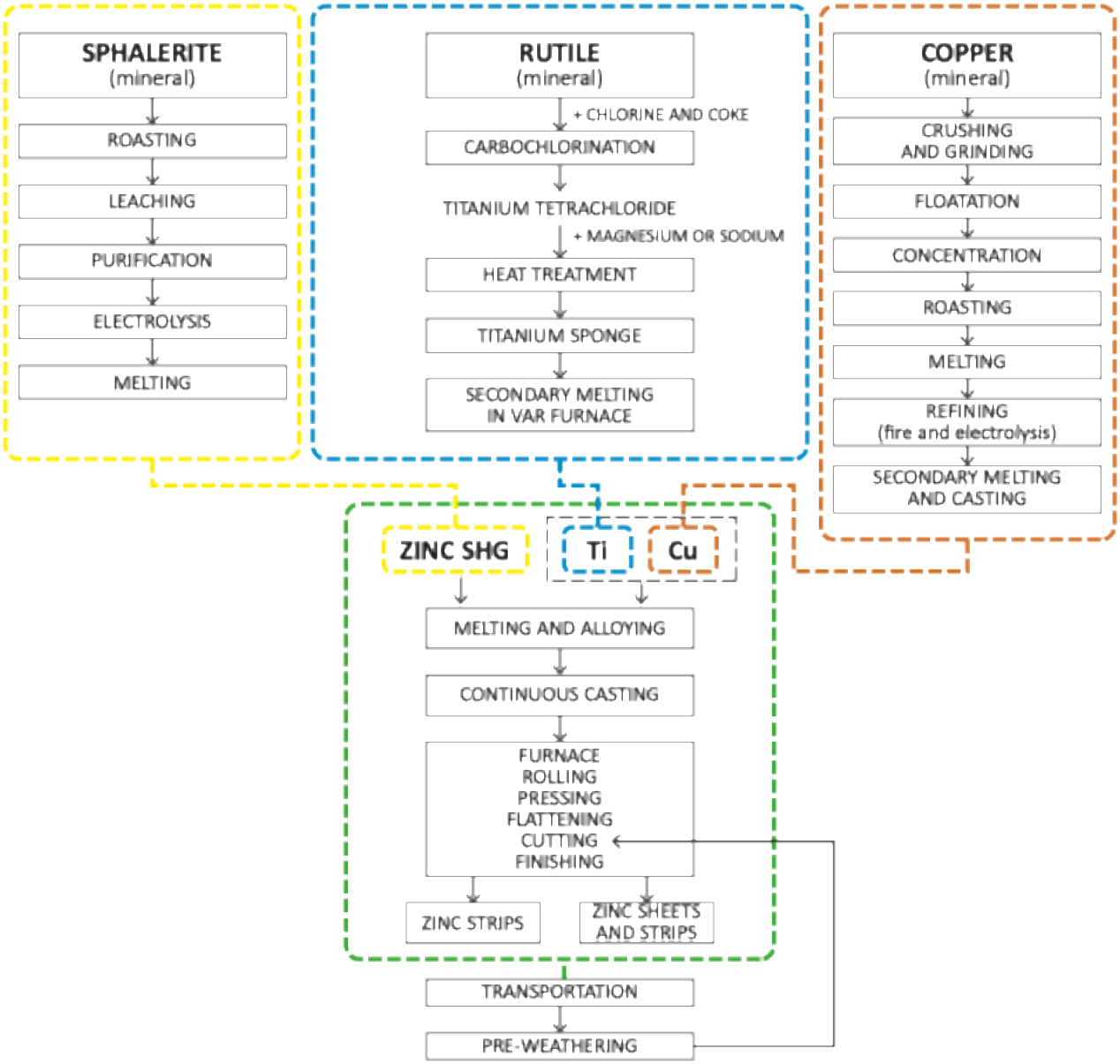
Module C1: deconstruction of the rolled zintek® at the end of the building's useful life;

Module C2: transportation of the demolished product to the processing site or collection centre;

Module C3: recovery and recycling of the metal components and packaging;

Module C4: final disposal of non-recoverable materials in landfill or through incineration. It was assumed that 5% of the waste generated during the disassembly will end up in landfill;

Module D: environmental impacts and benefits deriving from the potential recovery of the materials sent for recycling declared in stage C3.



Assumptions, exclusions, and cut-offs

The cut-off criteria in the LCA study were set at 1% for mass and primary energy. Processes contributing amounts below this threshold were therefore excluded, in accordance with EN 15804:2019.

As set out in the relevant PCR, it was assumed that the company's capital assets, including infrastructure, were excluded from the study. Impacts linked to transporting workers and those relating to producing the packaging for incoming raw materials were also excluded.

The approach defined in standard EN 15804:2019 was applied for biogenic CO_2 emissions. This method considers carbon storage to be a negative contributor to the environmental impact during the production and transformation stages. However, during the end-of-life stage, the biogenic carbon is released into the atmosphere, contributing positively to global warming potential.

Allocation rules

For virgin raw materials, both the environmental impacts deriving from their extraction and processing and those associated with the industrial transformation processes required to obtain the titanium–zinc alloy used in the production process were considered.
The overall environmental impacts of the production plant — such as electricity consumption, fuel use, waste production, and atmospheric emissions — were allocated among the various products created on the site on the basis of the physical characteristics of the materials analysed, such as the mass of the rolled metal.

This allocation method was applied wherever there was insufficient specific data for each product, and insufficient data to make dedicated calculations or estimates. In these circumstances, the environmental impacts were divided up proportionally, in accordance with the methodologies set out in the ISO 14040, ISO 14044 and EN 15804 standards, which regulate Life Cycle Assessment (LCA) and the drafting of Environmental Product Declarations.

End-of-life scenarios

Rolled zintek® is used on both the Italian and international market, applied to roofs and façades of buildings in various geographical locations. However, scenarios located in Italy were used to model the environmental impacts linked to the product's end of life, as they are representative of the production environment.

Module C1 — Deconstruction

Stage C1 involves the manual removal of the pre-weathered rolled metal cladding systems through mechanical deconstruction. The energy consumption potentially associated with this operation was considered negligible, and therefore was not included in the environmental impact assessment;

Module C2 — Waste transportation

This stage considers the transportation of the demolished material to the processing site, assuming a distance of 100 km between the demolition site and the waste handling site and the use of Euro 5 trucks;

Modules C3 and C4 — Processing and disposal

Stages C3 and C4 cover respectively the processing operations for recovering or recycling the materials that have reached the end of their life (95%) and those linked to sending the non-recoverable materials to landfill (5%).

The LCA study was conducted by the LCA Research Group in the University of Bergamo's Department of Engineering and Applied Sciences; *https://www.unibg.it/ugov/person/113147*

LCA: SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

	Product		Construction process			Use							End of life				Recovery of resources
	Supply of raw materials	Transportation	Production	Transportation	Building installation	Use	Maintenance	Repair	Replacement	Renovation	Energy use	Water use	Building demolition	Transportation	Waste processing	Disposal	Recovery/Recycling potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Declared modules	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

Table 03: Life cycle stages and modules as set out in EN 15804. The symbol "X" indicates that the module was included in the LCA, while "ND" indicates that the module was not included in the LCA, and therefore was not declared in the EPD

LCA: RESULTS

CORE environmental indicators (EN 15804:2019)

Parameter	Acronym	Unit	A1-A3	C1	C2	C3	C4	D
Climate change	GWP total	kg CO2 eq	**3,53E+00**	0,00E+00	1,51E-02	0,00E+00	3,18E-04	-2,31E+00
Climate change - Fossil	GWP fossil	kg CO2 eq	**3,50E+00**	0,00E+00	1,51E-02	0,00E+00	3,18E-04	-2,29E+00
Climate change - Biogenic	GWP biogenic	kg CO2 eq	**1,65E-02**	0,00E+00	5,17E-07	0,00E+00	6,06E-08	-1,49E-02
Climate change - Land use and LU change	GWP luluc	kg CO2 eq	**9,60E-03**	0,00E+00	3,72E-07	0,00E+00	1,64E-07	-8,92E-03
Ozone depletion	ODP	kg CFC11 eq	**6,30E-08**	0,00E+00	3,09E-10	0,00E+00	8,31E-12	-2,98E-08
Acidification	AP	mol H+ eq	**2,69E-02**	0,00E+00	3,77E-05	0,00E+00	2,24E-06	-2,22E-02
Eutrophication, freshwater	EP freshwater	kg P eq	**2,62E-04**	0,00E+00	1,27E-08	0,00E+00	2,53E-09	-2,34E-04
Eutrophication, marine	EPmarine	kg N eq	**6,02E-03**	0,00E+00	1,45E-05	0,00E+00	8,80E-07	-5,20E-03
Eutrophication, terrestrial	EPterrestrial	mol N eq	**6,72E-02**	0,00E+00	1,58E-04	0,00E+00	9,63E-06	-5,81E-02
Photochemical ozone formation	POCP	kg NMVOC eq	**1,94E-02**	0,00E+00	6,57E-05	0,00E+00	3,31E-06	-1,55E-02
Resource use, minerals and metals	ADPE[1]	kg Sb eq	**1,51E-03**	0,00E+00	5,00E-10	0,00E+00	9,06E-11	-1,42E-03
Resource use, fossils	ADPF[1]	MJ	**5,54E+01**	0,00E+00	2,00E-01	0,00E+00	7,05E-03	-3,58E+01
Water use	WDP	m3 depriv.	**3,05E+00**	0,00E+00	8,49E-05	0,00E+00	4,44E-04	-2,67E+00

[1] *The results of this environmental impact indicator should be used with caution, since there is high uncertainty over the results or experience with the indicator is limited.*

ADDITIONAL environmental indicators

The additional impact indicators were calculated in the LCA study report, but not reported in this EPD.

Resource consumption (EN 15804:2019)

Parameter	Acronym	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	PERE	MJ	6,49E+00	0,00E+00	6,94E-04	0,00E+00	6,76E-05	-5,78E+00
Renewable primary energy resources as material utilization	PERM	MJ	9,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources	PERT	MJ	6,49E+00	0,00E+00	6,94E-04	0,00E+00	6,76E-05	-5,78E+00
Non renewable primary energy as energy carrier	PENRE	MJ	5,54E+01	0,00E+00	2,00E-01	0,00E+00	7,05E-03	-3,58E+01
Non renewable primary energy as material utilization	PENRM	MJ	3,19E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non renewable primary energy resources	PENRT	MJ	5,54E+01	0,00E+00	2,00E-01	0,00E+00	7,05E-03	-3,58E+01
Use of secondary material	SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels	NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	FW	m^3	9,12E-02	0,00E+00	5,13E-06	0,00E+00	1,05E-05	-7,99E-02

Categories of waste and output flows (EN 15804:2019)

Parameter	Acronym	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	4,05E-02	0,00E+00	5,13E-06	0,00E+00	1,05E-05	-7,99E-02
Non hazardous waste disposed	NHWD	kg	1,02E-01	0,00E+00	1,47E-06	0,00E+00	6,89E-08	-3,31E-02
Radioactive waste disposed	RWD	kg	1,68E-04	0,00E+00	5,94E-06	0,00E+00	1,48E-06	-3,76E-02
Components for re-use	CRU	kg	0,00E+00	0,00E+00	1,88E-08	0,00E+00	1,19E-09	-1,50E-04
Materials for recycling	MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy	EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy	EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Parameter	Unit	
Biogenic carbon content in product	kg C	-
Biogenic carbon content in accompanying packaging	kg C	4,00E-03
NOTA: 1 kg di cabonio biogenico è equivalente a 44/12 kg di CO_2		

REFERENCES

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