

ENVIRONMENTAL-PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Etex Building Performance International
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-PMT-20190009-ICA2-EN
Issue date	18.04.2019
Valid to	17.10.2024

PROMATECT-H Promat

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1. General Information

Promat

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-PMT-20190009-ICA2-EN

This declaration is based on the product category rules:

Calcium silicate insulating materials, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

18.04.2019

Valid to

17.10.2024



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PROMATECT-H

Owner of the declaration

Etex Building Performance International
Rue Marcel Demonque 500
84915 Avignon Cedex 9
France

Declared product / declared unit

1m² of PROMATECT[®]-H with a thickness of 5mm

Scope:

The life cycle assessment is based on production data of PROMATECT[®]-H of the year 2017 at the production site Kapelle-op-den-Bos, Belgium.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A1. In the following, the standard will be simplified as *EN 15804 bezeichnet*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Dr. Frank Werner,
(Independent verifier)

2. Product

2.1 Product description/Product definition

PROMATECT®-H

is a fire protective calcium silicate board, composed of a calcium silicate matrix, cement and mineral fillers. The board is off-white in colour and has a smooth upper surface and an embossed or sanded reverse face. The board is resistant to moisture, of stable dimensions, large format and self-supporting.

For the placing of the product on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 Construction Products Regulation (CPR) applies. The product needs a declaration of performance taking into consideration (European Technical Assessment) /ETA 06/0206/, 2018-06-25, PROMATECT®-H and the CE-marking.

For the application and use the respective national provisions apply. Please select one of the following options and delete the header of the selected [alternative]:

[Alternative 1a: Product according to the CPR based on a hEN]:

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration EN xyz:date, title and the CE-marking.

For the application and use the respective national provisions apply.

[Alternative 1b: Products according to the CPR based on an ETA]:

For the placing of the product on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration ETA no. xyz:date, title and the CE-marking.

For the application and use the respective national provisions apply.

[Alternative 2a: Product not harmonised in accordance with the CPR but in accordance with other provisions for harmonisation of the EU]:

For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply:

- Directive no. xyz: date, title
- Regulation no. xyz: date, title

- and the harmonised standards based on these provisions:
- EN xyz: date, title

The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above.

For the application and use the respective national provisions apply.

[Alternative 2b: Product harmonized as well in accordance with the CPR as with other provisions for harmonisation of the EU]:

For the placing of the product on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) and the following other provisions for harmonisation apply:

- Directive (EU) xyz: date, title
- Regulation (EU) no. xyz: date, title

The product needs a declaration of performance in accordance with the CPR taking into consideration /EN xyz: date/, title or /ETA no. xyz/:date, title respectively and the CE-marking.

The CE-marking for the product takes into account the Declaration of Performance in accordance with the CPR and the proof of conformity with the following harmonised standards or based on the other provisions for harmonisation:

- EN xyz: date, title
- Source, date, title

For the application and use the respective national provisions apply.

[Alternative 3: Product for which no legal provisions for harmonisation of the EU exist]:

For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.

2.2 Application

Execution of construction elements for construction and technical fire protection according to EN standard in all the fields of building construction and industrial construction, e.g. in steel structures, fire resistant partitions, fire dampers, wall structures, facade elements.

2.3 Technical Data

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to /ETA 06/0206/, 2018-06-25/ PROMATECT®-H apply.

Constructional data

Name	Value	Unit
Gross density 23°C, 50% RH; according to /ETA 060206/	940±15%	kg/m ³
Gross density 105°C, dry; according to /ETA 060206/	870±15%	kg/m ³
Compressive strength according to /ETA 060206/	9.3	N/mm ²
Tensile strength (perpendicular tensile) according to /EN1607/	77.9	kPa
Tensile strength (parallel tensile) according to /EN1608/	989.01	kPa
Flexural strength according to /EN12467/	≥4.5	MPa
Thermal conductivity according to /EN12667/	0.175	W/(mK)
Water vapour diffusion resistance factor according to /EN ISO 12572, method C/	20	-

Please select one of the following options and delete the header of the selected [alternative]:

[Alternative 1a: Product according to the CPR, based on a hEN]:

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN xyz:date, title*.
- Voluntary data: *source, date, title* (not part of CE-marking).

[Alternative 1b: Product according to the CPR, based on an ETA]:

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *ETA no. xyz, date, title*.
- Voluntary data: *source, date, title* (not part of CE-marking).

[Alternative 2a: Product not harmonised in accordance with the CPR but in accordance with other provisions for harmonisation of the EU]:

Performance data of the product according to the harmonised standards, based on provisions for harmonization.

Voluntary data: *source, date, title* (not part of CE-marking).

[Alternative 2b: Product harmonized as well in accordance with the CPR as with other legal provisions of the EU]:

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN xyz: date, title* or *ETA no. xyz, date, title* respectively.
- Performance data of the product, based on the harmonised standards, in accordance with the other provisions for harmonization.
- Voluntary data: *source, date, title* (not part of CE-marking)

[Alternative 3: Product for which no legal provisions for harmonisation of the EU exist]:

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

2.4 Delivery status

Fire protective building boards are available in two sizes: 1250x2500 mm or 1250x3000 mm.

The boards are delivered in various thicknesses: 6,8,10,12,15,20 and 25mm.

2.5 Base materials/Ancillary materials

Main raw materials used (in weight percentages):

- sand 5-25%
- cement 5-25%
- lime 5-25%
- calcium silicate 10-50%
- fibres <7%

The raw materials are mixed in water and combined in a slurry.

This product/article/at least one partial article contains substances listed in the candidate list (date: 15.01.2019) exceeding 0.1 percentage by mass: no

This product contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012):no

2.6 Manufacture

All the raw materials are mixed in water and combined to form a thick slurry. The slurry is formed to a board on a forming drum, cut and stacked for curing. The board is autoclaved under saturated steam pressure and dried. Edges are trimmed and the reverse surface sanded to the desired thickness. All material which is cut off or sanded away is fully recycled within the process.

PROMATECT®-H is produced with quality assurance according to the standard /ISO 9001/.

2.7 Environment and health during manufacturing

Etex Building Performance commits to a clean, healthy and safe working environment for every person working in and for the company.

The company and the manufacturing site have an environment, health and safety management system which is /ISO 14001/ and Occupational health- and safety assessment series /OHSAS 18001/ certified. The manufacturing plant adheres to the Belgian environmental, health and safety regulations.

2.8 Product processing/Installation

The fire protective board is cut and machined using conventional woodworking equipment.

Fixing the boards will require appropriate means, which will depend upon the application and bearing structure. Boards can be installed using staples, screws, anchors or glue.

Industrial and environmental protection are assured through training and coaching staff on safety and environmental impacts. Dust levels are kept low by performing dust extraction. Noise is reduced by noise

insulation on the machines and ear protection is provided for persons entering the production area.

Regular measurements on noise and dust are performed and show conformity to the permitted levels.

All national, local and other applicable safety regulations are complied with.

2.9 Packaging

All fire protection boards are packed onto wooden pallets, wrapped with polyester strapping tape and strengthened with cardboard corners. The wooden pallets can be returned by the customer and reused several times. The polyethylene straps and cardboard are recyclable.

2.10 Condition of use

PROMATECT®-H boards are resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. Boards do not encourage mould growth and are resistant to attacks by insects or vermin. No maintenance or repair is required over their service life.

2.11 Environment and health during use

PROMATECT®-H is chemically inert. When the product is used as designed, the current state of knowledge indicates that there is no risk involved for

the environment or health.

2.12 Reference service life

The reference service life (RSL) of the product according to the series of standards ISO 15686 is declared to be 50 years (see in-use conditions described in clause 4). This is the minimum service life according to most building assessment schemes.

The service life according to the table "Service lives of components for life cycle assessment according to Bewertungssystem Nachhaltiges Bauen (BNB)" by the Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) is >50 years. Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

PROMATECT®-H boards have a reaction to fire classification A1 or non-combustible according to

/EN13501-1/.

Name	Value
Building material class	A1

Water

All ingredients are firmly bound in the matrix. The boards are insensitive to moisture and no ingredients which could be hazardous to water are washed out in

the event of extraordinary effects by water.

Mechanical destruction

Mechanical destruction of PROMATECT®-H will have no relevant effects on the environment. When tools are used during destruction, one should ensure that dusts are exhausted and that the regulatory occupational exposure limits are respected.

In order to prevent any reduction of fire performance following unforeseeable mechanical destruction, all damage of the components needs to be repaired using materials specified by the /ETA 06/0206/.

2.14 Re-use phase

Several possibilities exist for the boards after the end-of-life of the application in which they were used.

If the boards are removed non-destructively by releasing the screws, the undamaged product can be re-used in accordance with the original purpose.

If not contaminated with other building construction material, the boards also allow being recycled by the manufacturer.

Furthermore, the products referred to could be used as filler and bulk material in civil engineering or be recycled in cement industry.

2.15 Disposal

Within the production process, most of the generated waste is immediately re-used within the process.

When after end-of-life re-using or recycling the boards as described in the previous paragraph is not practical, the boards can be disposed to landfill class II.

The waste code in accordance with the /European Waste Index/ is 170904.

2.16 Further information

Further information is available on the following web site : www.promat-international.com

3. LCA: Calculation rules

3.1 Declared Unit

The functional unit is 1m² of PROMATECT®-H with a thickness of 5mm (abbreviated as 1 m²5). For any actual board thickness, the values resulting from the LCA shall be multiplied by the ratio (actual thickness [mm] / 5 mm)

Declared unit

Name	Value	Unit
Gross density used in the calculations, based on 2017 average data	955	kg/m ³
Declared unit	1	m ²
Weight of the functional unit	4.8	kg

For IBU core EPDs (where clause 3.6 is part of the EPD): for average EPDs, an estimate of the robustness of the LCA values must be made, e.g. concerning variability of the production process, geographical representativeness and the influence of background data and preliminary products compared to the environmental impacts caused by actual production.

3.2 System boundary

Type of the EPD: cradle to grave.

Assessment in this study includes the modules :

- A1 to A3 : the product stage including the raw material and energy production, raw material transports and the product manufacturing. Module A1 also includes the reuse of internal waste coming from all the production lines on site.

- A4 and A5: the construction stage including the transport to the building site (A4) and the installation into the building (A5). It was chosen not to include fixing accessories in module A5 due to many possible types of installation. Module A5 only includes the end of life of the packaging material (sorting) until it is no longer considered a waste.

- B1 to B7: the use stage is considered in the life cycle of PROMATECT®-H but no inputs or outputs are considered during this stage.

- C1 to C4: end-of-life stage including the transport of the boards from the construction site to treatment facility, and waste processing and waste disposal.

- D: loads and benefits from the recycling of product packaging are considered from the moment it is no longer considered a waste.

3.3 Estimates and assumptions

Blue water consumption is taken into consideration in the background data system. Water which is embedded in the product as well as water which is evaporated from the product during production is included in the calculations.

Where possible, specific regional data was used when selecting background data such as for electricity where the Belgian mix was used for the manufacturing stage.

For the waste treatment the European electricity mix was used as the boards are sold on the European market.

3.4 Cut-off criteria

All stages are included into the system boundaries. In the assessment, all available data from production process are considered, i.e. all raw materials used, utilized thermal energy, and electric power consumption. Thus, material and energy flows contributing less than 1% of mass or energy are considered. No flows contributing significantly to any of the indicators of the impact assessment was excluded.

According to /NF EN 15804/CN/ only the flows relative to production of capital equipment, facilities and infrastructure required for manufacture, employee transport, are outside the scope of this assessment.

Background/Generic data from /ecoinvent 3.4/ could include production and/or maintenance of

infrastructures.

3.5 Background data

Background data is from /ecoinvent 3.4/.

Primary data provided by Promat is representative of the annual production for the year 2017.

3.6 Data quality

This study is mainly based on primary data collected directly from the manufacturing site and therefore data quality can be assumed to be very good.

Background data is from the ecoinvent database, at the most up-to-date version available.

3.7 Period under review

Data for the entire production period of 2017 were collected and used for this EPD.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

3.9 Allocation

Allocation of upstream data:

The production process receives internally recycling provided by PROMATECT®-H and other production process lines.

Allocation of the foreground data:

The production process does not deliver any co-products but a waste that is reused as raw material for the board production.

For the PROMATECT®-H declared in this EPD, only one production line exists, but this line is shared for the production of other boards. The consumed energy and water for this line were allocated by total production volume in square meters of 5 mm thickness to the specific products within the product family.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

The used background database has to be mentioned.

4. LCA: Scenarios and additional technical information

The following technical scenario information is required for the declared modules and optional for non-declared modules. Modules for which no information is declared can be deleted; additional information can also be listed if necessary.

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

A5 is not declared including the disposal of the packaging material on the construction site, the amounts of packaging materials included in the LCA calculations must be declared as technical scenario information for Module A5.

Transport to the building site (A4)

For the transport from the factory gate to the building site, an average distance of 100km was assumed. For transport to european countries, the impacts can be easily calculated by multiplying the impacts in module A4 with the transport distance to the specific location and dividing it by 100.

The distance of 100km can be assumed to be representative for deliveries within Belgium.

Name	Value	Unit
Transport distance	100	km
Capacity utilisation (including empty runs)	90	%
Gross density of products transported	955	kg/m ³

Installation into the building (A5)

Because of various types of installation, it was decided not to take fixing accessories into account.

An average loss of product of 5 % was considered during calcium silicate boards installation. Impacts for the production, packaging, transport and end-of-life of this loss was included in module A5.

Waste treatment of packaging is also considered in module A5 until it is no longer considered a waste.

Name	Value	Unit
Material loss	0.25	kg
Waste carboard to recycling	9.3	g
Waste polyethylene to recycling	0.664	g
Waste pallet to incineration	29.16	g

Use (B)

For the use stage of the product, no emission to air or to water (B1) was considered.

No maintenance (B2), repair (B3), replacement (B4) or refurbishment (B5) operation is required during the product service life.

The product does not require any energy (B6) or water (B7) to

fulfill its function.

Reference service life

The Reference Service Life (RSL) is declared to be 50 years by Etex Group under the in-use conditions as declared below. This corresponds to the period after which a building renovation is usually needed, independently of the actual technical lifetime of the product (which can be longer than 50 years). The product keeps its technical performance during the whole duration of its life cycle.

Name	Value	Unit
Reference service life	50	a
Life Span (according to BBSR)	>50	a
Declared product properties (at the gate) and finishes	See §2.3	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	ETA 06/0206	-
Outdoor environment, (for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	not applicable	-
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	See §2.3	-
Usage conditions, e.g. frequency of use, mechanical exposure	not relevant	-
Maintenance e.g. required frequency, type and quality and replacement of components	no maintenance needed	-

End of life (C1-C4)

Name	Value	Unit
Landfilling	4.8	kg
Transport distance	50	km

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Although re-use and recycling of the PROMATECT®-H is possible, this is not yet a widely established practice. Therefore, no possible benefits of recycling or re-use of the boards were taken into account in this study. In module D, only the loads and benefits from the recycling of waste packaging (cardboard and polyethylene) were taken into account. The loads considered are due to the recycling processes and transport and the benefits correspond to the avoided impacts of virgin paper and plastic production.

Name	Value	Unit
Cardboard	9.3	g
Polyethylene strip	0.664	g

5. LCA: Results

The following tables depict the results of the indicators for the Life Cycle Assessment, use of resources and waste with reference to 1m²5 of PROMATECT®-H.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m²5 PROMATECT®-H

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	kg CO ₂ eq	2.6733434	0.0372317386285284	0.141806173601268	0	0	0	0	0	0	0	0	0.01802807570597	0	0.0574960424418	-0.0022202791576
ODP	kg CFC11 eq	3.13E-07	6.53E-09	1.71E-08	0	0	0	0	0	0	0	0	3.16E-09	0	1.44E-08	8.22E-11
AP	kg SO ₂ eq	9.13E-03	1.53E-04	4.9E-04	0	0	0	0	0	0	0	0	7.43E-05	0	1.41E-01	-1.45E-05
EP	kg PO ₄ ³ eq	2E-03	3.98E-05	1.09E-04	0	0	0	0	0	0	0	0	1.93E-05	0	6.26E-05	-8.16E-06
POCP	kg Ethen eq	7.27E-04	2.02E-05	4.08E-05	0	0	0	0	0	0	0	0	9.78E-06	0	5.67E-03	-2.1E-06
ADPE	kg Sb eq	2.37E-06	4.49E-07	2.15E-07	0	0	0	0	0	0	0	0	2.18E-07	0	7.8E-08	-7.35E-09
ADPF	MJ	31.289516	0.57672747153972	1.69052000335246	0	0	0	0	0	0	0	0	0.279258689001	0	1.321935865462	-0.0566320213

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 m²5 PROMATECT®-H

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5.83E+00	1.34E-02	2.95E-01	0	0	0	0	0	0	0	0	6.49E-03	0	5.28E-02	-6.45E-02
PERM	MJ	2.9746551	0	0.148732755	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	8.81E+00	1.34E-02	4.44E-01	0	0	0	0	0	0	0	0	6.49E-03	0	5.28E-02	-6.45E-02
PENRE	MJ	41.660216	0.59657240635236	2.21427935954743	0	0	0	0	0	0	0	0	0.288867855813	0	1.513096790328	-0.060426607182
PENRM	MJ	3.06E-02	0	1.53E-03	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	41.690813	0.59657240635236	2.21580920954743	0	0	0	0	0	0	0	0	0.288867855813	0	1.513096790328	-0.060426607182
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009964
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	1.87E-02	1.45E-04	9.68E-04	0	0	0	0	0	0	0	0	7.03E-05	0	1.41E-03	3.24E-06

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 m²5 PROMATECT®-H

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.62E-02	6.74E-04	9.59E-04	0	0	0	0	0	0	0	0	3.26E-04	0	2.47E-02	-1.57E-04
NHWD	kg	0.41352983	0.0392294090841528	0.029186939540417	0	0	0	0	0	0	0	0	0.01899537284374	0	4.79972096828	-0.002825672624256
RWD	kg	2.07E-04	3.71E-06	1.12E-05	0	0	0	0	0	0	0	0	1.79E-06	0	9.67E-06	-1.46E-07
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0.016702544	0	0.0107991272	0	0	0	0	0	0	0	0	0	0	0	0

MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

6. LCA: Interpretation

The impact assessment results are calculated using characterisation factors generated by the Centre of Environmental Science at Leiden University /CML2001- April 2013/, Netherlands.

resources (ADPe), total use of renewable primary energy (PERT), net use of freshwater (FW))

It can be seen that main contributions to the impact categories are coming from the production stage, more specifically from the raw material and the manufacturing.

For the manufacturing, impacts are mainly coming from:

The transport of the material to the building site, the waste treatment of the packaging and the end-of-life scenario of 100% landfill only contribute to a minor extent.

- Thermal energy (for GWP, ODP, AP, POCP, ADPf)

For the raw materials, impacts are mainly coming from:

- Electricity (for GWP, ODP, AP, EP, APDe)

- Cement

(for global warming potential (GWP), acidification potential (AP), abiotic depletion potential for fossil resources (ADPf), total use of non-renewable primary energy resources (PENRT))

Thermal energy and electricity are mainly used for drying the boards, autoclaving and preparing the raw materials.

- Hydrated lime (for ozone depletion potential (ODP), photochemical ozone creation potential (POPC))

- Cellulose

(for eutrophication potential (EP), abiotic depletion potential for non-fossil

7. Requisite evidence

As a general rule, all statements must be documented with measured data (presented by the corresponding test certificates). The methods of evidence and the test conditions have to be described together with the results.

Interpreting statements such as "... free of ..." or "... are entirely harmless ..." are not allowed.

If substances are not detected, the limit of detection must be included in the declaration.

If evidence required by the specific PCR part B is not provided, this has to be justified under the respective title for the required evidence.

If relevant for the scope of application of the declared product, or if derivable from its material composition, it is recommended

to provide additional adequate evidence.

7.1 Radioactivity

Radioactivity measurements on PROMATECT®-H confirm that no other gamma emitters than those originating from the natural radiation sources are contained. The measured radioactivity levels do not exceed the activity concentration indices as specified by the /Article 3 (Radiation Protection 112) for building products/ following the Council /Directive 96/29/. Activity concentration index ≤ 2 .

Date: 2 December 2011

Measuring agency : /SCK.CEN Laboratory for Gamma Spectrometry, Mol, Belgium/

Protocol : Activity concentration index (ACI) **7.2 Leaching**

Leaching

tests based on /EN 12457-2/ on PROMATECT®-H showed that no hazardous compounds were leached out.

Date: 17 June 2015

Measuring agency: /Eurofins Analyses pour l'Environnement/ France-Site de Saverne

7.3 VOC emissions

VOC

measurements confirmed compliance with the

requirements

of Agence française de sécurité de l'environnement et du travail (AFSSET) (2009) for use in the indoor environment.

(values in table below having "<" means that the measurements were below the quantification limit)

Name	Value	Unit
Total VOC after 28d (C-C16)	3,6	$\mu\text{g}/\text{m}^3$
R after 28d (c/LCI)	<1	-
Sum of VVOC after 28d (<n-C6)	<2	$\mu\text{g}/\text{m}^3$
Sum of SVOC after 28d (>n-C16)	<2	$\mu\text{g}/\text{m}^3$
Sum of carcinogens	<1	$\mu\text{g}/\text{m}^3$
Formaldehyd	<3	$\mu\text{g}/\text{m}^3$
Acetaldehyd	<3	$\mu\text{g}/\text{m}^3$

Date: 29 November 2011

Measuring agency: /Eurofins Product Testing A/S/,

Galten, Denmark

Report number: G10207B

8. References

Standards

EN 15804

EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

EN 15804

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025

EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

Further References

Title of the software/database

Title of the software/database. Addition to the title, version. Place: Publisher, Date of publication [Access on access date].

IBU 2021

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 www.ibu-epd.com

/PCR part A/

Product Category Rules for Building-Related Products and Services Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, version 1.7, date: 16.03.2018

/PCR part B/

Product Category Rules for Building-Related Products and Services Part B: Requirements on the EPD for Calcium silicate insulating materials, version 1.6, date: 30.11.2017

/ISO 9001/

UNI EN /ISO 9001:2015 September 2015/, Quality management systems - Requirements

**/(EU) No.
305/2011 (CPR)/**

Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance

/ETA 06/0206/
European Technical Assessment 06/0206 Version 1, date of issue: 2018-6-25

/EN 1607/

/NF EN 1607 May 2013/ Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces

/EN 1608/

/NF EN 1608 May 2013/ Thermal insulating products for building applications - Determination of tensile strength parallel to faces

/EN 12467/

/NF EN 12467 November 2012/ Fibre-cement flat sheets - Product specification and test methods

**/EN ISO
12572, method C/**

Hygrothermal performance of building materials and products -- Determination of water vapour transmission properties -- Cup method

/ISO 14001/

/UNI EN ISO 14001:2015/,Environmental management systems -- Requirements with guidance for use

/OHSAS 18001/

/OHSAS
18001:2007/ Occupational health and safety management systems. Requirements

**/ISO
15686/**

/ISO 15686-5:2017/ Buildings and constructed assets -- Service life planning -- Part 5: Life-cycle costing

/EN 13501-1/

/NF EN 13501-1+A1 February 2013/Fire classification of construction products and building elements - Part 1 : classification using data from reaction to fire tests

**/European
Waste Index/**

European waste catalogue and hazardous waste list, valid from January 2002, published by the Environmental Protection Agency, Ireland

**/ecoinvent
3.4/**

Weidema, B. P., Bauer, C., Hischer, R., Mutel, C., Nemecek, T., Reinhard, J., ... & Wernet, G. (2013). Overview and methodology: Data quality guideline for the ecoinvent database version 3.

/CML2001- April 2013/

**/Article 3
(Radiation Protection 112) for building products/**

Radiological Protection Principles concerning the
Natural Radioactivity of Building Materials, published in 1999 by
the Directorate-General
Environment, Nuclear Safety and Civil Protection

**/Council
/Directive 96/29/**

/Council Directive 96/29/Euratom/ of 13 May 1996
laying down basic safety standards for the protection of the
health of workers
and the general public against the dangers arising from ionizing
radiation

**/SCK.CEN
Laboratory for Gamma spectrometry/**

SCK•CEN Research Center MolBoeretang 200

2400 Mol

België

/EN 12457-2/

/NF EN 12457-2 December 2002/ Characterization of
waste - Leaching - Compliance test for leaching of granular
waste materials and
sludges - Part 2 : one stage batch test at a liquid to solid ratio of
10 l/kg
for materials with particle size below 4 mm (without or with size
reduction)

**/Eurofins
Analyses pour l'Environnement/**

Eurofins Analyses pour l'Environnement France

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67700, Saverne

France

**/Eurofins
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