

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

WOOD CEMENT ELEMENTS FOR ACOUSTIC BARRIERS

from

ISOTEX SRL



Programme:

The International EPD® System, www.environdec.com

Programme operator:

EPD International AB

EPD registration number:

S-P-01290

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2029-03-20

EPD of multiple products, based on worst-case results

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
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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, version 1.3.2*

PCR review was conducted by: *PCR Committee: IVL Swedish Environmental Research Institute, Secretariat of the International EPD[®] System*
Moderator: Martin Erlandsson, IVL Swedish Environmental Research Institute

Life Cycle Assessment (LCA)

LCA accountability: *Ing. Francesca Intini, Arch. Daniela Petrone, T&A - Tecnologia & Ambiente srl*

Third-party verification

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

☒ EPD verification by accredited certification body

Third-party verification: *Bureau Veritas Italia S.p.A* is an approved certification body accountable for the third-party verification

The certification body is accredited by: *Accredia*

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: ISOTEX srl, via D'Este, 5/7-5/842028 Poviglio (RE)

Contact: Ing. Alessia Aldrovandi tecnico2@blocchiisotex.it

Description of the organisation: The Isotex construction system began its history in Germany in 1946 and since 1985 C&P Costruzioni Srl has been operating on Italian territory, creating around 400,000 eco-sustainable homes, of which around 90,000 in Italy alone, guaranteeing safety and experience. From the then C&P Costruzioni Srl, the ancient name of the company, to the modern Isotex Srl, an entirely Italian company, it has stood out for research, innovation and product quality, becoming the most important company in the production of formwork blocks and wood-concrete floors: Isotex Srl is today the European leader with 82% of the market share in the wood-cement sector. The company has a staff of over 100 people including employees and agents who cover the entire national and international territory.

The production includes formwork blocks, floors and elements for acoustic barriers in wood-cement and takes place entirely in the production plant in Poviglio (RE), where the company is based. The systems are highly technological and functional in order to guarantee a high quality standard, respect for the environment and customer satisfaction, meeting the consensus of technicians, builders and end users. The use of fully automated procedures and machinery guarantees the quality and precision of the products. The company uses machinery to check the specific characteristics of the raw materials used, especially wood, on which quality controls are carried out to validate the supplies before unloading. An automatic mixture regulation system allows the desired levels of the characteristics of the wood-cement conglomerate produced to be maintained constant. Inside the production site there is also a laboratory equipped with instrumentation compliant with the requirements of the specific standards for carrying out checks and controls, carried out on samples of each production batch: specific weight (density) checks and resistance tests are included mechanics.

Finally, the company is committed to the circular economy plan: this company policy aims to reduce and limit the use of non-renewable energy in favor of renewable energy, to reduce the use of virgin raw materials by encouraging the use of recovery, to avoid the generation of new waste. This last aspect is made possible through the reintroduction, into the production cycle itself, of wood-cement waste (scraps) deriving from production: the generation of waste deriving from the production cycle is in this way almost eliminated. As regards energy, the presence of a photovoltaic system for the production of electricity, located on the production plant, allows us to reduce the use of electricity from non-renewable sources. The primary objective of the Isotex construction system is to guarantee safety and living comfort. At a certification level, the characteristics of the products for the different aspects have been certified by authorized laboratories, university institutes, third party bodies, etc. in compliance with the regulations in force in Italy and abroad.

Product-related or management system-related certifications: Isotex obtained the following certifications:

- ISO 9001 – Quality Management System
- ANAB/ICEA – Conformity of materials with green building

Name and location of production site(s): via D'Este, 5/7-5/842028 Poviglio (RE)



Product information

Product name: Element for acoustic barrier

Product identification: Isotex acoustic or noise barriers have high sound absorption and effective sound insulation. The available variants are represented by the elements: S10 and S13. These elements are built from a wood-concrete conglomerate and are designed to reduce noise pollution from roads, highways, railways or industrial centers. They are produced starting from Portland cement and fir wood, ground and mineralized with natural mineral, in order to make them inert. The wood used is exclusively recycled wood from end-of-life pallets, selected and untreated.

Product description: Wood cement elements for acoustic barriers of 13 cm

Included products: Element for acoustic barrier S10. The results are presented, for each impact category, for the product with the greatest impact.

	ELEMENTS FOR ACOUSTIC BARRIERS S10	ELEMENTS FOR ACOUSTIC BARRIERS S13
Weight [kg/m ²]	48	75

UN CPC code: 37520 “Boards, blocks and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders”

Geographical scope: Italian

The dimensional characteristics and main technical specifications of the acoustic barrier elements are summarized in the Table:

	ELEMENTS FOR ACOUSTIC BARRIERS S10	ELEMENTS FOR ACOUSTIC BARRIERS S13
Dimensional specifications		
Length [cm]	120	120
Width [cm]	10	13
Height [cm]	25	25

Technical performance

α_w (alpha) – Sound absorption coefficient (UNI EN ISO 11654)	0,80 - B	0,95 - B
NRC – Noise Reduction Coefficient (ASTM C423 – 09a)	0,80	0,95
DL α - (dB) Sound absorption class (UNI EN 1793-1)	8 – A3	14 – A4

LCA information

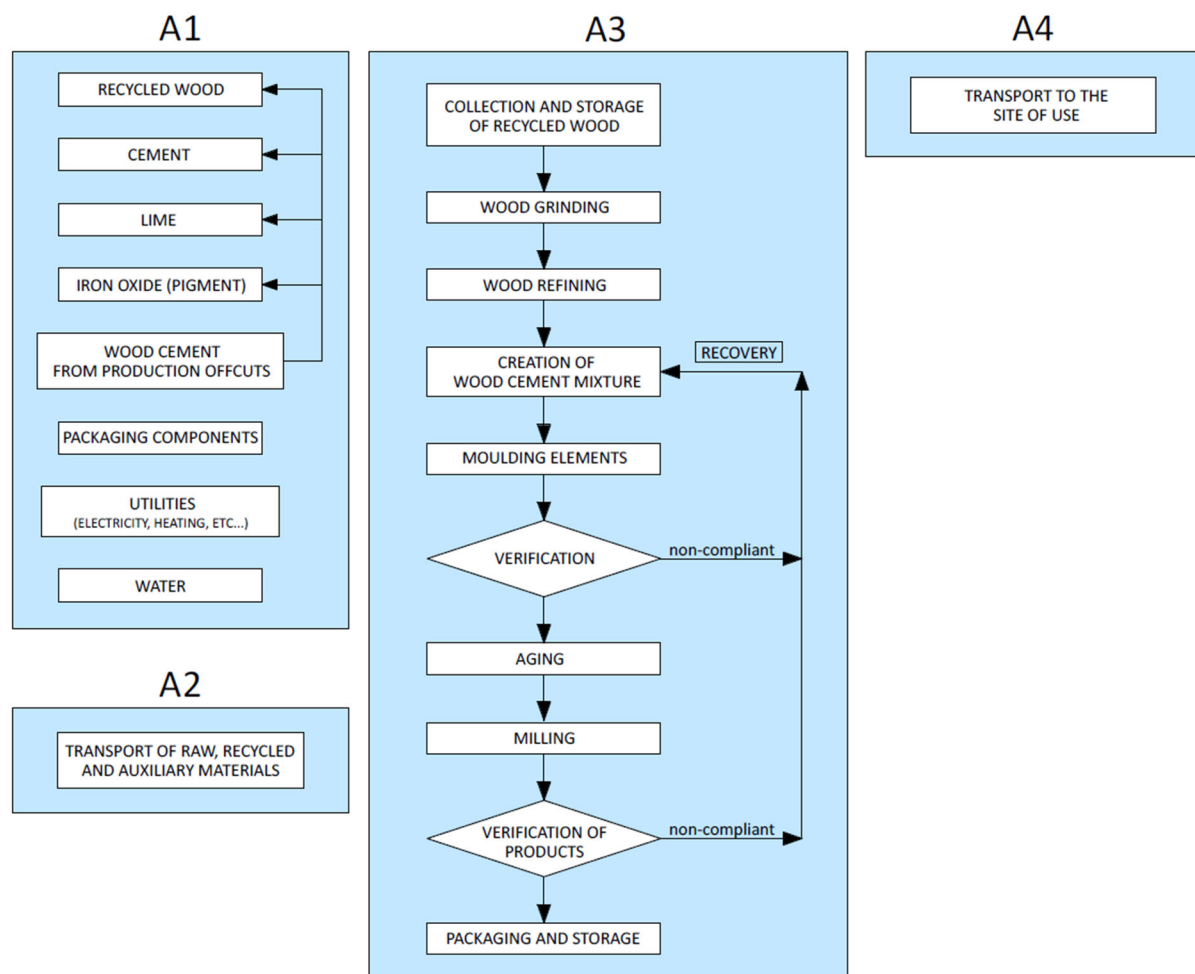
Functional unit / declared unit: The functional unit is 1 m² of Element for acoustic barrier S13

Time representativeness: 2022

Database(s) and LCA software used: The Ecoinvent database v.3.9.1 (www.ecoinvent.org) provides the life cycle inventory data for the raw and process materials obtained from the background system. LCA software used is SimaPro 9.5.0.2.

Description of system boundaries: Cradle to gate with options (A1–A3 and A4). The carbonation of product is not included because the use and end of life stages is excluded. The products are shipped to construction sites located in Italy, with an average distance of 272 km.

System diagram:



Cut-off rules: 1% cut-off is applied. Plant maintenance operations, infrastructure processes and machinery were excluded from the study.

Quality data: Specific data are used for raw materials, electricity, fuel data, emissions, waste data, average distances and means of transport in modules A2 and A4.

Electricity mix: The electricity used in the production process (phase A1-A3) was modeled using the national Residual Mix provided by the AIB (Association of Issuing Bodies) 2022 for a share of 89% and by the photovoltaic system for 11%. The GWP-GHG of the electricity mix is equal to: 0.522 kg CO₂ eq./kWh.

Allocation rules: In A1-A3 modules an allocation was used based on the quantity and type of products in the reference year.

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	ND	ND	ND	ND	ND
Geography	IT	IT	IT	IT	-												
Specific data used	> 90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-31%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Pre-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Cement	38,31	-	7,07%	-
Recycled wood (fir)	23,71	100%	-	0,494
Lime	3,31	-	2,83%	-
Iron oxide	0,22	-	-	-
Water	6,5	-	-	-
TOTAL	75,00	31,61%	3,73%	-
Packaging materials	Weight, kg	Weight-% (versus the product)		Weight biogenic carbon, kg C/kg
Pallet	1,11	-	-	0,588
Plastics	0,02	-	-	
TOTAL	1,13	-	-	

***All production waste is completely reinserted into the production cycle and taken into consideration in the evaluation.**

The product do not contain substances which exceed the limits for registration with the European Chemicals Agency regarding the “Candidate List of Substances of Very High Concern for Authorisation”.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional unit 1 m ²			
Indicator	Unit	A1-A3	A4
GWP-fossil	kg CO ₂ eq.	4,52E+01	6,38E-02
GWP-biogenic	kg CO ₂ eq.	1,32E-02	2,15E-05
GWP-luluc	kg CO ₂ eq.	5,81E-03	2,92E-05
GWP-total	kg CO ₂ eq.	4,52E+01	6,38E-02
ODP	kg CFC 11 eq.	5,20E-07	2,15E-05
AP	mol H ⁺ eq.	1,26E-01	1,99E-04
EP-freshwater	kg P eq.	2,45E-04	5,02E-07
EP-marine	kg N eq.	3,39E-02	6,72E-05
EP-terrestrial	mol N eq.	3,80E-01	7,18E-04
POCP	kg NMVOC eq.	1,28E-01	2,98E-04
ADP-minerals&metals*	kg Sb eq.	1,73E-05	2,03E-07
ADP-fossil*	MJ	3,26E+02	8,97E-01
WDP*	m ³	4,83E+00	3,40E-03
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		

** 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 functional unit 1 m ²			
Indicator	Unit	A1-A3	A4
GWP-GHG ¹	kg CO ₂ eq.	4,52E+01	6,38E-02

Resource use indicators

Results per functional unit 1 m ²			
Indicator	Unit	A1-A3	A4
PERE	MJ	3,60E+01	5,90E+01
PERM	MJ	2,55E+02	0,00E+00
PERT	MJ	2,91E+02	5,90E+01
PENRE	MJ	2,20E+02	1,32E+02
PENRM	MJ	1,06E+02	0,00E+00
PENRT	MJ	3,27E+02	1,32E+02
SM	kg	2,64E+01	0,00E+00
RSF	MJ	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00
FW	m ³	1,22E-01	7,56E-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		

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 CO₂ is set to zero.

Waste indicators

Results per functional unit 1 m ²			
Indicator	Unit	A1-A3	A4
Hazardous waste disposed	kg	2,27E-02	6,22E-04
Non-hazardous waste disposed	kg	2,27E-02	0,00E+00
Radioactive waste disposed	kg	1,69E-04	9,48E-05

Output flow indicators

Results per functional unit 1 m ²			
Indicator	Unit	A1-A3	A4
Components for re-use	kg	0,00E+00	0,00E+00
Material for recycling	kg	3,01E-01	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00
Exported energy, electricity	MJ	1,06E-03	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00

Differences versus previous versions

Compared to the previous version of this EPD, the SimaPro software and the Ecoinvent database have been updated to the latest version. Company impacts, distribution statistics, end-of-life scenarios based on statistics from the new reference year (2022).

References

- General Programme Instructions of the International EPD[®] System. Version 4.0.
- PCR 2019:14 Construction products, version 1.3.2
- Analisi del ciclo di vita dei prodotti in Legno Cemento, Ver.1.1, Febbraio 2024
- EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental
- ISO 14040-44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment-Principles
- AIB – Association of issuing bodies nel report “European Residual Mixes – Results of the calculation of residual mixes for the calendar year 2022
- EN 16757: 2022 - Sustainability of construction works – Environmental product declarations - Product Category Rules for concrete and concrete elements
- Data from TOOL EPD Buzzi Unicem

