

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND
EN 15804:2012+A2:2019 FOR



Gypsum Products By VOLCÁN



THE INTERNATIONAL EPD® SYSTEM



VOLCAN YESOS

Programme:

The International EPD® System
EPD registered through the fully
aligned regional programme:
Hub EPD® Latin America

EPD registration number:

S-P-05625

Publication date:

2022-03-31

Programme operator:

EPD International AB,
Regional Hub: EPD Latin America

Valid until:

2027-03-30

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 www.environdec.com EPD registered through the fully aligned regional programme: Hub EPD® Latin America www.epd-americalatina.com
Programme Operator	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden EPD Latin America Chile office: Alonso de Ercilla 2996, Ñuñoa, Santiago. Mexico office: Av. Convento de Actopan 24 Int. 7ª, Colonia Jardines de Santa Mónica, Tlalnepantla de Baz, Estado de México, México. C.P. 54050.

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products and Construction Services VERSION 1.0, 2019-12-20, UN CPC 152
PCR review was conducted by: <i>Technical Committee of the International EPD® System</i>
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: <i>Ruben Carnerero</i> Email: <i>r.carnerero@ik-ingenieria.com</i> Approved by: <i>The International EPD® System</i>
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No
Developed by: EDGE Chile Email: <i>contacto@edgechile.com</i> Web: <i>www.edgeenvironment.com</i>



The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

What is an EPD?

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.

The following EPD has been developed by Volcán for its construction gypsum.

Company information

Owner of the EPD

Volcán S.A.

Web: <https://www.volcan.cl>

Phone: (56) 600 399 2000

Contact: Ricardo Fernández – Manager of Technical and Sustainable Development Area

Email - rfernandez@volcan.cl

Description of the organisation

Volcán is a Company leader in constructive solutions that generate habitability, comfort, efficiency and sustainability. Its purpose is to create a better living standard for people in each habituated space, for this and future generations.

Volcán's portfolio of constructive solutions is formed by:

- 1 Solutions for facades and internal division, such as Volcanita for different uses, Volcoglass, fibercement Volcanboard Siding and Volcanboard Deck, and ceiling access panels;
- 2 Solutions for roofing and climatization, such as asphalt shingles, membranes, felt and ducts;
- 3 Solutions for thermic isolation, acoustic absorption and energy efficiency, such as glass wool Aislanglass, mineral wool Aislan, Sonoglass and Rigitone;
- 4 Solutions for perfect finishes like gypsum plaster, fillers, composites, tape, Levelline corners, Volcastic, Volcabond, and;
- 5 Tools and solutions for passive protection to fire, such as compartments, seals and protection of metallic structures.

Additionally, Volcán offers technical advisory to answer the diverse needs of clients.

Sustainability

Responsible environmental management, protection of the environment and natural resources are a strategic priority for Volcán. This is why in 2014 the company created a Sustainability division, in charge of registering, controlling and learning about all the events that imply environmental impacts, as well as creating and consolidating a cross wise program called "Sustainable Volcán", formed by pillars structured according to all fields of environmental management, with the goal of configuring a sustainable management of waste, emissions, energy use, water use, noise levels, rainfall control, among others; in order to achieve a responsible environmental management.

At the moment, Volcán has the following ISO Standards:

- 6 ISO 9001:2015 - Quality management systems — Requirements
(https://www.volcan.cl/system/files/iso_9001.pdf)

- 7 ISO 14001:2015 - Environmental management systems
(https://www.volcan.cl/system/files/iso_14001.pdf)
- 8 OHSAS 18001:2007 Occupational Health and Safety Management Systems
(https://www.volcan.cl/system/files/ohsas_18001.pdf)
- 9 ISO 50001:2018 — Energy management systems
(https://www.volcan.cl/system/files/certificaciones_iso_50001.pdf)

Additionally, since 2016, Volcán has been developing its Sustainability Report, where sustainability strategic priorities are being addressed within the organization, including analysis of best practices, and research and focus group with internal and external stakeholders. This report is elaborated following Global Reporting Initiative (GRI) guidelines. The report represents a new era for Volcán, where it is not only about responding to the needs of clients, but also a concern about the surroundings and communities. The latest version of the Sustainability Report can be downloaded from the following link:

<https://www.volcan.cl/informe-de-sostenibilidad>

Name and location of production site(s):

Volcán S.A.

Planta CIVSA- Avenida Concha y Toro 0602, Puente Alto, Región Metropolitana

Product information

Product name

The products included in this EPD are Volcán's construction gypsum products

Product identification and description

UN CPC code: 152

Table 1 shows the different products covered in this study and their main uses.

Table 1- Characteristics of construction gypsum products covered in the study

Product	Short description and application
Yeso Super (Illustration 1)	Calcium sulphate (gypsum) semi hydrated for construction. Applications include: - Whitewash and plastering of interior walls and slabs with low load - Repairment of walls, surfaces, pillars and others - Fabrication of ledges - Finishing of masonry and edges It can be used in all types of buildings.
Yeso Express (Illustration 2)	Calcium sulphate (gypsum) semi hydrated for construction, suggested for repairs, remodelling and small surfaces that need to be covered. Applications include: - Interior walls with low load - Repairment of walls, surfaces, pillars and others It can be used in all types of buildings.
Volcafix (Illustration 3)	Calcium sulphate (gypsum) semi hydrated with additives that works as adhesive for expanded polystyrene panels to concrete, brickwork or other, as well as glue for gypsum boards. It can be used in all types of buildings.



Illustration 1- Yeso Super



Illustration 2- Yeso Express



Illustration 3- Volcafix

Content information

Table 2 presents the composition of Volcán's construction gypsum products, as well as packaging materials. No dangerous substances from the candidate list of SVHC are included in the product.

Table 2- Product components

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Mineral gypsum	0.98- 1.00	98-100%	0%
Additives	0.00-0.02	0-2%	0%
TOTAL	1.00	100%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Polyethylene	0.000233	0.023%	
Paper	0.003043	0.304%	
TOTAL	0.003276	0.328%	
Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
Not applicable			

LCA information

A life cycle assessment is a technique for assessing the environmental aspects and potential impacts associated with a product. By considering potential impacts throughout the life cycle of a product (upstream and downstream), the analysis avoids the shifting of burdens from one type of environmental impact to another, from one political region to another and from one stage to the other.

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life cycle environmental impacts of products. The following information describes the scope and methodology of this EPD for Volcán's construction gypsum products.

Declared unit

This EPD has a cradle to gate with options approach, with a declared unit of 1 kg of construction products used in Chile.

Reference service life

The typical Volcán construction gypsum product life is assumed to be the life of the building or 50+ years.

Geographical scope

The geographical scope of this EPD is Chile.

Time representativeness

The information collected for the analysis is 2020, considering the production of all products in this year.

Database(s) and LCA software used

The inventory data for the process are entered in SimaPro LCA program and linked to the pre-existing data for the upstream feedstocks and services. Data were selected per geographic relevance from ecoinvent 3.6 database (Ecoinvent Centre, 2019).

Description of system boundaries

This EPD is cradle to gate grave, however, given that some of the modules are not applicable for Volcán's construction gypsum products, the scope is cradle to gate with options¹. Table 3 has the detail of the modules included. The following life cycle stages have not been declared, as they are deemed not applicable for Volcán: Material emissions from usage (B1); Repair (B3); Maintenance (B2); Replacement (B4); Refurbishment (B5), Operational energy use (B6) and Operational water use (B7).

In the case of Waste processing (C3) and Reuse, recycle or recovery (D) these have been included in the analysis; however, they are both considered to be 0 due to a conservative scenario of all products going to landfill. This scenario responds to Volcán not having a reuse, recovery, recycling take back program for its products. Also on a national level, official data from the government in terms of circular economy in the construction and demolition sector indicates that the industry is very behind in this area. On one hand, the baseline is not very clear, since only 50% of companies declare their waste,

¹ Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules). The additional modules may be one or more selected from A4–A5 and/or B1–B7.

only 8.4% of that is valorised, and within that the only materials with relevant data are steel, wood, other metals, and stone and gravel (Gobierno de Chile, 2020). Thankfully, this scenario could change in the future due to the Roadmap on Circular Economy for the Construction and Demolition Sector, where targets are a 30% valorisation of waste for 2025 and 70% for 203

Table 3- Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation

	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	x	NR	NR	NR	NR	NR	NR	NR	x	x	NR	x	NR
Geography	Main supplier (mineral gypsum) from Chile		Chile			Chile											NA
Specific data used	99.64%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	+ -7% variation between products and average					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not applicable, only one production site					-	-	-	-	-	-	-	-	-	-	-	-

System diagram

Figure 1 presents the system diagram, including the production process. This can be described as follows:

- **Primary, secondary and tertiary grinding:** mineral gypsum enters a grinding process. In the primary grinding its size is reduced from 20” to 4”. In the secondary and tertiary grinding it goes from 4” to ¾” and from ¾” to dust, respectively.
- **Calcination:** in this process the gypsum goes to an oven working with electricity and natural gas for dehydration. This process creates crystal with minimum porosity and regular shape.
- **Grinding after calcination:** gypsum is grinded again to reduce its size after calcination.
- **Sacking:** gypsum is packed in 30kg bags made of paper.
- **Storage:** products are stored for further shipment.

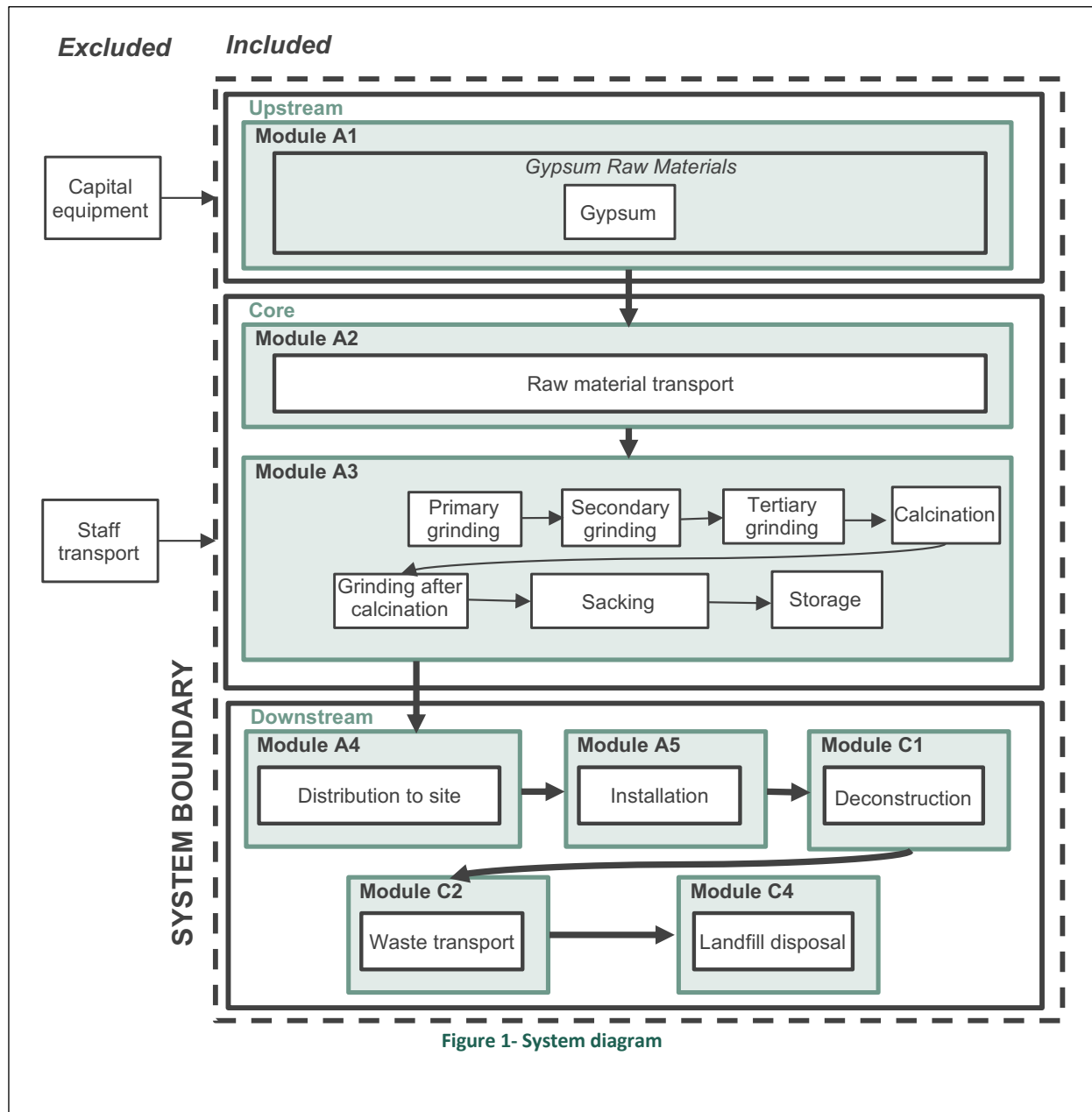


Figure 1- System diagram

Foreground data sources and quality

Foreground data on raw material requirements, manufacture and distribution was provided by Volcán for the year 2020. Background data was retrieved from ecoinvent 3.6, which dates from 2019, for processes occurring in Chile and countries supplying raw materials. In compliance with the relevant PCR, generic processes were used for feedstock materials. Data quality is considered medium to good. More details in Table 4 below.

Table 4- Foreground data sources and quality

Product data	Module A1	Module A2	Module A3	Module A4	Module A5	Module B	Module C
--------------	-----------	-----------	-----------	-----------	-----------	----------	----------

Data	Range and physical properties	Raw material inputs Energy inputs	Transportation from national and overseas suppliers to Volcán's installations	Water inputs Consumable inputs Waste outputs Internal transport distances Emissions	Distribution information	Ancillary materials and energy for installation	Ancillary materials and energy for deinstallation	End of life of products
Source	Collected by Volcán staff for 2020	Collected by Volcán staff for 2020	Supplier locations provided by Volcán staff for 2020. Distances calculated with online tool. Transport specifications assumed fromecoinvent 3.6 processes.	Collected by Volcán staff for 2020	Collected by Volcán staff for 2020	Estimations based on products description and use made by Volcán staff	Estimations based on products description and use made by Volcán staff	Conservative assumptions given no take back scheme and low recyclability in Chile
Quality	Good.	Good.	Good.	Good.	Good	Medium	Medium	Medium

Exclusion of small amounts and cut off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system. All other reported data were incorporated and modelled using the best available life cycle inventory data.

No other cut offs were necessary for the modules included in this EPD.

Allocation

For Volcán's construction gypsum production there are no co-products from production and therefore allocation issues were avoided.

Environmental Information

Potential environmental impacts

- Module A1+A2 (raw materials and energy) has the highest impact contribution to most environmental impacts (10 out of 14 indicators, with an average 41% contribution among them). The highest contributions are to water depletion potential (59%), abiotic depletion potential- minerals and metals (60%) and eutrophication- freshwater (59%). The highest contribution to these 4 impact categories is the use of mineral gypsum (as high as 99% of A1+A2 module in use of mineral and metal resources). Electricity also represents an important impact, reaching 31% module contribution for freshwater eutrophication, for example.
- Module A4 (distribution to site) is on average (20%) the second highest impact contributor, even representing the highest contribution to ozone depletion potential (41%). The impact is also relevant in terms of total global warming potential (Figure 2), where the transport to site is the highest individual contributor to the total impact of the product (37%), followed by natural gas (24%) and mineral gypsum (19%).
- On average, the third highest module contributing to environmental impact is C4 (disposal). This is particularly relevant for acidification potential, with 91% contribution, and to photochemical ozone formation (64%). The emissions of gypsum going to landfill are responsible for these impacts.
- Modules A3 (manufacturing and packaging) and C2 (transport to disposal) have a limited impact contribution (10% and 11% average contribution, respectively); while Module A5 (installation) only represents a 1% average contribution to all impacts.

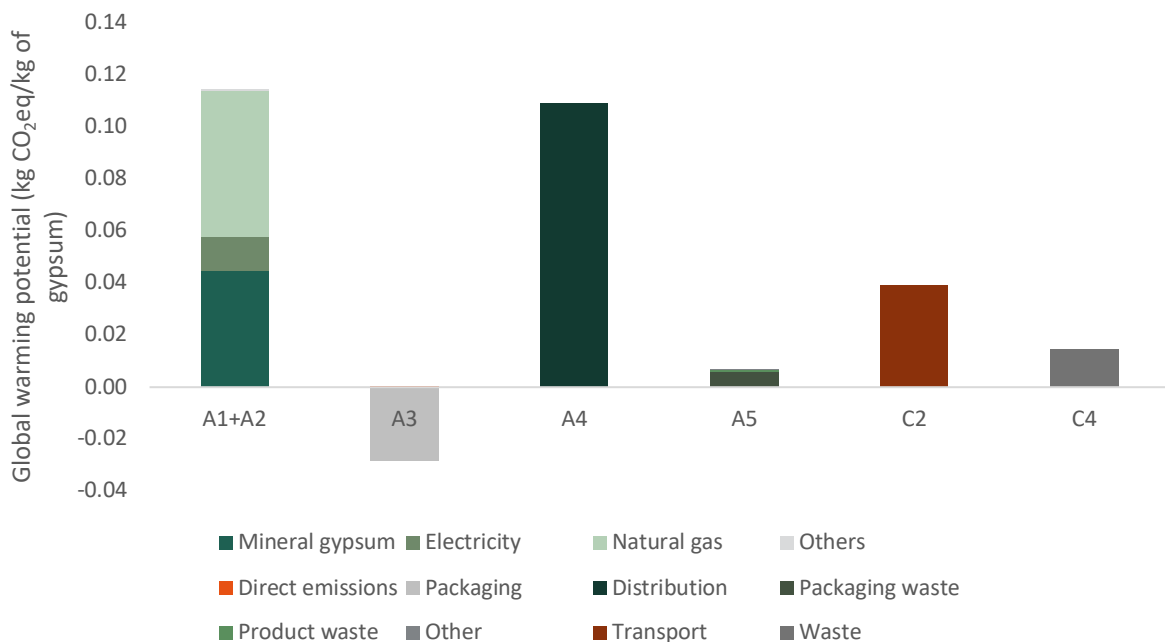


Figure 2- Input contribution to global warming potential, by module for 1 kg of Yeso Super/Express

Resource use

- Module A1+A2 (raw materials and energy) has the highest use of resources for use of net fresh water (53%) and total use of non- renewable energy (43%). In the first indicator, mineral gypsum is responsible for the highest contribution, with 84% of the module, while in the second indicator the use of natural gas represents the highest contribution (51% of the module and 22% of the total product's impact, as can be seen in Figure 3). Mineral gypsum also has a relevant impact in terms of total non- renewable energy, with 40% of the module and 17% of the total product.

- Module A3 (manufacturing and packaging) has a relevant total use of renewable energy (61%), mostly due to the pallets (65% contribution to the module).
- The transport to site (Module A4) has the highest individual contribution to total use of non-renewable energy (31%) because of the use of fuels for road transportation of gypsum across Chile. Module C2 (transport to disposal) also has a relevant contribution to total use of non-renewable energy (14%).
- Module C4 (disposal) has a 19% contribution to use of net fresh water and 7% to total use of non-renewable energy.
- Use of resources of Module A5 (installation) is negligible.

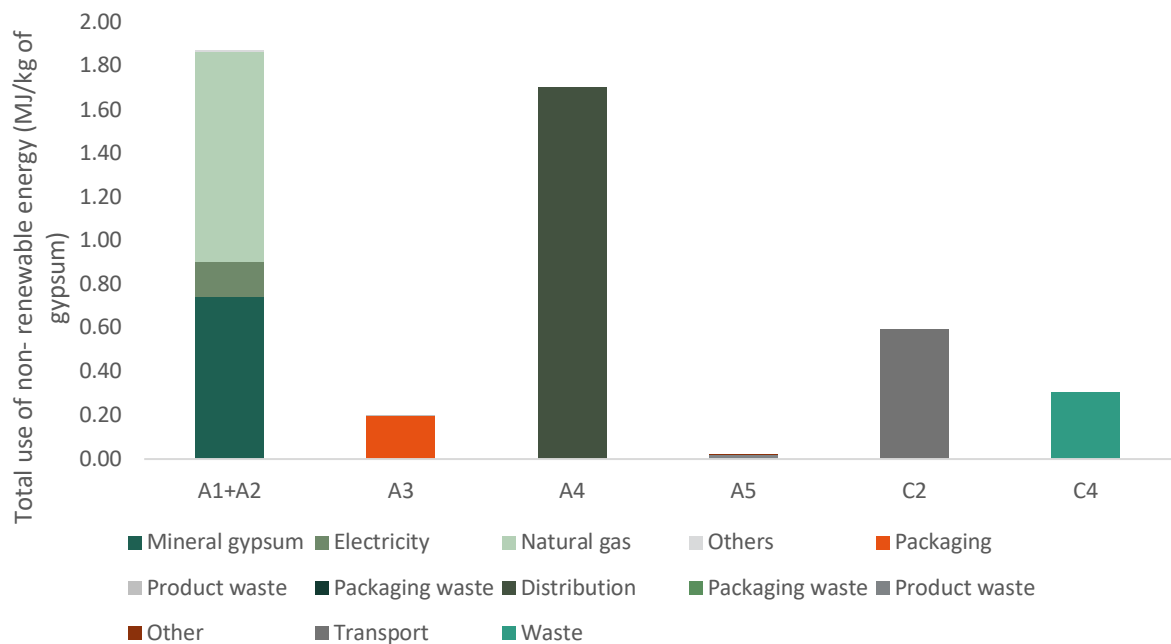


Figure 3- Input contribution to total use of non-renewable primary energy, by module for 1 kg of Yeso Super/Express

Waste and Output flows

- Module C4 (disposal) has the highest non-hazardous waste disposed (Figure 4, equivalent to 87% contribution), due to the conservative assumption that all products go to landfill and the end of life.
- Module C2 (transport to disposal) has the highest contribution to hazardous waste disposed (63%) due to wire drawing processes related to road transport.
- Modules A4 and A1+A2 have a relevant contribution to radioactive waste disposed (50% and 21%, respectively) related to the production of fossil fuels that generates this type of waste.

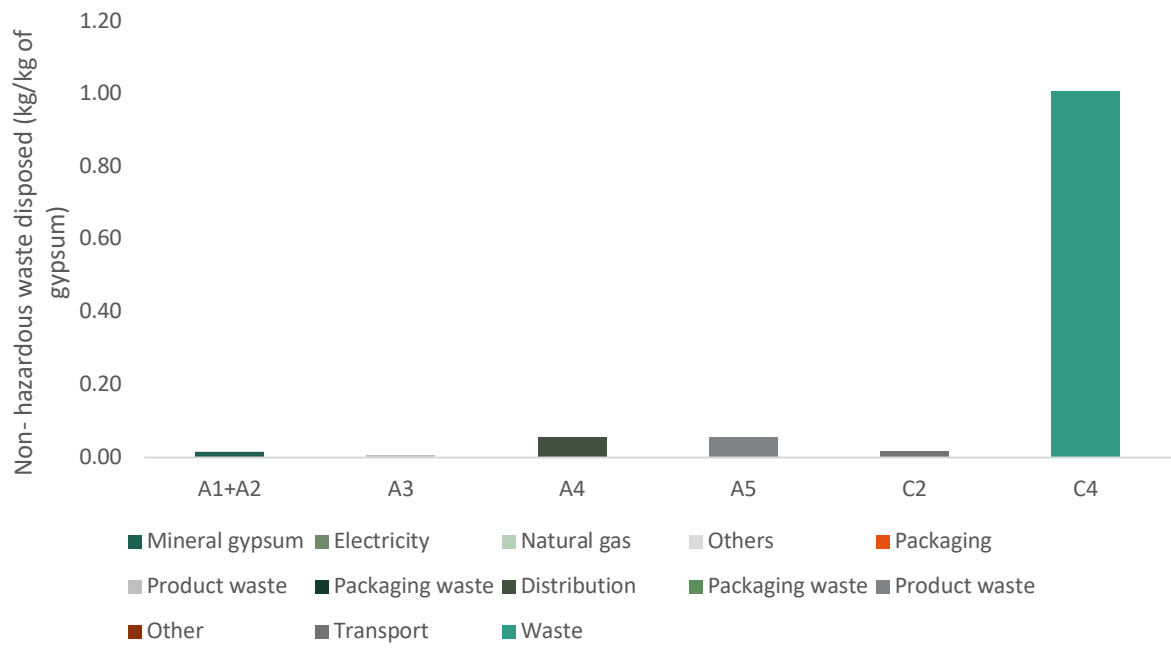


Figure 4- Input contribution to non- hazardous waste disposed, by module for 1 kg of Yeso Super/Express

Yeso Super/Express

Table 5- Potential environmental impact – mandatory indicators according to EN 15804

Results per 1 kg Yeso Super/Express																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.35E-01	1.18E-02	1.47E-01	8.62E-02	8.37E-04	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.44E-02	0
GWP-biogenic	kg CO ₂ eq.	-2.13E-02	-4.00E-02	-6.13E-02	3.32E-05	5.85E-03	ND	0	ND	ND	ND	ND	ND	0	4.10E-05	0	1.64E-04	0
GWP-luluc	kg CO ₂ eq.	7.81E-05	2.79E-05	1.06E-04	3.10E-05	5.66E-07	ND	0	ND	ND	ND	ND	ND	0	2.46E-05	0	9.07E-06	0
GWP-total	kg CO ₂ eq.	1.14E-01	-2.82E-02	8.60E-02	8.63E-02	6.68E-03	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.46E-02	0
ODP	kg CFC 11 eq.	1.48E-08	1.34E-09	1.62E-08	1.87E-08	1.92E-10	ND	0	ND	ND	ND	ND	ND	0	7.67E-09	0	3.41E-09	0
AP	mol H ⁺ eq.	7.83E-04	1.99E-04	9.82E-04	3.58E-04	1.70E-03	ND	0	ND	ND	ND	ND	ND	0	2.19E-04	0	3.22E-02	0
EP-freshwater	kg PO ₄ ³⁻ eq.	1.79E-04	2.74E-05	2.06E-04	6.57E-05	1.07E-05	ND	0	ND	ND	ND	ND	ND	0	4.69E-05	0	2.36E-05	0
EP-freshwater	kg P eq.	2.97E-05	3.60E-06	3.33E-05	7.24E-06	1.88E-07	ND	0	ND	ND	ND	ND	ND	0	6.98E-06	0	3.03E-06	0
EP-marine	kg N eq.	1.72E-04	4.04E-05	2.13E-04	1.05E-04	9.66E-06	ND	0	ND	ND	ND	ND	ND	0	6.52E-05	0	3.53E-05	0
EP-terrestrial	mol N eq.	1.78E-03	4.38E-04	2.22E-03	1.15E-03	2.21E-05	ND	0	ND	ND	ND	ND	ND	0	7.19E-04	0	3.84E-04	0
POCP	kg NMVOC eq.	3.46E-04	1.29E-04	4.75E-04	3.51E-04	1.12E-04	ND	0	ND	ND	ND	ND	ND	0	2.32E-04	0	2.10E-03	0
ADP-minerals&metals*	kg Sb eq.	5.26E-06	2.15E-07	5.48E-06	2.27E-06	7.59E-09	ND	0	ND	ND	ND	ND	ND	0	8.49E-07	0	1.35E-07	0
ADP-fossil*	MJ	1.72E+00	1.88E-01	1.91E+00	1.27E+00	1.64E-02	ND	0	ND	ND	ND	ND	ND	0	5.58E-01	0	2.88E-01	0
WDP	m ³	3.57E-02	6.69E-03	4.24E-02	4.11E-03	6.62E-04	ND	0	ND	ND	ND	ND	ND	0	2.58E-03	0	1.12E-02	0
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.

“ND” (Not Declared)

Table 6- Potential environmental impact – additional mandatory and voluntary indicators

Results per 1 kg Yeso Super/Express																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ²	kg CO ₂ eq.	1.35E-01	1.18E-02	1.47E-01	8.62E-02	8.37E-04	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.44E-02	0
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017																		

“ND” (Not Declared)

Table 7- Use of resources

Results per 1 kg Yeso Super/Express																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3.50E-01	6.13E-01	9.62E-01	1.42E-02	4.80E-04	ND	0	ND	ND	ND	ND	ND	0	1.28E-02	0	7.80E-03	0
PERM	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	3.50E-01	6.13E-01	9.62E-01	1.42E-02	4.80E-04	ND	0	ND	ND	ND	ND	ND	0	1.28E-02	0	0.00E+00	0
PENRE	MJ	1.87E+00	2.01E-01	2.07E+00	1.35E+00	1.75E-02	ND	0	ND	ND	ND	ND	ND	0	5.92E-01	0	3.06E-01	0
PENRM	MJ.	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
PENRT	MJ	1.87E+00	2.01E-01	2.07E+00	1.35E+00	1.75E-02	ND	0	ND	ND	ND	ND	ND	0	5.92E-01	0	3.06E-01	0
SM	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m³	7.69E-04	1.78E-04	9.46E-04	1.25E-04	1.64E-05	ND	0	ND	ND	ND	ND	ND	0	8.75E-05	0	2.77E-04	0
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																	

“ND” (Not Declared)

² The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 8- Waste production

Results per 1 kg Yeso Super/Express																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.23E-06	3.58E-07	2.59E-06	3.35E-06	2.27E-08	ND	0	ND	ND	ND	ND	ND	0	1.06E-05	0	3.99E-07	0
Non-hazardous waste disposed	kg	1.67E-02	5.98E-03	2.27E-02	6.01E-02	5.62E-02	ND	0	ND	ND	ND	ND	ND	0	1.64E-02	0	1.01E+00	0
Radioactive waste disposed	kg	2.50E-06	5.93E-07	3.10E-06	8.35E-06	8.86E-08	ND	0	ND	ND	ND	ND	ND	0	3.53E-06	0	1.57E-06	0

“ND” (Not Declared)

Table 9- Output flows

Results per 1 kg Yeso Super/Express																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Material for recycling	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0

“ND” (Not Declared)

Table 10- Information on biogenic carbon content

Results per 1 kg Yeso Super/Express		
BIOTENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	-0.08
Biogenic carbon content in packaging	kg C	-0.15

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

Volcafif

Table 11- Potential environmental impact – mandatory indicators according to EN 15804

Results per 1 kg of Volcafif																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.35E-01	4.68E-02	1.82E-01	8.62E-02	8.37E-04	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.44E-02	0
GWP-biogenic	kg CO ₂ eq.	-2.13E-02	-4.16E-02	-6.29E-02	3.32E-05	5.85E-03	ND	0	ND	ND	ND	ND	ND	0	4.10E-05	0	1.64E-04	0
GWP-luluc	kg CO ₂ eq.	7.81E-05	4.99E-05	1.28E-04	3.10E-05	5.66E-07	ND	0	ND	ND	ND	ND	ND	0	2.46E-05	0	9.07E-06	0
GWP-total	kg CO ₂ eq.	1.14E-01	5.28E-03	1.19E-01	8.63E-02	6.68E-03	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.46E-02	0
ODP	kg CFC 11 eq.	1.48E-08	6.28E-09	2.11E-08	1.87E-08	1.92E-10	ND	0	ND	ND	ND	ND	ND	0	7.67E-09	0	3.41E-09	0
AP	mol H ⁺ eq.	7.83E-04	4.40E-04	1.22E-03	3.58E-04	1.70E-03	ND	0	ND	ND	ND	ND	ND	0	2.19E-04	0	3.22E-02	0
EP-freshwater	kg PO ₄ ³⁻ eq.	1.79E-04	8.76E-05	2.67E-04	6.57E-05	1.07E-05	ND	0	ND	ND	ND	ND	ND	0	4.69E-05	0	2.36E-05	0
EP-freshwater	kg P eq.	2.97E-05	1.48E-05	4.45E-05	7.24E-06	1.88E-07	ND	0	ND	ND	ND	ND	ND	0	6.98E-06	0	3.03E-06	0
EP-marine	kg N eq.	1.72E-04	9.52E-05	2.68E-04	1.05E-04	9.66E-06	ND	0	ND	ND	ND	ND	ND	0	6.52E-05	0	3.53E-05	0
EP-terrestrial	mol N eq.	1.78E-03	1.03E-03	2.81E-03	1.15E-03	2.21E-05	ND	0	ND	ND	ND	ND	ND	0	7.19E-04	0	3.84E-04	0
POCP	kg NMVOC eq.	3.46E-04	3.20E-04	6.66E-04	3.51E-04	1.12E-04	ND	0	ND	ND	ND	ND	ND	0	2.32E-04	0	2.10E-03	0
ADP-minerals&metals*	kg Sb eq.	5.26E-06	8.34E-07	6.10E-06	2.27E-06	7.59E-09	ND	0	ND	ND	ND	ND	ND	0	8.49E-07	0	1.35E-07	0
ADP-fossil*	MJ	1.72E+00	9.97E-01	2.72E+00	1.27E+00	1.64E-02	ND	0	ND	ND	ND	ND	ND	0	5.58E-01	0	2.88E-01	0
WDP	m ³	3.57E-02	2.75E-02	6.32E-02	4.11E-03	6.54E-04	ND	0	ND	ND	ND	ND	ND	0	2.58E-03	0	1.12E-02	0
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.

“ND” (Not Declared)

Table 12- Potential environmental impact – additional mandatory and voluntary indicators

Results per 1 kg of Volcafix																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ³	kg CO ₂ eq.	1.35E-01	4.68E-02	1.82E-01	8.62E-02	8.37E-04	ND	0	ND	ND	ND	ND	ND	0	3.90E-02	0	1.44E-02	0
Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017																		

“ND” (Not Declared)

Table 13- Use of resources

Results per 1 kg of Volcafix																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3.50E-01	6.52E-01	1.00E+00	1.42E-02	4.80E-04	ND	0	ND	ND	ND	ND	ND	0	1.28E-02	0	7.80E-03	0
PERM	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	3.50E-01	6.52E-01	1.00E+00	1.42E-02	4.80E-04	ND	0	ND	ND	ND	ND	ND	0	1.28E-02	0	0.00E+00	0
PENRE	MJ	1.87E+00	1.07E+00	2.94E+00	1.35E+00	1.75E-02	ND	0	ND	ND	ND	ND	ND	0	5.92E-01	0	3.06E-01	0
PENRM	MJ.	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
PENRT	MJ	1.87E+00	1.07E+00	2.94E+00	1.35E+00	1.75E-02	ND	0	ND	ND	ND	ND	ND	0	5.92E-01	0	3.06E-01	0
SM	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m³	7.69E-04	7.02E-04	1.47E-03	1.25E-04	1.62E-05	ND	0	ND	ND	ND	ND	ND	0	8.75E-05	0	2.77E-04	0
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																	

“ND” (Not Declared)

³ The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 14- Waste production

Results per 1 kg of Volcafix																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.23E-06	9.61E-07	3.19E-06	3.35E-06	2.27E-08	ND	0	ND	ND	ND	ND	ND	0	1.06E-05	0	3.99E-07	0
Non-hazardous waste disposed	kg	1.67E-02	8.34E-03	2.51E-02	6.01E-02	5.62E-02	ND	0	ND	ND	ND	ND	ND	0	1.64E-02	0	1.01E+00	0
Radioactive waste disposed	kg	2.50E-06	2.27E-06	4.77E-06	8.35E-06	8.86E-08	ND	0	ND	ND	ND	ND	ND	0	3.53E-06	0	1.57E-06	0

"ND" (Not Declared)

Table 15- Output flows

Results per 1 kg of Volcafix																		
Indicator	Unit	A1+A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Material for recycling	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	ND	0	ND	ND	ND	ND	ND	0	0	0	0	0

"ND" (Not Declared)

Table 16- Information on biogenic carbon content

Results per 1 kg of Volcafix		
BIOTENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	-0.08
Biogenic carbon content in packaging	kg C	-0.15

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

References

Ecoinvent Centre, 2019. *ecoinvent version 3.6 database*, Zurich: ETH, Agroscope, EMPA, EPFL, PSI.

ISO, 2007. *Sustainability in building construction - Environmental declaration of building products. ISO 21930:2007*, Geneva: ISO.

Sea-Distances.org, 2017. *Sea Distances*. [Online]
Available at: <https://sea-distances.org/>

Google, 2017. *Maps*. [Online].

EPD International, 2019. *Product Category Rules for Construction Products and Construction Services, PCR2019:14*, Stockholm: EPD International.

European Standards, 2019. *Sustainability of construction works - Environmental product declarations, CSN EN 15804:2019*, Pilsen: European Standards.

EPD International, 2019. *General Programme Instructions for the International EPD System. Version 3.01*, s.l.: s.n.

Gobierno de Chile, 2020. *Hoja de Ruta RCD Economía Circular en Construcción 2035*, Santiago, Chile: s.n.

