EPD

ENVIRONMENTAL PRODUCT DECLARATION

DIASEN

Environmental Product Declaration

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

EPD INFORMATION

Registration number of EPD(s):	EPD–IES–0030965:001
Product names:	*Mortars Line* *Calce Storica, Thermo M10, Rebuild*[40] *R4* and *Diathonite Regularization*
EPD owner:	*DIASEN S.r.l.*
Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company, based on worst case results
EPD new version date:	*2026-10-02*
EPD valid until:	*2031-10-02*

GENERAL INFORMATION

The address of the programme operator:	EPD International AB, Box 210 60, SE–100 31 Stockholm, Sweden
E–mail:	support@environdec.com

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 2.0.1
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

Third–party Verification

Independent third–party verification of the declaration and data, according to ISO 14025:2010

☐ EPD process certification ☒ EPD verification

Third party verifier:	***Certiquality S.r.l.*** Via Gaetano Giardino, 4, 20123 – Milan Tel. +39 02 806 9171 www.certiquality.it
Accredited by:	***Accredia*** Accreditation Number: n.0027VV

Procedure for follow–up of data during EPD validity involves third party verifier

☐ Yes ☒ No

An EPD may be updated or depublished if conditions change. To find the last version of the EPD, and to confirm its validity, see www.environdec.com. The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but published in different EPD programmes may not be comparable. For two EPDs to be comparable:

- they shall be based on the same PCR (including the same first–digit 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 identical scope in terms of included life–cycle stages (unless the excluded life–cycle stage is demonstrated to be insignificant);
- apply identical impact assessment methods (including the same version of characterisation factors);
- and be valid at the time of comparison.

EPDs of construction products may not be comparable if they are not compliant with EN 15804. For further information on comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: DIASEN S.R.L.

Address: Zona Industriale Berbentina, 5 – 60041 – Sassoferrato (AN) – Italy

Contact: Giulia Mengotti

Address and contact information of the LCA practitioner commissioned by the EPD owner: Roberto Petrucci – University of Perugia – DICA – Strada di Pentima, 4 – 05100 – Terni (Italy)

DESCRIPTION OF THE ORGANISATION

Diasen is an Italian company specialized in developing materials and innovative solutions for architecture and green building, focusing on energy efficiency and indoor comfort. The company operates in the construction materials sector, engineering thermal and acoustic insulation systems, waterproofing solutions, and coatings for public, residential, and sports buildings.

Corporate activities are driven by compliance with current environmental regulations and the mitigation of related environmental impacts.

Since 2007, Diasen has implemented an Environmental Management System certified to ISO 14001:2015, and operates in accordance with ISO 9001:2015 and ISO 45001:2018 standards. The company has achieved B Corp® certification, and completed LEED®, WELL®, and BREEAM® mapping for more than 40 products.

Manufacturing processes incorporate cork and other natural raw materials, utilizing low–environmental–impact technical solutions. Research and Development activities focus on the utilization of production by–products or recoverable materials, as well as enhancing thermal insulation performance to lower building energy demand.

Management system–related certifications

ISO 9001:2015 – ISO 14001:2015 – ISO 45001:2018

PRODUCT INFORMATION

1

Product name	CALCE STORICA	
Product Identification	See ***Table 1***	
Product Description	Malta strutturale monocomponente formulata con calce idraulica naturale (NHL 5), calce idrata ed aggregati minerali selezionati. Specificamente progettata per il consolidamento ed il ripristino di murature storiche e tradizionali, questa matrice priva di cemento presenta compatibilità con i materiali da costruzione tradizionali senza alterare l'equilibrio termo-igrometrico della struttura. Limita la migrazione di sali idrosolubili, riducendo le efflorescenze sulle superfici restaurate.	
UN CPC Code	37410 – Plasters (Restoration and levelling mortars)	
Diasen Product Code	098	

2

Product name	THERMO M10	
Product Identification	see ***Table 2***	

Product Description	Low–density, thermal–insulating cementitious mortar designed for masonry applications. This lightweight matrix combines mechanical strength (Class M10) with thermal insulation properties (tested per UNI EN 1745), making it suitable for both structural consolidation and new construction in seismic zones. Designed for laying masonry blocks, it mitigates linear thermal bridges within the building envelope.	
UN CPC Code	37410 – Plasters (Restoration and levelling mortars)	
Diasen Product Code	065	

3

Product name	REBUILD^{40} R4	
Product identification	see ***Table 3***	
Product description	Pre–mixed single–component thixotropic structural mortar (Class R4 / M45), engineered for the repair and restoration of reinforced concrete structures. Characterized by high compressive strength, it provides structural reinforcement and resistance against carbonation and weathering. Suitable for vertical and overhead applications on pillars, beams, and structural edges, protecting embedded steel reinforcement.	
UN CPC code	37410 – Plasters (Restoration and levelling mortars)	
DIASEN product code	099	

4

Product name	DIATHONITE REGULARIZATION	
Product identification	see ***Table 4***	
Product description	Pre–mixed mortar based on natural hydrated lime and selected mineral aggregates, designed for the preparation and regularization of damp mineral substrates prior to applying dehumidifying systems. It provides mechanical adhesion to the support and accommodates salt crystallization. Featuring water vapor permeability, it limits the surface migration of salt deposits, assisting overall plaster adhesion and durability.	
UN CPC code	37410 – Plasters (Restoration and levelling mortars)	
DIASEN product code	074	

Table section

***Table 1**: Calce Storica.*

Technical Feature	Value	Test Method	Technical Specification
Thermal conductivity (W/mK)	< 0.124	UNI EN 1745	EN 998–2
Compression Strength (N/mm²)	M2.5	UNI EN 998–2	
Compression modulus (N/mm²)	N/D	UNI EN 13412	
Flexural Strength (N/mm²)	5.66	UNI EN 1015–11	
Adhesion (N/mm²)	≥ 0.10 – FP:B	UNI EN 1015–12	
Specific weight (kg/m³)	1450 ± 20	UNI EN 1015–15	
Cl Content (%)	0.004	UNI EN 1015–17	

Hazardous substances	Lime (chemical), hydraulic	CE Regulation 878/2020	

***Table 2**: Thermo M10.*

Technical Feature	Value	Test Method	Technical Specification
Thermal conductivity (W/mK)	0.244	UNI EN 1745	EN 998–2
Compression Strength (N/mm²)	M10	UNI EN 998–2	
Fire reaction	Class A1	UNI EN 13501–1	
Specific weight (kg/m³)	1300 ± 30	UNI EN 1015–15	
Hazardous substances	Cement, portland, chemicals; Calcium dihydroxide; Flue dust, portland cement	CE Regulation 878/2020	

***Table 3**: Rebuild[40] R4.*

Technical Feature	Value	Test Method	Technical Specification
Compression Strength (N/mm²)	M45	UNI EN 998–2	EN 998–2
Compression Modulus (N/mm²)	> 20	UNI EN 13412	
Flexural Strenght (N/mm²)	≥ 1.50 – FP:B	UNI EN 1015–11	
Specific weight (kg/m³)	1950 ± 50	UNI EN 1015–15	
Cl Content (%)	0.002	UNI EN 1015–17	
Hazardous substances	Cement, portland, chemicals; Flue dust, portland cement.	CE Regulation 878/2020	

***Table 4:** Diathonite Regularization*

Technical Feature	Value	Test Method	Technical Specification
Density (kg/m³)	1230 ± 123	UNI EN 1015–6	EN 998–2
Compression Strength (N/mm²)	4.30	UNI EN 998–2	
Fire reaction	Class A1	UNI EN 13501–1	
Adhesion (N/mm²)	0.258 *type C failure*	UNI EN 1504	
Cl Content (%)	0.35	UNI EN 1015–17	
Hazardous substances	Lime (chemical) – Hydraulic method; Cement, portland, chemical; Flue dust, portland cement	CE Regulation 878/2020	

Additional Relevant Information

The whole range of the products are delivered in bags, made on paper and plastic–based, according to a weight ratio of about 80:20.

The products *Thermo M10, Rebuild[40] R4* and *Diathonite Regularization* are supplied in 25 kg bag, while *Calce Storica* is supplied in 15 kg bags.

References to any relevant websites for more information or explanatory materials

For more information, please refer to **www.diasen.com**

MANUFACTURING

The manufacturing process begins with the receipt and storage of raw materials from suppliers. Depending on their characteristics, some raw materials arrive in big bags, while bulk materials are delivered unpackaged and stored directly in dedicated silos; both types are automatically fed into the production mixer. Other packaged ingredients are stored in the warehouse and subsequently transported to the mixer via electric forklifts, or fed to the mix.

Additionally, a specific bulk raw material is stored in dedicated containers and undergoes a volume reduction process through a specialized milling stage before being added to the mixer according to the product formula.

Production is a batch (discontinuous) process where all components are mechanically blended. Once mixed, the final product is packaged in bags, palletized on wooden pallets, secured with a protective polymer hooding film, and stored in the *finished goods* warehouse. Quality control is strictly performed both during the production phase and prior to shipment

This manufacturing process requires no water and operates virtually as a closed–loop system, generating no scraps or waste. Furthermore, most of the residual dust collected by the filtration system during production is recycled back into the process.

Please refer to the *Preliminary Production Phase Outline* for the *Mortars Line* (***Figure 1***) for further details.

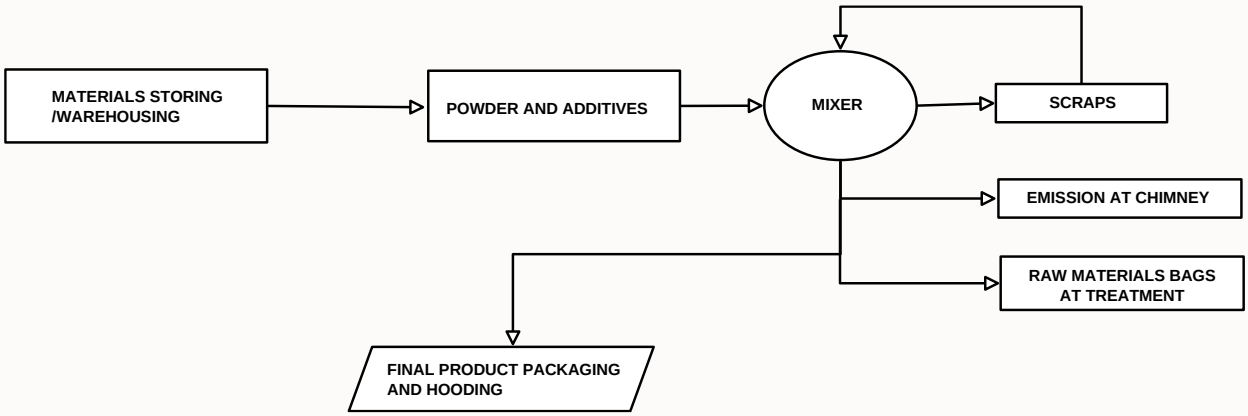

Figure 1*: Preliminary scheme of the Mortars Line Production phase.*

CONTENT DECLARATION

Table 5: *Content declaration and substances list for the Mortars Line (the indicated mass values refer to the minimum and maximum found among all products included in the EPD).*

Product content	***Mass, kg***	***Post–consumer recycled material,*** *mass–% of product*	***Biogenic material*** *mass–% of product*	***Biogenic material*** *kg C/product or declared unit*
Perlite	$0.00 – 4.36\times10^{-2}$	0	0	0
Binders	0.00 – 0.756	0	0	$0 – 5.39\times10^{-7}$
Organic Additives	$5.00\times10^{-4} – 6.90\times10^{-3}$	0	0	0
Inorganic Additives	$3.40\times10^{-3} – 1.58\times10^{-2}$	0	0	0
Calcium Carbonate	0.468 – 0.704	0	0	0

Table 6: *Content declaration and substances list for the used packaging for the product of the Mortars Line.*

Packaging materials	***Mass, kg***	***Mass %*** *(versus the product)*	***Biogenic material*** *kg C/product or declared unit*
Wood	1.78×10^{-2} – 2.08×10^{-2}	1,80–2.08	7.00×10^{-3} – 8.16×10^{-3}
Paper/PE Box	6.48×10^{-3} – 1.08×10^{-2}	0.65 –1.08	1.94×10^{-3} – 3.24×10^{-3}
LDPE Film	2.84×10^{-4} – 3.32×10^{-4}	0.028– 0.033	0.00

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

Table 7: *Content of hazardous substances used in the Mortars Line.*

Declaration of hazardous substances	***EC No.***	***CAS No.***	***Mass–%*** *per product or declared unit*
Hydrated Lime	215–137–3	1305–62–0	0.00 – 7.58
Cement	266–043–4	65997–15–1	10.00 – 40.70
Organic Additives	N.A.	9004–65–3	0.05 – 0.69
Inorganic Additives	205-592-5	143-22-6	0.03 – 1.58
Hydraulic Lime	285–561–1	85117–09–5	0.00 – 27.29

The products are not classified as hazardous to human health or the environment in accordance with Regulation (EC) No **878/2020** (CLP). They do not contain any substances included in the Candidate List of Substances of Very High Concern (SVHC) for Authorization, nor any substances listed in Annex XIV (Authorization List) issued by the European Chemicals Agency (ECHA). Under normal storage and use conditions, these products can be handled without any specific precautions or personal protective equipment (PPE). The detailed composition of the products constitutes DIASEN S.r.l. proprietary know–how and remains strictly confidential.

LCA INFORMATION

The environmental performance of the products was assessed using the Life Cycle Assessment (LCA) method in accordance with the **EN ISO 14044:2021** standard. The Life Cycle Impact Assessment (LCIA) was performed according to the **EN 15804:2012+A2:2019** standard, which served as the core PCR. In this regard, the Product Category Rules (PCR) **2019:14** "Construction products" (**Version 2.0.1**) was used as the primary reference document

Among the other reference standards, the following ones have been taken into account for the development of the LCA and the LCIA other than to carry out this EPD:

- ISO 14025:2010 – Environmental labels and declarations – Type III environmental declarations – Principles and procedures;
- ISO 15942:2021 – Sustainability of construction works — Environmental product declarations — Communication format business–to–business;
- ISO 14020:2023 – Environmental labels and declarations — General principles;
- General Programme Instructions For The International EPD System – Version 5.0 2024–06–19;

The results of the estimated environmental impacts are relative statements and do not indicate the endpoints of impact categories, the exceeding of threshold values, safety margins, or risks. Although the specific properties of the various products may differ slightly, their fields of application are substantially equivalent.

Furthermore, each product can perform multiple functions or deliver varying levels of performance within a building component, making the definition of a single, specific functionality

for each item highly complex. For this reason, and in accordance with the reference standards, a declared unit has been adopted instead of a functional unit.

For all products covered by this EPD, the declared unit is defined as **1.00 kg** of product, ready for sale and transport to the end–user (builder). This includes its packaging (bag), along with its proportional share of plastic protective film, palletized on the Euro–pallet used for transport. Finally, it should be noted that the manufacturing of all investigated systems takes place exclusively at the Diasen production plant in Sassoferrato (AN), Italy. Multiple products are included in the same EPD as they share the same core PCR, are manufactured by the same company, and undergo the same production process.

Declared unit

1 kg of product as dry product mix is defined as Declared Unit (DU).

Reference service life

The environmental impact of 1 kg of powder product (packaging included) for each products involved is described. According to the system boundary of this EPD, a Reference Service Life has not been provided.

Time representativeness

Data are referred to the production carried out in 2025 and have been provided by Diasen Srl. Also, data regarding the geographic origin of any raw materials, packaging materials etc. have been provided, as well as the transportation media.

Database and LCA software used

Ecoinvent 3.11 used as a database and **SimaPro Version 10.3.0** as a software.

Geographical scope

Global.

Description of system boundaries

Cradle to gate (A1–A3).

Within each of the assessed life cycle stages, all material and energy input and output flows have been included. No raw materials or components have been omitted, regardless of their individual contribution to the overall environmental impact or to any specific impact indicators. Lifecycle modules that were not evaluated in this LCA are explicitly marked as **"ND" (Not Declared)**, as shown in ***Table 8***.

Table 8: *Reporting table for the Mortars Line.*

	Product stage				Distribution / installation stage				Use stage				End of life stage				Beyond product life cycle
	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	ND	ND	ND	ND	ND
Geography	GLO	GLO	IT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Share of primary data	31.98 – 42.82 %			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Variation products	18.75%			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Variation sites	0 %			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Cut–off criteria

The consumption of raw materials and energy related to ordinary and extraordinary maintenance operations was included, as well as energy consumption associated to illumination and heating of personnel, despite they were not relevant to environmental impact calculations. No consumption of auxiliary materials and waste related to extraordinary activities (A3), having a periodicity exceeding 3 years, take place.

Allocation criteria

Each manufacturing cycle yields a single product output, with no co–products or by–products generated. Furthermore, since the manufacturer provided primary data regarding material and energy consumption, as well as scraps and waste, no allocation procedures were required. Production is carried out strictly on a batch–by–batch basis (discontinuous process), even under steady–state operating conditions; therefore, only one specific product is manufactured inside the facility at any given time. After a straightforward cleaning procedure, the same equipment can be seamlessly used to process a completely different material.

Data quality

As previously stated, the background data used in this EPD were retrieved from the **Ecoinvent 3.11 database**, and **SimaPro 10.3.0** software was utilized for inventory modelling. The geographical reference is Italy or, where necessary, Central Europe, while the datasets used span the last 5 years.

Data collection involved analyzing internal production and environmental data from the Diasen S.r.l. manufacturing site, acquiring site–specific data for all production processes included in the LCA, and mapping the energy sources utilized (modelled via the Italian Residual Mix).[10]

Regarding raw materials, the most relevant datasets are either European averages or specific to the suppliers. The reference time period for all inventory data (product composition, transport, production rates, etc.) is 2025. Background data are based on EPDs compliant with EN 15804 and recognized LCA databases.

The data quality of the raw materials in A1 is presented in ***Table 9***.

Table 9: *Data quality of the raw materials in A1*

Material	***Source***	***Quality***	***Reference year***
Expanded materials (Perlite)	Diasen	Ecoinvent 3.11	2025
Hydrated and Hydraulic Lime	Diasen	Ecoinvent 3.11	2025
Additives (Organic and Inorganic)	Diasen	Ecoinvent 3.11	2025
Cement	EPD Owner	Ecoinvent 3.11	2025
Carbonates	Diasen	Ecoinvent 3.11	2025
Packaging (Pallet, Bags, Film)	Diasen	Ecoinvent 3.11	2025

Data quality assessment (DQIs) is carried out based on five categories and on a scale from 1 (excellent) to 5 (poor) (***Table 10***). In compliance with the system boundaries defined for this product (Cradle-to-Gate), the index reflects the very high level of accuracy of the primary data collected directly at the production plant. The overall average score for the entire product line is **(1.5, 1.0, 1.0, 1.0, 1.3)**. The precision of the primary data is reflected in the optimal scores for completeness, temporal correlation, and geographical correlation (all equal to 1.0), affected only by the minimal and physiological assumptions linked to the background modelling of commercial chemical additives.

Table 10: *Data Quality Indicators (DQIs) for the Mortar's Product Line*

Flow Category	***Approach / Data Source***	***DQIs*** *(Min – Max Range)*					***Qualitative Assessment***
		Reliability	Completeness	Temporal correlation	Geographical correlation	Further technological correlation	
Materials, Energy and Process (A1-A3)	Primary factory data and specific datasets	1.5	1.0	1.0	1.0	1.3	Excellent / Good

The data quality for raw materials in stage A1 is presented in the table below. Manufacturing operations are powered by an energy mix, of which **19.1%** is self–produced via a proprietary photovoltaic plant. The remaining **80.90%** is purchased from the national grid and has been modelled using the Italian Residual Mix. The related details have been summarized in ***Table 11***.

Table 11: *Details on the used Electricity mix*

	Data Source			**GWP–GHG**	**Unit**
Diasen Electricity Mix	Diasen Photovoltaic	Residual Mix (AIB)	Ecoinvent 3.11	0.486	Kg CO_2 eq./kWh

Table 12: *Share of primary data of the GWP–GHG*

Process	**Source type**	**Source**	**Reference year**	**Data category**	**Share of primary data, of GWP–GHG results for A1–A3**
Manufacturing of product	Collected data	EPD owner	2025	Primary data	0%
Generation of electricity used in manufacturing of product	Collected data and Database	EPD Owner and AIB Residual Mix	2025	Primary data	31.98 – 42.82 %
Input Raw materials	Collected data	EPD Owner Ecoinvent 3.11	2025	Primary data, Secondary data	0%
Other processes	Databases	Ecoinvent 3.11	2025	Secondary data	0%
Total share of primary data, of GWP–GHG results for A1–A3					31.98 – 42.82 %

The share of primary data is calculated based on the GWP–GHG results. This simplified data quality indicator is intended to encourage the use of primary data, thereby enhancing both

the representativeness and the comparability of EPDs. Please note that this indicator does not capture all aspects of data quality and is not comparable across different product categories.

ENVIRONMENTAL PERFORMANCE

This section presents the environmental profiles of the products covered by this EPD, calculated using the LCA methodology. In accordance with the system boundaries defined for this study, a "Cradle–to–gate" approach has been adopted, including stages A1–A3. All calculations were performed using compliant software tools, as required by the EPD Programme General Instructions.

LCA RESULTS OF THE PRODUCT – WORST CASE

The estimated impact results are relative statements and do not indicate the endpoints of impact categories, the exceeding of threshold values, safety margins, or potential risks. The characterization factors applied are based on the **Environmental Footprint (EF) 3.1 methodology**.

Regarding the mandatory impact indicators — specifically biogenic carbon dioxide — the biogenic carbon leaving the product system in subsequent lifecycle stages not included in this study (such as A5 and C, in accordance with the PCR guidelines) has already been balanced out within modules A1–A3.

Disclaimer 1: 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 2: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Table 13: *Mandatory impact category indicators according to EN 15804+A2:2019*

Results per functional or declared unit

Indicator	Unit	A1–A3
GWP–total	kg CO_2 eq.	0.73
GWP–fossil	kg CO_2 eq.	0.73
GWP–biogenic	kg CO_2 eq.	3.61×10^{-6}
GWP–luluc	kg CO_2 eq.	2.32×10^{-4}
ODP	kg CFC 11 eq.	9.39×10^{-7}
AP	mol H^+eq.	2.70×10^{-3}
EP–freshwater	kg P eq.	1.46×10^{-4}
EP–marine	kg N eq.	5.59×10^{-4}
EP–terrestrial	mol N eq.	6.12×10^{-3}
POCP	kg NMVOC eq.	2.24×10^{-3}
ADP–minerals &metals*	kg Sb eq.	6.41×10^{-6}
ADP–fossil*	MJ	8.04
WDP*	m^3	0.12

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

Table 14: *Additional mandatory and voluntary impact category indicators*

Results per functional or declared unit		
Indicator	**Unit**	**A1–A3**
GWP–GHG	kg CO_2 eq.	0.67
Note	This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide were updated in line with the guidance of PCR 2019:14 Construction products, version 2.0.1 Annex 1. This indicator is identical to the GWP–total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.	

Table 15*: Resource use indicators*

Results per functional or declared unit		
Indicator	**Unit**	**A1–A3**
PERE	MJ	1.17
PERM	MJ	0.00
PERT	MJ	1.17
PENRE	MJ	7.77
PENRM	MJ	0.24
PENRT	MJ	8.00
SM	kg	0.00
RSF	MJ	0.00
NRSF	MJ	2.18×10^{-4}
FW	m^3	0.12
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	

Table 16 *: Waste indicators*

Results per functional or declared unit		
Indicator	**Unit**	**A1–A3**
HWD	kg	0
NHWD	kg	1.78×10^{-3}
RWD	kg	5.53×10^{-6}
Acronyms	HWD = Hazardous waste disposed; NHWD =Non azardous waste disposed; RWD = Radiactive waste disposed;	

Table 17 *: Output flow indicators*

Results per functional or declared unit		
Indicator	**Unit**	**A1–A3**
CRU	kg	0
MFR	kg	0
MER	kg	0
EEE	MJ	0
EET	MJ	0
Acronyms	CRU = Componentsfor re–use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy;	

Table 18: *Additional environmental performance indicators according to EN 15804+A2:2019*

Results per functional or declared unit		
Indicator	**Unit**	**A1–A3**
PM	Disease incid.	2.41×10^{-7}
IRP[1]	kBq U235 eq.	2.12×10^{-2}
ETP–fw[2]	CTUe	3.98
HTP–c[2]	CTUh	2.78×10^{-10}
HTP–nc[2]	CTUh	6.25×10^{-9}
SQP	–	5.97
Acronyms	PM = Particulate matter Emission; IRP = Ionizing radiation, human health; ETP–fw = Ecotoxicity (Freshwater); HTP–c = Human toxicity, cancer effects; HTP–nc = Human toxicity, non–cancer effects; SQP = Soil quality potential/Land use related impacts;	

DECLARATION OF THE VARIATION IN RESULTS

This EPD is characterized by high variability among the majority of the calculated impact indicators, with variations exceeding 10%. In accordance with **PCR 2019:14 "**Construction products" (**Version 2.0.1**), this variation has been formally declared within the EPD. The specific percent variations between the highest and lowest impacts across the included products are detailed in the tables below for both the core environmental indicators and the GWP–GHG indicator.

Table 19: *Environmental Impacts Results Variation*

Indicator	A1–A3 Results variation (%)
GWP–total	18.62
GWP–fossil	70.65
GWP–biogenic	18.65
GWP–luluc	26.67
ODP	91.65
AP	21.58
EP–freshwater	29.98
EP– marine	16.94
EP–terrestrial	15.59
POCP	14.98
ADP–minerals & metals	31.47
ADP–fossil	19.47
WDP	18.21
PERE	29.07
PERT	29.07
PENRE	19.37
PENRM	66.91
PENRT	20.51
NRSF	31.82
FW	17.25
PM	2.46
IRP	23.65

ETP–fw	65.87
HTP–c	43.28
HTP–nc	12.15
SQP	30.87
NHWD	99.67
RWD	91.26

Table 20: *GWP–GHG Impacts Results Variation*

Indicator	Unit	A1–A3 Results variation (%)
GWP–GHG	Kg CO_2eq.	18.75

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VERSION HISTORY

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