

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

Foaming agent: ISOCEM S/B

from ***Isoltech s.r.l.***



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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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
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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) (1.3.3) published by the International EPD® System*

PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com/TC 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: *Archita engineering s.r.l.*

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

[Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

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: Isoltech s.r.l.

Contact: Franco Bellotti, franco@isoltech.it

Description of the organisation:

Isoltech s.r.l. has been amongst the first Italian companies to introduce systems for producing cellular concrete to the market using appropriate machines and foaming agents. The company business evolved during over 40 years of activity. Besides the sale of foaming agents, machinery, and turnkey plant, Isoltech offers an integrated and highly personalized service, able to give the client all the means and capabilities necessary to produce cellular concrete in an excellent and autonomous manner.

Product-related or management system-related certifications: ISO 9001 certificate n. QBC585 certified by ABI Cert

Name and location of production site(s): Isoltech s.r.l., Via Amburgo 2, 24040 Verdellino (BG, Italy)

Product information

Product name: ISOCEM S/B

Product description:

The product under analysis is ISOCEM S/B, a foaming agent consisting of hydrolysed proteins of animal origin (horns and hoofs), used mostly in agriculture for their nutritional properties. ISOCEM S/B is intended to be used in all the applications that requires the maximal mechanical resistance of cellular concrete, as the foam it produces is highly stable.

Geographical scope: Italy

LCA information

Functional unit / declared unit: One (1) kilogram of product ISOCEM S/B, ready to be used by final client.

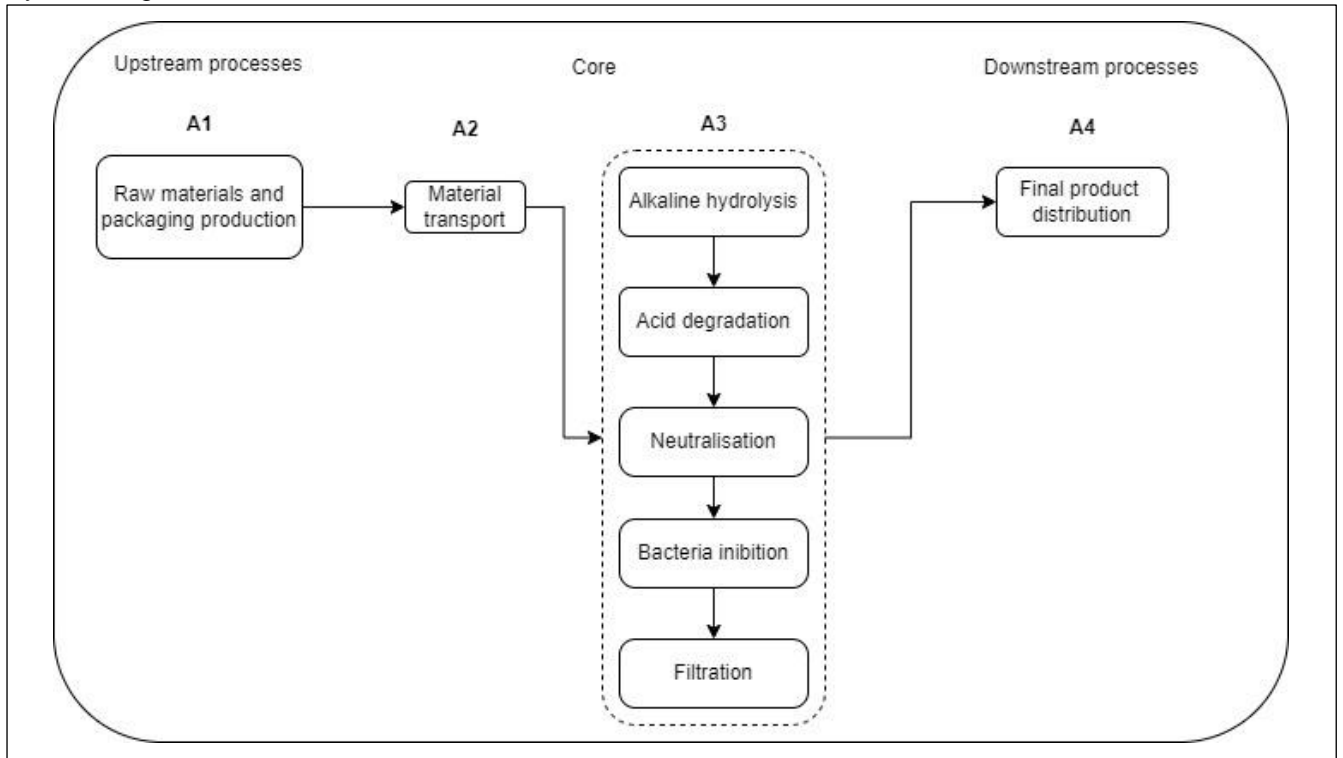
Time representativeness: The reference year is 2023.

Database(s) and LCA software used: Ecoinvent version 3.10, SimaPro software 9.6.0.1 Analyst

Description of system boundaries:

e) Cradle to gate with options (A1–A3 and additional modules). The additional module is A4.

System diagram:



More information: <https://www.isoltech.it/>

The electricity purchased from the grid is modelled through the process “Electricity, medium voltage {IT} | electricity, medium voltage, residual mix | Cut-off, U”, based on the AIB 2023 report. Its emission value, calculated with the IPCC 2021 method, is 0,641 kgCO_{2eq}/kWh.

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	
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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific data used	>90%			>90%		-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Water	0,42	0	0
Soda	0,06	0	0
Rosin size	0,01	0	0,32%, 4,52E-01 kg C/kg
Horn and hoof meal	0,27	0	19,01%, 7,00E-01 kg C/kg
Hydrogen peroxide	0,01	0	0
Hydrochloric acid	0,15	0	0
Calcium chloride	0,01	0	0
Triethanolamine	0,02	0	0
Ammonia	0,02	0	0
Iron sulphate	0,01	0	0
Ethylene glycol	0,02	0	0
Acticide	<0,1%	0	0
TOTAL	1	0	19,33%, 1,152 kg C/kg
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
HDPE	5,69E-02	6	0
Steel	5,37E-03	0,54	0
Wood	8,47E-04	0,008	4,98E-04, 5,88E-01 kg C/kg
TOTAL	6,35E-02	6,2	4,98E-04, 5,88E-01 kg C/kg

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
ND	-	-	-

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
GWP-fossil	kg CO ₂ eq.	6,32E-01	1,91E-01
GWP-biogenic	kg CO ₂ eq.	5,37E-02	1,38E-03
GWP-luluc	kg CO ₂ eq.	1,46E-02	6,25E-05
GWP-total	kg CO ₂ eq.	6,12E-01	1,91E-01
ODP	kg CFC 11 eq.	1,97E-08	3,80E-09
AP	mol H ⁺ eq.	2,88E-03	5,98E-04
EP-freshwater	kg P eq.	3,41E-04	1,28E-05
EP-marine	kg N eq.	6,73E-04	2,02E-04
EP-terrestrial	mol N eq.	5,90E-03	2,19E-03
POCP	kg NMVOC eq.	2,49E-03	9,37E-04
ADP-minerals&metals*	kg Sb eq.	4,92E-06	6,11E-07
ADP-fossil*	MJ	1,17E+01	2,68E+00
WDP*	m ³	3,39E-01	1,10E-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		

* 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 or declared unit			
Indicator	Unit	A1-A3	A4
<u>GWP-GHG[1]</u>	kg CO ₂ eq.	1,34E+01	1,91E-01

Resource use indicators

Results per functional or declared unit			
Indicator	Unit	A1-A3	A4
PERE	MJ	5,94E-01	3,20E-02
PERM	MJ	8,79E-01	1,21E-02
PERT	MJ	1,47E+00	4,41E-02
PENRE	MJ	9,06E+00	2,68E+00
PENRM	MJ	2,65E+00	0,00E+00
PENRT	MJ	1,17E+01	2,68E+00
SM	kg	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00
FW	m ³	9,16E-03	3,67E-04

Waste indicators

Results per functional or declared unit			
	Unit	A1-A3	A4
Hazardous waste	kg	1,71E-04	1,81E-05
Bulk waste	kg	2,97E-01	1,27E-01
Radioactive waste	kg	1,03E-05	8,55E-07

Output flow indicators

Results per functional or declared unit			
Indicator	Unit	A1-A3	A4
Components for re-use	kg	0	0
Material for recycling	kg	0,252	0
Materials for energy recovery	kg	0	0

Exported energy, electricity	MJ	0	0
Exported energy, thermal	MJ	0	0

LCA interpretation

Most of the impact in all the categories investigated is related to the A1 stage, corresponding to the raw material supply. Indeed, it represents the 72,1 % of the GWP impact, and at least the 68,8% of all the eutrophication category.

Further investigating, it seems that one of the most impactful raw materials in the supply chain is hydrochloric acid, contributing to the 24,5% of the GWP category. Rosin size, one of the ingredients used to produce S/B, constitutes the 47,5% of the eutrophication-freshwater impact.

In most of the impact categories, the packaging material, being polyethylene (HDPE) and steel, give a great contribution to the total impact. Indeed, the HDPE production contributes about the 30% of the GWP and ODP impact category, up to the 42,3% to the ADP-fossil impact category.

The second most impactful stage is A4, contributing between the 23,3 and the 27,4% in all the impact category assessed. The A4 stage concerns the transport of the final product. In this case, the only transport mode is by lorry, therefore being the only contributes to the impacts in this life cycle stage.

Most of the impacts in the A3 phase, corresponding to the manufacturing stage, are due to the grid electricity purchased. Indeed, it contributes to the 81,3% to the GWP (total) impact category, followed by the diesel consumption, which contributes to the 12,8% in the same category.

The electricity from the solar panels contributes to 43,6% of the category GWP-lula, being the most impactful process in this category.

Information related to the EPD sector

This EPD is not sectorial.

Differences from previous version

This document is the first version of EPD.

References

- General Programme Instructions of the International EPD® System. Version 4.0
- PCR 2019:14 Construction products, version 1.3.3
- 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
- ISO 14021:1999, "Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling)"

