

Environmental Product Declaration

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

Steel Panels with Expanded Polystyrene Insulation
from Cintac S.A.I.C.

EPD of multiple products, based on the
average results of the product group

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LATIN AMERICA



Programme: The International EPD[®] System EPD registered through the fully aligned regional programme: EPD Latin America. More information at 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
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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
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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): PCR 2019:14 Construction products (EN 15804+A2) (1.3.4)
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Life Cycle Assessment (LCA)
LCA accountability: MSc. Ing. Tomás Saiz, EBP Chile SpA
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier
Third-party verifier: Dr. Ing. Javier Martin Echazarreta, Instituto Nacional De Tecnología Industrial
Approved by: The International EPD [®] System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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: Cintac S.A.I.C

Address: Camino a Melipilla 8920, Maipú, Chile

Contact: Catalina Pérez-Aguirre, Technical Development and Sustainability Manager,
cperez.aguirre@grupocintac.com

Description of the organisation: Cintac is a Chilean company specialized in the manufacturing and commercialization of steel solutions for the construction, infrastructure, and industrial sectors. Founded in 1956, it has established itself as one of the leading steel companies in Chile, offering a wide range of products including metal profiles, cold-formed galvanized steel profiles, pipes, zinc-aluminum alloy-coated steel panels, insulated panels, and 2D prefabricated structures.

Product-related or management system-related certifications:

Cintac operates according to international standards

ISO 9001:2015 Quality management systems

ISO 14001:2015 Environmental management systems

ISO 45001:2018 Occupational health and safety management systems

Name and location of production site(s):

Casa Matriz, Camino a Melipilla 8920, Maipú, Santiago, Región Metropolitana, Chile

Product information

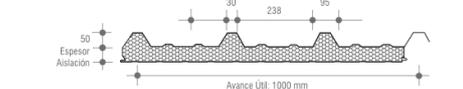
Product name: Steel panels with expanded polystyrene insulation

Product identification: Cintac's expanded polystyrene (EPS) insulated steel panels consist of two steel sheets and a high-density polystyrene core. The steel panels included in this study are manufactured using galvanized steel with an aluminium-zinc alloy coating, in compliance with ASTM A792, under the AZM 150 designation, with structural grade Gr 37.

Product description: Cintac's EPS insulated steel panels are a self-supporting structural element for roofing and façades, offering high mechanical strength and thermal insulation in a lightweight system.

Names and codes of the products included in the EPD: Cintac's EPS insulated steel panels offer a wide range of designs, differing in steel thickness, type and thickness of insulation material, geometric configurations, and finishes, such as paint type.

All the products included in this EPD feature expanded polystyrene insulation, two steel sheets with a nominal thickness of 0.5 or 0.4 mm, and are coated with polyester paint. The geometric configurations of the panels included in the EPD are detailed in the following table.

Product	Insulation Thickness (mm)	Steel Sheet Thickness, External / Internal (mm)	Geometry
2V	50	0.5 / 0.5	
ISOPOL	50, 75, 100, 120, 150	0.5 / 0.5	
KOVERPOL	75, 100	0.5 / 0.4	

UN CPC code: 421 "structural metal products and parts thereof"

Geographical scope: Chile

LCA information

Declared unit: One square meter of steel sandwich panel with expanded polystyrene insulation

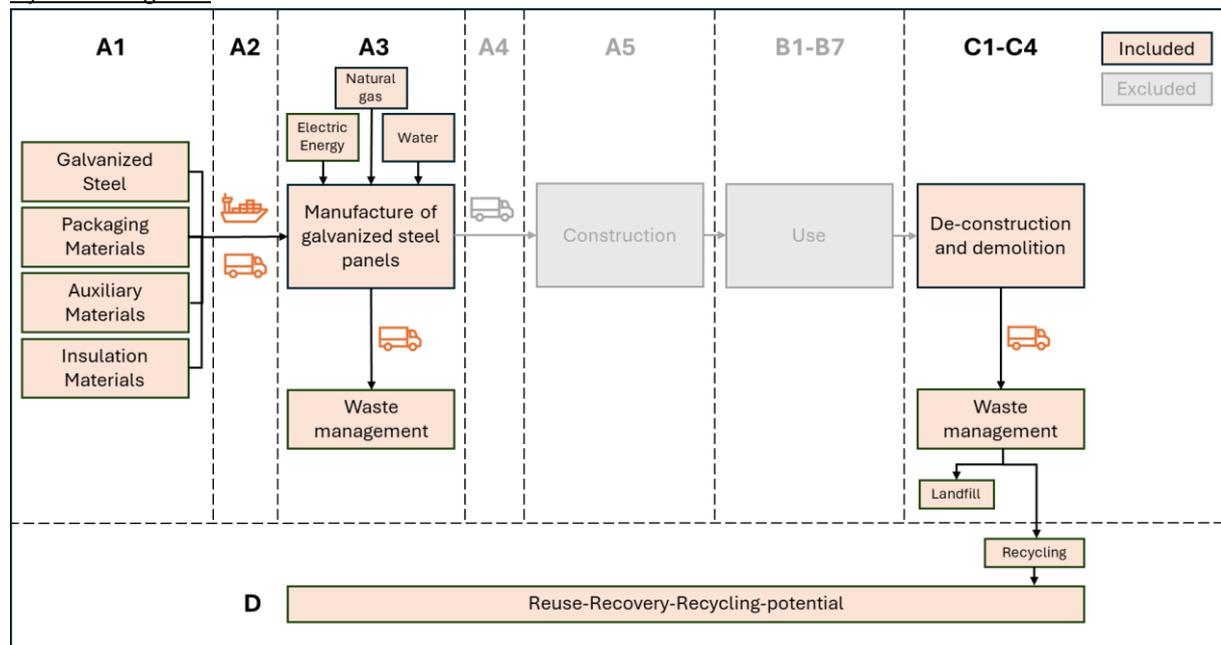
Conversion factor to mass: 9.62 kg/m²

Time representativeness: All the manufacturer's primary data refer to the year 2023.

Database(s) and LCA software used: Ecoinvent 3.8, and SimaPro 9.6.0.1

Description of system boundaries: cradle-to-gate with modules C1–C4 and module D (A1–A3 + C + D)

System diagram:



Product Stage

- **Raw Material Supply (A1):** Includes the extraction and processing of raw materials required for product manufacturing. The primary inputs considered are galvanized steel coils, raw materials for expanded polystyrene (EPS) sheets, paint, packaging materials (polyethylene film and expanded polystyrene pieces), and auxiliary materials such as diesel for forklifts and solvents for painting.
- **Transport to Manufacturer (A2):** Covers the transportation of inputs from suppliers to the manufacturing plant. This includes container ship transport for imported inputs and truck transport from the port or domestic suppliers to the plant.
- **Manufacturing (A3):** Accounts for electricity, gas, and water consumption during panel forming, EPS sheet production, and painting processes, as well as waste generation, transportation, and management. For steel scrap the end-of-waste state is reached when the scrap arrives at the steel processing plant and it is considered a co-product, therefore steel scrap recycling is not considered part of the system. All other types of waste accounted do not reach the end-of-waste state and are considered part of the system.

End-of-Life Stage

- **Deconstruction or Demolition (C1):** During demolition, the steel profiles are dismantled, it is assumed that 1.1 kWh/tonne energy from diesel powered tools is consumed in this process.

- **Waste Transport (C2):** It is estimated that 96.8% of the generated steel scrap is sent for recycling, traveling 200 km, while the remaining 3.2% is transported along with the insulation material to a landfill located 20 km away.
- **Waste Treatment (C3):** T The steel scrap fraction destined for recycling retains economic value as an input for steelmaking companies and is therefore excluded from the evaluated system.
- **Final Waste Disposal (C4):** The insulation material and the non-recycled steel scrap are disposed of in landfills.

Process	Value per one square meter of steel sandwich panel with EPS insulation
Collection processes specified by type	7.72 kg of steel scrap separately collected
	0.26 kg of steel scrap collected as mixed construction and demolition waste
	1.64 kg of expanded polystyrene separately collected
Recovery system specified by type	7.72 kg of steel scrap sent for steel recycling
Final disposal specified by type	0.26 kg of steel scrap sent to landfill disposal
	1.64 kg of expanded polystyrene sent to landfill disposal
Transport assumptions	200 km to the steel scrap recovery centre
	20 km to the landfill site

Resource Recovery Stage

- **Reuse-Recovery-Recycling-potential (D):** This module includes any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state in the form of reuse, recovery and/or recycling potentials. Steel scrap is assumed to reach the end of waste status directly at the construction site. The impacts and benefits of recycling the steel scrap (for the net scrap amount only) are grouped to module D.

Type of EPD: This is an EPD of multiple products, based on the average results of the product group. The average results were obtained by weighting the annual production (in mass units) of the evaluated products. All products included in this EPD are manufactured in the same plant.

Cut off criteria: At least 95% of the total input and output flows (mass and energy) per module have been included, in compliance with the used PCR. All reported data were incorporated and modelled using best available LCI data. The construction, plant maintenance activities and infrastructure or capital goods for upstream, core and downstream processes regarding the inventory data are excluded.

Reference Package: EN 15804 reference package based on EF 3.1

Data quality and sources: Data quality is compliant with ISO 14025:2006. All primary data were collected for 2023. All background data comes from Ecoinvent 3.8.

Allocations: All allocations are done as per EN15804+A2 and the applied PCR. For all the background data used in the model, the standard allocation assumptions of the used datasets were maintained. Coproduct allocation was applied based on the economic values. Plant level data such as electricity, water, steel coil packaging and its waste, and product packaging, was allocated based on production mass for each product.

For flows that leave system boundaries, the polluter pays principle applies, according to which the impacts related to the production of recycled material streams are borne by the system that produced them until they reach the end-of-waste status. Downstream impacts (e.g. impacts of recycling processes to obtain secondary raw material) are borne by the system that uses the secondary material.

Electricity mix: Generation of electricity consumed within the manufacturing plant was based on the electricity mix provided in the ecoinvent dataset for high voltage electricity in Chile. The GWP-GHG indicator of this dataset is 0.571 kg CO₂eq/kWh.

Target group: This EPD is intended for both business to business and business to consumer communications.

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CL	CL	CL	ND	ND	ND	ND	ND	ND	ND	ND	ND	CL	CL	CL	CL	CL
Primary data used ¹	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	NR			-	-	-	-	-	-	-	-	-	-	-	-	-	-

¹ The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that do not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Content information

The content declaration is based on an average product, obtained by weighting the annual production (in mass units) of the evaluated products. The declared unit is one square meter of steel sandwich panel with EPS insulation.

Product components	Gross weight, kg/declared unit	Weight-%	Biogenic content, kg C/declared unit
Steel	7.65	79.50%	0.000
Zinc-Aluminium coating	0.33	3.43%	0.000
Expanded Polystyrene	1.64	17.08%	0.000
TOTAL	9.62	100%	0.000
Packaging materials	Gross weight, kg/declared unit	Weight-% (versus the product)	Biogenic content ² , kg C/declared unit
Low-Density Polyethylene	0.101	1.27%	0.000
Expanded Polystyrene	0.058	0.73%	0.000
Paper	0.002	0.02%	0.001
TOTAL	0.16	2%	0.001

The product does not contain the substances included in the "Candidate List of SVHC" document issued by the European Chemicals Agency (<http://echa.europa.eu/candidate-list-table>).

² 1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂

Results of the environmental performance indicators

The results presented in this section are based on an average result, obtained by weighting the annual production (in mass units) of the evaluated products. All the results are presented per the declared unit: declared unit is one square meter of steel sandwich panel with EPS insulation.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A3).

Core environmental impact indicators to EN 15804

Results per one square meter of steel sandwich panel with EPS insulation

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3.91E+01	2.89E-03	1.45E-01	0.00E+00	2.05E-02	-7.18E+00
GWP-fossil	kg CO ₂ eq.	3.85E+01	2.89E-03	1.45E-01	0.00E+00	1.79E-02	-7.20E+00
GWP-biogenic	kg CO ₂ eq.	1.83E-01	4.68E-07	7.67E-05	0.00E+00	2.64E-03	1.23E-02
GWP-luluc	kg CO ₂ eq.	4.29E-01	2.88E-07	5.33E-05	0.00E+00	1.82E-05	4.32E-03
ODP	kg CFC 11 eq.	2.74E-06	6.17E-10	3.37E-08	0.00E+00	5.44E-09	-1.86E-07
AP	mol H ⁺ eq.	9.87E-01	3.00E-05	1.01E-03	0.00E+00	1.51E-04	-2.76E-02
EP-freshwater	kg P eq.	1.58E-02	8.94E-08	1.05E-05	0.00E+00	5.18E-06	-3.56E-03
EP-marine	kg N eq.	7.93E-02	1.33E-05	3.89E-04	0.00E+00	5.21E-05	-1.02E-03
EP-terrestrial	mol N eq.	3.88E+00	1.46E-04	4.26E-03	0.00E+00	5.66E-04	-7.19E-02
POCP	kg NMVOC eq.	1.95E-01	4.00E-05	1.20E-03	0.00E+00	1.64E-04	-4.02E-02
ADP-minerals & metals*	kg Sb eq.	2.67E-03	1.48E-09	3.29E-07	0.00E+00	5.84E-08	-2.01E-04
ADP-fossil*	MJ	5.43E+02	3.96E-02	2.24E+00	0.00E+00	4.20E-01	-5.63E+01
WDP*	m ³	1.94E+01	6.20E-05	8.49E-03	0.00E+00	1.83E-02	1.92E+00

Acronyms: GWP-total = Global Warming Potential total, 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

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per one square meter of steel sandwich panel with EPS insulation

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG*	kg CO ₂ eq.	3.91E+01	2.89E-03	2.07E-01	0.00E+00	1.80E-02	-7.18E+00
PM	disease inc.	9.75E-06	8.04E-10	2.07E-08	0.00E+00	3.07E-09	-3.51E-07
IRP**	kBq U-235 eq	2.34E+00	1.78E-04	1.05E-02	0.00E+00	1.96E-03	2.55E-01
ETP-fw***	CTUe	1.88E+03	2.32E-02	1.89E+00	0.00E+00	3.28E-01	-1.69E+02
HTP-c***	CTUh	1.85E-07	8.96E-13	7.69E-11	0.00E+00	1.31E-11	6.94E-08
HTP-nc***	CTUh	1.73E-06	1.68E-11	2.26E-09	0.00E+00	2.02E-10	4.30E-07
SQP***	Pt	1.44E+02	5.04E-03	2.50E+00	0.00E+00	1.01E+00	-2.43E+01
Acronyms	GWP-GHG = Global Warming Potential green house gases; PM = Potential incidence of disease due to particulate matter emissions; IRP = Potential Human exposure efficiency relative to U235; ETP-fw = Potential Comparative Toxic Unit for ecosystems (freshwater); HTP-c = Potential Comparative Toxic Unit for humans (cancer); HTP-nc = Potential Comparative Toxic Unit for humans (non-cancer); SQP = Potential soil quality index.						

* 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 CO₂ is set to zero.

**Disclaimer: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

*** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Resource use indicators

Results per one square meter of steel sandwich panel with EPS insulation

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	3.89E+01	0.00E+00	6.30E-02	0.00E+00	7.19E-03	-7.83E+00
PERM	MJ	2.39E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.89E+01	2.23E-04	6.30E-02	0.00E+00	7.19E-03	-7.83E+00
PENRE	MJ	4.78E+02	3.96E-02	3.09E+00	0.00E+00	4.20E-01	-5.63E+01
PENRM	MJ	6.44E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.42E+02	3.96E-02	3.09E+00	0.00E+00	4.20E-01	-5.63E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	4.99E-01	2.00E-06	3.80E-04	0.00E+00	4.37E-04	7.35E-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						

Waste indicators

Results per one square meter of steel sandwich panel with EPS insulation

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1.65E-01	1.15E-06	2.73E-04	0.00E+00	4.15E-05	-4.03E-02
Non-hazardous waste disposed	kg	9.49E+00	5.28E-05	2.14E-01	0.00E+00	1.70E+00	-2.80E+00
Radioactive waste disposed	kg	1.11E-03	2.73E-07	2.04E-05	0.00E+00	2.51E-06	5.41E-05

Output flow indicators

Results per one square meter of steel sandwich panel with EPS insulation							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	7.72E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon content

Results per 1 metric ton of galvanized steel profile		
Biogenic carbon content	Unit	Quantity
Biogenic carbon content in the product	kg C	0.000
Biogenic carbon content in accompanying packaging	kg C	0.001

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

References

- PCR: EPD International Product Category Rules for construction products (PCR 2019:14 v1.3.4, valid until: 2025-06-20)
- General Programme Instructions of the International EPD[®] System. Version 4.0
- General Programme Instructions of the International EPD[®] System. Version 5.0
- EN 15804:2012+A2:2019: Sustainability of construction works -Environmental Product Declarations - Core rules for the product category of construction products
- ISO 14025:2006: Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO 14040:2009-11: Environmental management - Life cycle assessment - Principles and Framework
- ISO 14044:2009-11: Environmental management - Life cycle assessment – Requirements and guidelines

