Environmental Product Declaration

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

CELENIT N, CELENIT N/C, CELENIT R, CELENIT RA, CELENIT RAB

from

CELENIT S.p.A.

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company
EPD registration number:	EPD-IES-0025755
Version date:	2025-10-30
Validity date:	2030-10-30

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

EPD of multiple products, based on a representative product.

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
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 (EN 15804+A2) (2.0.1)* ***and UN CPC code:*** *37520 - Boards, blocks and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders*
PCR review was conducted by: *The Technical Committee of the International EPD System. See www.envirodec.com for a list of members. The review panel may be contacted via support@environdec.com.* *Review chair: Rob Rouwette, Co-chair: Noa Meron*
c-PCR: *C-PCR-005 (TO PCR 2019:14) THERMAL INSULATION PRODUCTS (EN 16783:2024)*

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: *Bureau Veritas Italia S.p.A., Viale Monza, 347, 20126 Milano (MI)* Accredited by: ACCREDIA - Accreditation certification N. 00031VV
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 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.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: CELENIT S.p.A.

Address: Via Bellinghiera, 17, 35019 Onara di Tombolo (PD)

Contact: Arch. Piero Svegliado, psvegliado@celenit.com

Address and contact information of the LCA practitioner commissioned by the EPD owner: Ingegneria 5.0 srl, Eng. Francesca Intini and Arch. Daniela Petrone

Description of the organisation: The company operates in the field of building insulation, producing thermal and acoustic insulation panels (CELENIT). The thermal and acoustic insulation panels are produced in the same production facility, using the same raw materials (spruce wood wool, grey cement or white cement, calcium carbonate). The only difference is the width of the wood wool. 3 mm wood wool is used to produce the thermal insulation panel, while 2 or 1 mm wood wool is used to produce the acoustic insulation panel. CELENIT panels are suitable for Green Building. The company does not use hardwood in its production process.

Product-related or management system-related certifications: The Company has UNI EN ISO 9001:2015 Management System certification.

PRODUCT INFORMATION

Product names: CELENIT N, CELENIT N/C, CELENIT R, CELENIT RA, CELENIT RAB

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

Product description:

CELENIT N is a thermal and acoustic insulation panel made of mineralized spruce wood wool bound with grey Portland cement. Wood wool width: 3 mm.
Complies with UNI EN 13168 and UNI EN 13964 standards.
The CELENIT N/C alternative is specific for external insulation applications.

CELENIT R is a thermal and acoustic insulation board, specific for roofing insulation, consisting of mineralized spruce wood wool bound with grey Portland cement, reinforced with three wooden strips. Wood wool is 3 mm wide.
Complies with UNI EN 13168 standard.

CELENIT RA is a thermal and acoustic insulation board, specific for roofing insulation, consisting of mineralized spruce wood wool bound with grey Portland cement, reinforced with three wooden strips. Wood wool is 2 mm wide.
CELENIT RAB is a thermal and acoustic insulation board, specific for roofing insulation, consisting of mineralized spruce wood wool bound with white Portland cement, reinforced with three wooden strips. Wood wool is 2 mm wide.
The boards are complying with EN 13168 standard.

The boards are PEFC certified. Also available with FSC® certification.
CELENIT wood wool panels are not dangerous for the human health: they are tested for the determination of formaldehyde release (according to the EN 717-1 standard) obtaining the E1 class. Furthermore, they do not contain asbestos and they are tested for the VOC emissions in the Eurofins Product Testing A/S and Istituto Giordano laboratories. The lab tests point out that the values are compliant with the most stringent regulatory requirements. These aspects together with a production process with reduced emissions to air and lower energy consumption have enabled the panels to obtain the ANAB-ICEA (certified product for green building) and natureplus certifications.

Technical data for CELENIT N

CELENIT N									
Length	mm	2400 - 2000 - 1200							
Width	mm	600							
Thickness	mm	15	20	25	30	35	40	50	75
Weight	kg/m^2	8.0	10.0	11.5	13.0	14.0	16.5	19.0	26.0
Declared thermal conductivity λ_D	W/mK	0.065							
Declared thermal resistence R_D	m^{2}K/W	0.20	0.30	0.35	0.45	0.50	0.60	0.75	1.15
Compressive stress at 10% relative deformation	kPa	≥ 200 (Thickness 15-40 mm) ≥ 150 (Thickness 50-75 mm)							
Water vapour transmission	-	5							
Reaction to fire	-	Euroclass B-s1, d0							
Durability		Class C							
Release of formaldehyde		Class E1							

Technical data for CELENIT N/C

CELENIT N/C					
Length	mm	1200 -1000			
Width	mm	600			
Thickness	mm	25	35	50	75
Weight	kg/m^2	11.5	14.0	19.0	26.0
Declared thermal conductivity λ_D	W/mK	0.065			
Declared thermal resistence R_D	m^{2}K/W	0.35	0.50	0.75	1.15
Compressive stress at 10% relative deformation	kPa	≥ 200 (Thickness 25-35 mm) ≥ 150 (Thickness 50-75 mm)			
Water vapour transmission	-	5			
Reaction to fire	-	Euroclass B-s1, d0			
Durability		Class C			
Release of formaldehyde		Class E1			

Technical data for CELENIT R

CELENIT R			
Length	mm	2400 - 2000	
Width	mm	600	
Thickness	mm	50	75
Weight	kg/m^2	24.0	28.0
Declared thermal resistence R_D	m^{2}K/W	0.75	1.10
Compressive stress at 10% relative deformation	kPa	≥ 150	
Water vapour transmission	-	5	
Reaction to fire	-	Euroclass B-s1, d0	

Technical data for CELENIT RA

CELENIT RA		
Length	mm	2400 - 2000
Width	mm	600
Thickness	mm	50
Weight	kg/m^2	24.0
Declared thermal resistence R_D	m^{2}K/W	0.70
Compressive stress at 10% relative deformation	kPa	≥ 200
Water vapour transmission	-	5
Reaction to fire	-	Euroclass B-s1, d0

Technical data for CELENIT RAB

CELENIT RAB		
Length	mm	2400 - 2000
Width	mm	600
Thickness	mm	50
Weight	kg/m^2	24.0
Declared thermal resistence R_D	m^{2}K/W	0.70
Compressive stress at 10% relative deformation	kPa	≥ 200
Water vapour transmission	-	5
Reaction to fire	-	Euroclass B-s1, d0

Included products: This is a multi-product EPD, based on one representative product. According to the General Programme Instruction (GPI) v. 5.0 and the PCR 2019:14 “Construction products” v.2.0.1, the results for each category of impact are represented for the product CELENIT N with a thickness of 20 mm identified as representative.
The products included in this EPD are:

- CELENIT N 15 mm
- **CELENIT N 20 mm**
- CELENIT N 25 mm
- CELENIT N 30 mm
- CELENIT N 35 mm
- CELENIT N 40 mm
- CELENIT N 50 mm
- CELENIT N 75 mm
- CELENIT N/C 25 mm
- CELENIT N/C 35 mm
- CELENIT N/C 50 mm
- CELENIT N/C 75 mm
- CELENIT R 50 mm
- CELENIT R 75 mm
- CELENIT RA 50 mm
- CELENIT RAB 50 mm

Name and location of production site(s): CELENIT S.p.A. The company is located in Onara of Tombolo (Padua, Italy), where all CELENIT panels are produced.

CONTENT DECLARATION

The mass (weight) of one unit of a product per declared unit: 10 kg CELENIT N 20 mm for 1 m^2

The declared share of biogenic/recycled materials:
The product contains pre- consumer recycled content contributed by calcium carbonate component.
The packaging components contain post-consumer recycled materials.
All percentages and biogenic values are calculated based on dry matter, and the biogenic carbon balance is maintained across the product life cycle by EN 15804+A2.

Product content	Mass, kg	Mass, %	Post-consumer recycled material, mass-% of product	Pre-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/m²
Cement	3.70	37.00%				
Wood	3.81	38.10%			38.10%	1.51
Water	0.97	9.70%				
Calcium carbonate	1.50	15.00%		15.00%		
Setting accelerator	0.02	0.20%				
TOTAL	**10.00**	**100.00%**	**0.00%**	**15.00%**	**38.10%**	**1.51**

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/m²
Plastic straps	0.002	0.02%	
Cardboard angular	0.003	0.03%	0.001
Cardboard box	0.019	0.19%	0.009
Plastic Film	0.002	0.02%	
Pallet	0.134	1.34%	0.066
TOTAL	**0.160**	**1.60%**	**0.076**

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

The product does not contain substances included in the "Candidate list of substances of very high concern (SVHC) for authorization" in a percentage greater than 0.1%.

The composition of the current product of CELENIT N/C is identical to that of CELENIT N.
In the case of CELENIT R 50 mm, RA and RAB the composition is: 33.80% cement, 34.80% wood, 8.86% water, 13.70% calcium carbonate, 0.18% setting accelerator and 8.66% wooden strips.
In the case of CELENIT R 75 mm the composition is: 32.33% cement, 33.29% wood, 8.47% water, 13.11% calcium carbonate, 0.17% setting accelerator and 12.63% wooden strips.

LCA INFORMATION

Functional unit

In accordance with the PCR and C-PCR the functional unit is 1 square meter of CELENIT N panel with a thickness of 20 mm installed and with a useful life of 60 years with R_D-value of 0.30 m^2K/W. The declared lambda is 0.065 W/mK.

Conversion factor to mass: Conversion factor for this EPD is 0.1 for 1 kg

Reference service life: 60 years

Time representativeness: 2024

Geographical scope: Europe

Database(s) and LCA software used: Ecoinvent v3.11 and SimaPro v10.2.0.2.

Description of system boundaries:

Cradle to grave and module D (A + B + C + D).

Product stage (A1-A3)

The A1 module includes the supply of raw materials. The A2 module includes the transportation of each raw material to the manufacturing site. The A3 module includes all the processes taking place on the manufacturing site: cutting of the wood trunks, production of the wet wood wool and subsequent wetting, mixture formation by adding Portland cement and calcium carbonate, distribution on the moulds and pressing, curing, demoulding, drying, calibration, squaring. Then there is the eventual painting.

Transport to construction site (A4)

The products are shipped to construction sites located in Italy, Europe and other countries with a weighted average distance of 1138 km (road) and 180 km (ship).

Construction installation (A5)

A quantity of construction site waste of 5% is considered. Sending the packaging materials to the waste recycling chain has been evaluated (distance 10km).

Use Stage (B1-B7)

If the installation phases have been carried out correctly and according to the technical instructions provided by CELENIT S.p.A., the product does not undergo variations and is not subject to ordinary maintenance interventions during its useful life of 60 years.

End of Life Stage (C1-C4)

C1: The impacts associated with the demolition phase require energy for the use of excavators and other machinery.

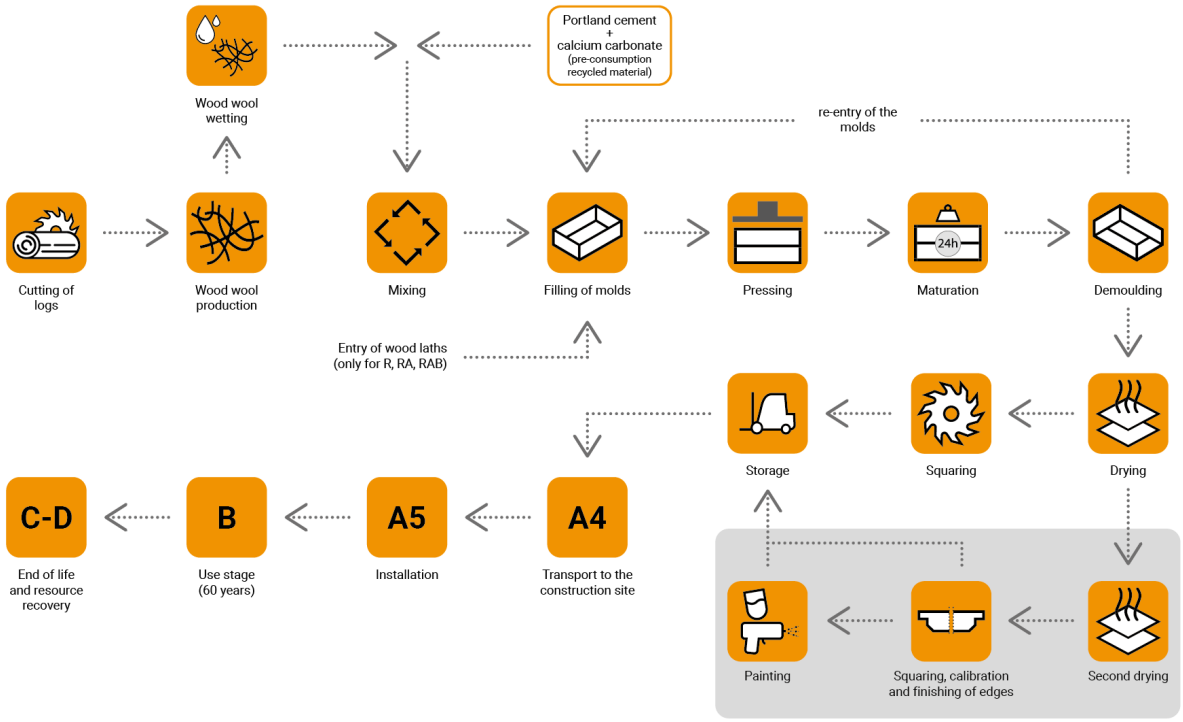
C2: The transportation of the product at the end of its life is modelled with a scenario equal to 50 km by truck.

C3: In the case of selective demolition of buildings, the product can be recovered and sent to specialized recovery companies. As a precaution, it was assumed that 100% of the material at the end of its life will be sent to landfill.

C4: The 100% of product after the demolition activities is disposed to landfill.

Resource recovery stage (D)
There are no benefits associated with the recovery/recycling/reuse phase for the product because 100% of the material will be sent to landfill in phase C.
The credits relating to the avoided impacts of the virgin raw material for packaging with a yield of 90% were quantified.

Process flow diagram:
Process flow diagram of the product system, divided into the life-cycle stages and modules shows the main processes included and the system boundary of the LCA.



More information:
Technical data sheets, Declaration of Performance and Safety Data Sheet for all these products are available at www.celenit.com.

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

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

Electricity mix: The electricity used in the production process (phase A1-A3) was modelled using the national Residual Mix provided by the AIB (Association of Issuing Bodies) 2024 for a share of 96% and by the photovoltaic system for 4%. The GWP-GHG of the electricity mix is equal to: 0.57 kg CO2eq./kWh.

Environmental impact method:
For environmental performance indicators: EN 15804 + A2 based on EF 3.1 characterisation factors (JRC Website)

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	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	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU	EU	IT	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Share of primary data	73%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-20%+163%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0% (single site)			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Data quality
The data quality assessment (DQA) was conducted in accordance with EN 15941:2024 and follows the requirements of Annex E in EN 15804. All data sets for each core environmental impact indicator have been individually assessed for:

- Time-related representativeness: Data reflect the most recent and relevant production period.
- Geographical representativeness: Data are specific to the region of production.
- Technological representativeness: Data correspond to the actual technology and processes used.
- Completeness and consistency: All relevant flows and processes are included, and data are consistent across the system boundary.
- The assessment confirms that the majority of the environmental impacts are based on high-quality, specific data.

Data quality declaration, as well as the share of primary data in GWP-GHG results are presented below:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product	Collected data	CELENIT SpA	2024	Primary data, secondary data	27%
Generation of electricity used in manufacturing of product	AIB/Database	Ecoinvent v3.11	2024	Primary data	24%
Emissions Specific	Collected data	CELENIT SpA	2024	Primary data	0%
Thermal Energy	Database	Ecoinvent v3.11	2024	Primary data	14%
Transport A2	Collected data and Database	Ecoinvent v3.11	2024	Primary data	6%
Production of packaging	Database	Ecoinvent v3.11	2024	Primary data, secondary data	1%
Other processes	Databases	Ecoinvent v3.11	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					73%

ENVIRONMENTAL PERFORMANCE

Mandatory impact category indicators according to EN 15804

Results per functional unit 1 m² CELENIT N 20 mm

Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	-3.62E-01	2.22E+00	2.29E-01	0.00E+00	4.63E-02	9.52E-02	0.00E+00	5.33E+00	-1.86E-02
GWP-fossil	kg CO_2 eq.	5.13E+00	2.22E+00	9.45E-03	0.00E+00	4.63E-02	9.51E-02	0.00E+00	5.53E-02	-1.82E-02
GWP-biogenic	kg CO_2 eq.	-5.50E+00	1.51E-03	2.20E-01	0.00E+00	9.38E-06	6.52E-05	0.00E+00	5.28E+00	-2.40E-04
GWP-luluc	kg CO_2 eq.	3.45E-03	7.38E-04	2.43E-06	0.00E+00	4.74E-06	3.15E-05	0.00E+00	1.03E-05	-2.04E-04
ODP	kg CFC 11 eq.	1.66E-09	1.15E-09	5.33E-12	0.00E+00	1.46E-11	4.96E-11	0.00E+00	2.48E-11	-8.32E-12
AP	mol H^+ eq.	1.14E-02	7.61E-03	4.36E-05	0.00E+00	4.14E-04	3.05E-04	0.00E+00	3.68E-04	-1.19E-04
EP-freshwater	kg P eq.	8.86E-05	1.62E-05	6.35E-08	0.00E+00	1.62E-07	6.97E-07	0.00E+00	3.15E-07	-5.77E-07
EP-marine	kg N eq.	3.43E-03	2.49E-03	1.70E-05	0.00E+00	1.92E-04	1.02E-04	0.00E+00	1.57E-04	-4.65E-05
EP-terrestrial	mol N eq.	3.99E-02	2.74E-02	1.87E-04	0.00E+00	2.11E-03	1.12E-03	0.00E+00	1.72E-03	-4.91E-04
POCP	kg NMVOC eq.	1.36E-02	1.11E-02	7.14E-05	0.00E+00	6.31E-04	4.63E-04	0.00E+00	6.45E-04	-1.96E-04
ADP-minerals&metals[1]	kg Sb eq.	2.75E-06	7.44E-06	2.49E-08	0.00E+00	1.65E-08	3.21E-07	0.00E+00	6.87E-08	-2.35E-08
ADP-fossil[1]	MJ	4.56E+01	3.14E+01	1.75E-01	0.00E+00	6.03E-01	1.35E+00	0.00E+00	1.45E+00	-2.75E-01
WDP[1]	m^3	3.20E-01	1.21E-01	-1.74E-04	0.00E+00	1.29E-03	5.23E-03	0.00E+00	5.02E-03	-2.37E-03

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 (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional mandatory impact category indicators

Results per functional unit 1 m² CELENIT N 20 mm

Indicator	Unit	A1-A3	A4	A5	B1- B7	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	5.14E+00	2.22E+00	9.46E-03	0.00E+00	4.63E-02	9.52E-02	0.00E+00	5.53E-02	-1.84E-02

[1] 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 experienced with the indicator.
[2] 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 CO_2 is set to zero.

Resource use indicators

Results per functional 1 m² CELENIT N 20 mm										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1- B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.43E+01	4.94E-01	5.26E-03	0.00E+00	3.70E-03	2.13E-02	0.00E+00	2.78E-02	-3.23E+00
PERM	MJ	3.86E+01	0.00E+00	-2.52E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.61E+01	0.00E+00
PERT	MJ	5.29E+01	4.94E-01	-2.51E+00	0.00E+00	3.70E-03	2.13E-02	0.00E+00	-3.60E+01	-3.23E+00
PENRE	MJ	4.56E+01	3.14E+01	1.75E-01	0.00E+00	6.03E-01	1.35E+00	0.00E+00	1.45E+00	-2.75E-01
PENRM	MJ	1.13E-01	0.00E+00	-1.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-05	0.00E+00
PENRT	MJ	4.57E+01	3.14E+01	6.23E-02	0.00E+00	6.03E-01	1.35E+00	0.00E+00	1.45E+00	-2.75E-01
SM	kg	1.52E+00	0.00E+00	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.09E-02	3.91E-03	-5.14E-04	0.00E+00	4.25E-05	1.68E-04	0.00E+00	1.66E-03	-9.74E-05

Waste indicators

Results per functional 1 m² CELENIT N 20 mm										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	8.55E-04	7.90E-04	1.38E-04	0.00E+00	5.64E-06	3.41E-05	0.00E+00	2.43E-05	-4.33E-05
Non-hazardous waste disposed	kg	5.60E-01	1.50E+00	6.39E-01	0.00E+00	4.07E-04	6.47E-02	0.00E+00	9.99E+00	-7.27E-04
Radioactive waste disposed	kg	4.54E-05	9.20E-06	7.55E-08	0.00E+00	6.31E-08	3.97E-07	0.00E+00	3.14E-07	-7.02E-07

Output flow indicators

Results per functional 1 m² CELENIT N 20 mm										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**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	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	5.53E-02	0.00E+00	1.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+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	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	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	0.00E+00	0.00E+00	0.00E+00

Additional LCA results of the products

In this table below the variation of the grouping of products from representative product CELENIT N 20 mm are presented as minimum and maximum for each impact category.

Indicators for functional unit (A1-A3)	**Unit**	**Min**	**Max**
GWP-fossil	kg CO_2 eq.	4.11E+00	1.35E+01
GWP-biogenic	kg CO_2 eq.	-1.99E+01	-4.40E+00
GWP-luluc	kg CO_2 eq.	2.76E-03	1.48E-02
GWP-total	kg CO_2 eq.	-6.38E+00	-2.82E-01
ODP	kg CFC 11 eq.	1.34E-09	4.56E-09
AP	mol H^+ eq.	9.17E-03	3.09E-02
EP-freshwater	kg P eq.	7.11E-05	2.37E-04
EP- marine	kg N eq.	2.75E-03	9.43E-03
EP-terrestrial	mol N eq.	3.20E-02	1.08E-01
POCP	kg NMVOC eq.	1.11E-02	3.78E-02
ADP-minerals&metals*	kg Sb eq.	2.26E-06	6.68E-06
ADP-fossil*	MJ	3.68E+01	1.25E+02
WDP*	m^3	2.58E-01	8.55E-01
GWP-GHG	kg CO_2 eq.	4.12E+00	1.35E+01

ADDITIONAL ENVIRONMENTAL INFORMATION

The following table shows the multiplication factors for each individual thickness in the product family (A1-A3). In order to determine the environmental impacts associated with a given product thickness, the results expressed in this EPD must be multiplied by the corresponding multiplication factor.

Indicator	Unit	CELENIT N 15 mm	CELENIT N 25 mm	CELENIT N 30 mm	CELENIT N 35 mm	CELENIT N 40 mm	CELENIT N 50 mm
GWP - Fossil	kg CO_2 eq	0.802	1.149	1.298	1.397	1.645	1.893
GWP - Biogenic	kg CO_2 eq	0.800	1.150	1.300	1.400	1.650	1.900
GWP - Luluc	kg CO_2 eq	0.802	1.149	1.298	1.397	1.645	1.893
GWP - Total	kg CO_2 eq	0.778	1.167	1.333	1.444	1.722	1.999
ODP	kg CFC11 eq	0.808	1.144	1.288	1.384	1.624	1.863
AP	mol H+ eq	0.803	1.148	1.295	1.394	1.640	1.886
EP-freshwater	kg P eq	0.802	1.149	1.297	1.396	1.644	1.891
EP-marine	kg N eq	0.802	1.149	1.297	1.397	1.644	1.892
EP - terrestrial	mol N eq	0.802	1.149	1.298	1.397	1.645	1.893
POCP	kg NMVOC eq	0.811	1.142	1.283	1.378	1.614	1.850
ADP-minerals&metal	kg Sb eq	0.824	1.132	1.264	1.351	1.571	1.791
ADP-fossil	MJ	0.807	1.145	1.290	1.386	1.628	1.869
WDP	m^3 depriv.	0.805	1.146	1.292	1.389	1.633	1.876
GWP GHG	kg CO_2-eq	0.802	1.149	1.298	1.397	1.645	1.893
PERE	MJ	0.800	1.150	1.299	1.399	1.648	1.898
PERM	MJ	0.800	1.150	1.300	1.400	1.650	1.900
PERT	MJ	0.800	1.150	1.300	1.400	1.650	1.899
PENRE	MJ	0.807	1.145	1.290	1.386	1.628	1.869
PENRM	MJ	0.800	1.150	1.300	1.400	1.650	1.900
PENRT	MJ	0.807	1.145	1.290	1.386	1.628	1.869
SM	kg	0.800	1.150	1.300	1.400	1.650	1.900
RSF	MJ	0.000	0.000	0.000	0.000	0.000	0.000
NRSF	MJ	0.000	0.000	0.000	0.000	0.000	0.000
FW	m3	0.805	1.146	1.293	1.391	1.635	1.879
Hazardous waste disposed	kg	0.806	1.146	1.292	1.389	1.632	1.875
Non-hazardous waste disposed	kg	0.801	1.149	1.298	1.397	1.646	1.894
Radioactive waste disposed	kg	0.804	1.147	1.294	1.392	1.638	1.883
Components for re-use	kg	0.000	0.000	0.000	0.000	0.000	0.000
Material for recycling	kg	0.800	1.150	1.300	1.400	1.650	1.900
Materials for energy recovery	kg	0.000	0.000	0.000	0.000	0.000	0.000
Exported energy, electricity	MJ	0.000	0.000	0.000	0.000	0.000	0.000
Exported energy, thermal	MJ	0.000	0.000	0.000	0.000	0.000	0.000

Indicator	Unit	CELENIT N 75 mm	CELENIT N/C 25 mm	CELENIT N/C 35 mm	CELENIT N/C 50 mm	CELENIT N/C 75 mm
GWP - Fossil	kg CO_2 eq	2.588	1.149	1.397	1.893	2.588
GWP - Biogenic	kg CO_2 eq	2.600	1.150	1.400	1.900	2.600
GWP - Luluc	kg CO_2 eq	2.588	1.149	1.397	1.893	2.588
GWP - Total	kg CO_2 eq	2.777	1.163	1.444	1.999	2.777
ODP	kg CFC11 eq	2.535	1.145	1.384	1.863	2.535
AP	mol H+ eq	2.576	1.148	1.394	1.886	2.576
EP-freshwater	kg P eq	2.584	1.149	1.396	1.891	2.584
EP-marine	kg N eq	2.586	1.149	1.397	1.892	2.586
EP - terrestrial	mol N eq	2.587	1.149	1.397	1.893	2.587
POCP	kg NMVOC eq	2.510	1.144	1.378	1.850	2.510
ADP-minerals&metal	kg Sb eq	2.406	1.136	1.351	1.791	2.406
ADP-fossil	MJ	2.545	1.146	1.386	1.869	2.545
WDP	m^3 depriv.	2.557	1.147	1.389	1.876	2.557
GWP GHG	kg CO_2-eq	2.588	1.149	1.397	1.893	2.588
PERE	MJ	2.596	1.150	1.399	1.898	2.596
PERM	MJ	2.600	1.150	1.400	1.900	2.600
PERT	MJ	2.599	1.150	1.400	1.899	2.599
PENRE	MJ	2.545	1.146	1.386	1.869	2.545
PENRM	MJ	2.600	1.150	1.400	1.900	2.600
PENRT	MJ	2.545	1.146	1.386	1.869	2.545
SM	kg	2.600	1.150	1.400	1.900	2.600
RSF	MJ	0.000	0.000	0.000	0.000	0.000
NRSF	MJ	0.000	0.000	0.000	0.000	0.000
FW	m^3	2.562	1.147	1.391	1.879	2.562
Hazardous waste disposed	kg	2.556	1.147	1.389	1.875	2.556
Non-hazardous waste disposed	kg	2.589	1.149	1.397	1.894	2.589
Radioactive waste disposed	kg	2.570	1.148	1.392	1.883	2.570
Components for re-use	kg	0.000	0.000	0.000	0.000	0.000
Material for recycling	kg	2.600	1.150	1.400	1.900	2.600
Materials for energy recovery	kg	0.000	0.000	0.000	0.000	0.000
Exported energy, electricity	MJ	0.000	0.000	0.000	0.000	0.000
Exported energy, thermal	MJ	0.000	0.000	0.000	0.000	0.000

Indicator	Unit	CELENIT R 50 mm	CELENIT R 75 mm	CELENIT RA 50 mm	CELENIT RAB 50 mm
GWP - Fossil	kg CO_2 eq	2.300	2.633	2.299	2.090
GWP - Biogenic	kg CO_2 eq	2.882	3.622	2.882	2.896
GWP - Luluc	kg CO_2 eq	3.273	4.291	3.273	3.260
GWP - Total	kg CO_2 eq	11.129	17.612	11.133	14.294
ODP	kg CFC11 eq	2.361	2.754	2.360	2.299
AP	mol H+ eq	2.342	2.708	2.341	2.184
EP-freshwater	kg P eq	2.327	2.680	2.327	2.168
EP-marine	kg N eq	2.365	2.746	2.365	2.195
EP - terrestrial	mol N eq	2.351	2.721	2.351	2.173
POCP	kg NMVOC eq	2.365	2.771	2.363	2.208
ADP-minerals&metal	kg Sb eq	2.152	2.432	2.147	1.949
ADP-fossil	MJ	2.356	2.742	2.354	2.276
WDP	m^3 depriv.	2.320	2.673	2.319	2.232
GWP GHG	kg CO_2-eq	2.300	2.634	2.300	2.091
PERE	MJ	4.144	5.771	4.144	4.128
PERM	MJ	2.986	3.799	2.986	2.986
PERT	MJ	3.299	4.331	3.299	3.295
PENRE	MJ	2.356	2.742	2.354	2.276
PENRM	MJ	2.400	2.800	2.400	2.400
PENRT	MJ	2.356	2.742	2.354	2.277
SM	kg	2.194	2.451	2.194	2.194
RSF	MJ	0.000	0.000	0.000	0.000
NRSF	MJ	0.000	0.000	0.000	0.000
FW	m^3	2.330	2.690	2.329	2.209
Hazardous waste disposed	kg	2.354	2.736	2.353	2.262
Non-hazardous waste disposed	kg	2.243	2.537	2.243	2.002
Radioactive waste disposed	kg	2.437	2.873	2.437	2.393
Components for re-use	kg	0.000	0.000	0.000	0.000
Material for recycling	kg	2.400	2.800	2.400	2.400
Materials for energy recovery	kg	0.000	0.000	0.000	0.000
Exported energy, electricity	MJ	0.000	0.000	0.000	0.000
Exported energy, thermal	MJ	0.000	0.000	0.000	0.000

If the panel is painted in addition to previous environmental impact must be added the value in the below table for 1 square meter (A1-A3).

Indicator	Unit	Paint layer per square meter	Indicator	Unit	Paint layer per square meter
GWP - Fossil	kg CO_2 eq	3.29E-01	PERE	MJ	1.32E-01
GWP - Biogenic	kg CO_2 eq	1.76E-03	PERM	MJ	0.00E+00
GWP - Luluc	kg CO_2 eq	6.95E-05	PERT	MJ	1.32E-01
GWP - Total	kg CO_2 eq	3.31E-01	PENRE	MJ	6.56E+00
ODP	kg CFC11 eq	6.30E-10	PENRM	MJ	0.00E+00
AP	mol H+ eq	1.73E-03	PENRT	MJ	6.56E+00
EP-freshwater	kg P eq	3.78E-05	SM	kg	0.00E+00
EP-marine	kg N eq	1.96E-04	RSF	MJ	0.00E+00
EP - terrestrial	mol N eq	1.81E-03	NRSF	MJ	0.00E+00
POCP	kg NMVOC eq	8.92E-04	FW	m3	4.93E-03
ADP-minerals&metal	kg Sb eq	1.76E-07	Hazardous waste disposed	kg	3.09E-04
ADP-fossil	MJ	6.56E+00	Non-hazardous waste disposed	kg	3.83E-02
WDP	m^3 depriv.	1.97E-01	Radioactive waste disposed	kg	3.24E-06
GWP GHG	kg CO_2-eq	3.30E-01	Components for re-use	kg	0.00E+00
Exported energy, electricity	MJ	0.00E+00	Material for recycling	kg	0.00E+00
Exported energy, thermal	MJ	0.00E+00	Materials for energy recovery	kg	0.00E+00

Use and Maintenance Phase

The document states that phases B1 through B7 have been evaluated: CELENIT products are permanently installed in the structure and do not require any operational energy or water consumption during their use. Furthermore, if properly installed, they do not require maintenance, repair, replacement, or restoration under normal conditions of use.

Deconstruction and Selective Demolition at End-of-Life

As a precautionary measure for the calculation of environmental indicators, the analyzed end-of-life scenario has assumed the product's disposal in a landfill. A potential end-of-life for CELENIT products, which can be adopted as a scenario in the life-cycle assessment of a building, is their disposal in a waste incineration plant. The path permitted within the construction sector is that of the incinerator for the thermal recovery of waste, subject to verification of the normative provisions of the reference nation.

Reuse and Recovery

Regarding material recovery, in the case of construction waste or demolitions at the end of their life cycle, CELENIT panels can potentially be recovered if they are dry-laid and not glued or plastered. To carry out selective demolition that does not compromise the possibility of reusing CELENIT products, it is necessary to adopt deconstruction and disassembly techniques for the panels before proceeding with the demolition of the load-bearing structures.

Therefore, for the purposes of drafting the "Disassembly/End-of-Life Plan" for a building designed and constructed with CELENIT false ceilings/walls, these can be considered eligible for selective demolition at the end of their life. The "Disassembly/End-of-Life Plan" includes the manual or mechanical removal of the false walls/ceilings until the building is "skeletalized." This proper separation entails a higher cost than traditional demolition. This additional cost must be considered during the project planning phase.

Recycled Content

CELENIT panels have a total recycled content understood as the sum of pre- and post-consumer recycled fractions, evaluated with the mass balance method and reported in the declaration regarding the panel's composition equal to 15.00%. See above paragraph “Content Declaration”.

For the purposes of compliance with the DECREE of 23 June 2022 "*Minimum environmental criteria for the awarding of the service of designing building interventions, for the awarding of works for building interventions and for the joint awarding of design and works for building interventions*.” and subsequent amendments, both with reference to the Partition walls, false ceilings criterion and the Insulating materials criterion for the wood wool component, it is stated that wood-based materials meet the requirements of criterion "2.5.6 - Wood products". Therefore, since Celenit products are PEFC and FSC® certified, criterion "2.5.6" is automatically respected.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CPC	Central product classification
SVHC	Substances of Very High Concern
ND	Not Declared
EPD	Environmental Product Declaration
PCR	Product Category Rules
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
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

REFERENCES

a) AIB, “European Residual Mixes -Results of the calculation of Residual Mixes for the calendar year 2024”
b) Central Product Classification (CPC) Series M No.77, v.2.1. United Nations, New York, 2015.
c) Database Ecoinvent v.3.11 (www.ecoinvent.org).
d) Default list v. 3.0 of Environmental Impact Indicators: The International EPD System (www.environdec.com).
e) ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures.
f) UNI EN ISO 14040:2021 Environmental management. Life cycle assessment. Principles and frameworks.
g) UNI EN ISO 14044:2021 Environmental management. Life cycle assessment. Requirements and guidelines.
h) General Programme Instructions for Environmental Product Declarations, version 5.0.1, Published on 2025-02-27.
i) PCR 2019:14 Construction products, version 2.0.1. - EN 15804:2012+A2:2019/AC:2021
j) C-PCR-005 (to PCR 2019:14) Thermal insulation products (EN 16783:2024)
k) EN 15804+A2 Sustainability in construction works – Environmental product declarations – Core rules for the pro-duct category of construction products.
l) Life cycle analysis of Celenit SpA wood wool insulation products

VERSION HISTORY

Original Version of the EPD, 2025-10-30

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Cardewlees, Carlisle, Cumbria, CA5 6LF,
United Kingdom

Ireland Ecological Building Systems Ltd.,
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