

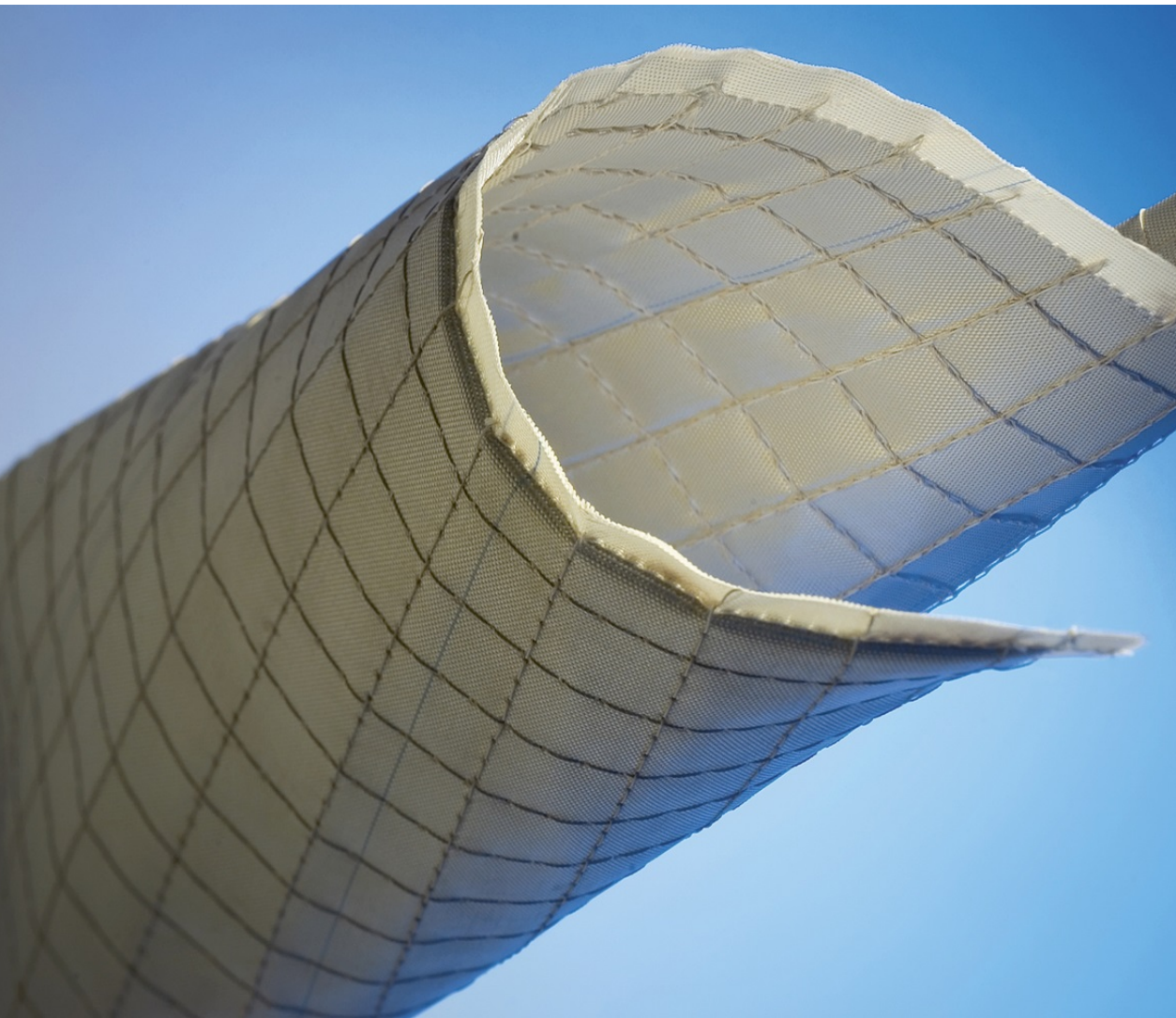
# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

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-ETE-20230096-IBA1-EN
Issue date	14.06.2023
Valid to	13.06.2028

**MICROTHERM® Flexible panels range: (Semi-)Overstitched Panels, (Semi-)Quilted Panels, Slatted Panels, Aeroguard (>160 kg/m<sup>3</sup>) and Slimflex ETEX**

[www.ibu-epd.com](http://www.ibu-epd.com) | <https://epd-online.com>



1. General Information

**ETEX**

**Programme holder**

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

**Declaration number**

EPD-EET-20230096-IBA1-EN

**This declaration is based on the product category rules:**

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

**Issue date**

14.06.2023

**Valid to**

13.06.2028



Dipl.-Ing. Hans Peters  
 (Chairman of Institut Bauen und Umwelt e.V.)



Dipl.-Ing. Hans Peters  
 (Managing Director Institut Bauen und Umwelt e.V.)

**MICROTHERM® Flexible panels range:  
 (Semi-)Overstitched Panels, (Semi-)Quilted  
 Panels, Slatted Panels, Aeroguard (>160 kg/m<sup>3</sup>)  
 and Slimflex**

**Owner of the declaration**

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

**Declared product / declared unit**

1 m<sup>2</sup> of MICROTHERM® Flexible panels range, including  
 (Semi-)Overstitched Panels, (Semi-)Quilted Panels, Slatted Panels,  
 Aeroguard (>160 kg/m<sup>3</sup>) and Slimflex

**Scope:**

This product is representative for the MICROTHERM® Flexible panels  
 range, including (Semi-)Overstitched Panels, (Semi-)Quilted Panels,  
 Slatted Panels, Aeroguard (>160 kg/m<sup>3</sup>) and Slimflex, produced by  
 MICROTHERM® (part of ETEX group) in Sint-Niklaas, Belgium.  
 The reference product used for this EPD is the MICROTHERM®  
 Overstitched panel 1000R and 1000R HY with a density of 220 kg/m<sup>3</sup> and  
 a thickness of 10 mm. A variability study has been performed in the LCA  
 background report to prove the representativeness.  
 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+A2. In  
 the following, the standard will be simplified as *EN 15804*.

**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



Vito D'Incognito,  
 (Independent verifier)

## 2. Product

### 2.1 Product description/Product definition

This EPD covers the **MICROTHERM® flexible panels**: (Semi-)Overstitched Panels, (Semi-)Quilted Panels, Slatted Panels, Aeroguard (> 160 kg/m<sup>3</sup>) and Slimflex range. These products are custom-made flexible microporous insulation panels. The panels are produced in a glass cloth outer envelope, making them clean and easy to handle. Stitching can be one-directional (2D flexure), or two-directional (3D flexure). The formulation is an opacified blend of filament-reinforced pyrogenic silica (alumina for 1200 grade). Some products use hydrophobic silica in the core to repel water. It is ideal for applications where contact with liquid water or condensation (dew point) is possible.

No EN or ETA norm for flexible panels as these products are not used in building & construction.

### 2.2 Application

Microporous insulation offers (an) extremely low thermal conductivity, close to the lowest theoretically possible at high temperatures. Microporous materials are the preferred choice when a large temperature reduction is required within a limited space, or when strict heat loss or surface temperature requirements are specified. Some specific examples of the application areas are provided in the table below.

#### OIL AND GAS

- petrochemical industry
- piping insulation
- back-up insulation in refractory lined pipes
- hot pipe support insulation
- filler material for mattresses
- cassettes
- expansion joints
- PFP (Passive Fire Protection)
- piping insulation (ideal for large diameters)
- back-up insulation in refractory lined pipes vessels and reactors

#### ENERGY

- turbine insulation
- pipe insulation
- small radius pipe insulation
- R&D centres – advanced research
- fuel cells
- piping insulation in power stations

#### HEAVY INDUSTRY

- rotary kiln insulation
- exhaust system
- hot air valves
- exhaust systems

#### TRANSPORTATION

- thermal batteries
- exhaust systems
- PFP of train floors
- heat shields
- 3D geometries
- aerospace
- Engine nacelles & thrust reversers

- automotive: exhaust, muffler

#### MARINE

- exhaust systems
- engines

### 2.3 Technical Data

#### Technical data

Name	Value	Unit
Thermal conductivity at 200 °C	0.025 - 0.035	W/mK
Gross density	160 - 350	kg/m <sup>3</sup>
Compressive strength	0.12 - 0.22	N/mm <sup>2</sup>

No EN or ETA norm for flexible panels as these products are not used in building & construction.

### 2.4 Delivery status

Product	Grade	Density	Standard sizes	Thickness range*	Stitching pitch
Microtherm (Semi-)Overstitched	1000R, 1000R HY & 1200	220, 260 & 350 (kg/m <sup>3</sup> )	1200x600 & 1200x900	3-15mm	50x50mm
MICROTHERM®(Semi-)Quilted Panel	1000R 1000R-HY 1200	220, 260 & 350 (kg/m <sup>3</sup> )	1200x600 & 1200x900	3-10mm	25x25mm
Microtherm Slatted	1000R 1000R-HY	240, 260 (kg/m <sup>3</sup> )	1000x700	3-25mm	
Aeroguard	1000R	160 - 220	1144X914 700X700	3 - 12.7mm	25x25mm
Slimflex	1000R-HY	260	8400x914	5 & 10mm	25x25mm

### 2.5 Base materials/Ancillary materials

Composition:

- (Hydrophobic) Fumed silica
- Rutile
- Glass fibre
- Fumed alumina
- Others

This product/article/at least one partial article contains substances listed in the *candidate list* (date: 16.12.2022) exceeding 0.1 percentage by mass: no

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (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

The production of microporous flexible panels goes through different steps. First of all the E-glass cloth bags are produced. They are cut to size from a roll, folded in 2 and stitched at 2 sides so one side is still open. In the meantime the raw materials are mixed together to get the appropriate mix, this is done on the mixing platform. From there the mix is sent to the filling station where the right amount of mix is filled into the glass cloth bag and the bag is closed at the 4 sides. This bag with the mix inside is then pressed in the pressing hall to the required thickness. After this step the panels go to the multi-needle where they are stitched in 1 or 2 directions to get a

flexible panel. These panels can be manipulated or machined or are the final product to be packed.

**2.7 Environment and health during manufacturing**

Environmental, occupational health, safety and quality management at the Sint-Niklaas plant are in accordance with the following standards:

- ISO 14001:2015
- ISO 9001:2015
- ISO 45001:2018

**2.8 Product processing/Installation**

Not considered in the scope of the EPD, as a wide range of different applications and installation scenarios can be applied.

**2.9 Packaging**

A wooden pallet, carton and plastic packaging are used to pack the product for transport to the installation/customer.

**2.10 Condition of use**

No maintenance is needed.

**2.11 Environment and health during use**

Under normal conditions of use, MICROTHERM panels do not cause any adverse health effects or release of volatile organic compounds (VOCs) into indoor air. No environmental impact on water, air or soil is expected due to the extremely low metal release from the low maintenance requirements.

**2.12 Reference service life**

The reference service life is not declared, as the EPD does not cover the use stage. The RSL depends on the application. Under normal conditions of use, the product is supposed to remain its characteristics as long as the application lasts.

**2.13 Extraordinary effects**

**Fire**

All microporous products are A1 non-combustible according EN13501,

**Fire protection**

Name	Value
Building material class	A1
Burning droplets	Not available
Smoke gas development	Not available

**Water**

Tests on the product performance including possible impacts on the environment following the unforeseeable influence of water, e.g. flooding showed that no risks are expected to occur in terms of environment and human health.

**Mechanical destruction**

In the case of mechanical destruction, no risks are expected to occur in terms of environment and human health.

**2.14 Re-use phase**

No reuse/recycling has been considered.

**2.15 Disposal**

Waste from these materials may be generally disposed off at a landfill, which has been licensed for this purpose. Please refer to the European list (Decision N° 2000/532/CE as modified) to identify your appropriate waste number, and ensure national and/or regional regulations are complied with.

Unless wetted, such a waste is normally dusty and so should be properly sealed in containers for disposal. At some authorised disposal sites, dusty waste may be treated differently in order to ensure they are dealt with promptly to avoid them being windblown. Check for any national and/or regional regulations, which may apply.

**2.16 Further information**

Additional information on MICROTHERM® Flexible panels can be found at:

<https://www.promat.com/en/industry/technologies/microporous-materials/high-temperature-insulation/>

**3. LCA: Calculation rules**

**3.1 Declared Unit**

The declared unit is defined as: 1 m<sup>2</sup> (thickness 10 mm) of a MICROTHERM® Flexible panel with a thermal conductivity between 0.025-0.035 W/mK at 200 °C.

**Declared unit**

Name	Value	Unit
Declared unit	2.2	kg
Gross density	220	kg/m <sup>3</sup>
Gammage	2.2	kg/m <sup>2</sup>
Layer thickness	0.01	m

The reference product used for this EPD is the MICROTHERM® Overstitched panel 1000R and 1000R HY with a density of 220 kg/m<sup>3</sup> and a thickness of 10 mm.

A variability study has been performed in the LCA background report to describe the variance with the other products included in the EPD, i.e. Quilted Panels, Slatted Panels, Aeroguard (>160 kg/m<sup>3</sup>) and Slimflex.

The environmental impact of a product can be considered to be proportional to the weight of the product, so products with another density and/or thickness can be calculated by the below formula. Note that the glass fibre is not proportional to the thickness, but to the surface area instead. However, as the glass fibre as little contribution to the environmental impact

compared to the core, one can still use the formula below.

$$E = W \cdot E_{ref} / W_{ref}$$

*E = environmental impact of a product with density d and thickness t*

*W = d \* t = weight of 1 m<sup>2</sup> product with density d and thickness t*

*E<sub>ref</sub> = environmental impact of the reference product with density 220 kg/m<sup>3</sup> and thickness 10 mm*

*W<sub>ref</sub> = weight of 1 m<sup>2</sup> reference product with density 220 kg/m<sup>3</sup> and thickness 10 mm*

**3.2 System boundary**

cradle to gate - with options, valid for the European market.

**3.3 Estimates and assumptions**

No data record for (hydrophobic) fumed silica and fumed alumina is available in Ecoinvent. Therefore, a customized model has been used, based on the stoichiometry of the chemical reaction and energy consumption provided by ETEX's supplier. During the production of fumed silica and fumed alumina, Hydrogen chloride (HCl) is produced as a co-product. Impacts have been allocated on an economic basis to both end products (fumed silica and HCl).

### 3.4 Cut-off criteria

The following processes are considered below cut-off:

- Transport of packaging of raw materials
- Infrastructure and land use of the factory
- Ancillary materials used during the manufacturing
- Environmental impacts caused by the personnel of the production plants are not included in the LCA, e.g. waste from the cafeteria and sanitary installations, accidental pollution caused by human mistakes, or environmental effects caused by commuter traffic. Heating or cooling of the plants in order to ensure a comfortable indoor climate for the personnel for example is also neglected.

### 3.5 Background data

Ecoinvent 3.8 and Industry 2.0

### 3.6 Data quality

Company-specific data concern the data about the production of MICROTHERM® Flexible panels range. All required data about the production process have been delivered to Enperas by MICROTHERM®. Enperas uses publicly available generic data for all background processes (Ecoinvent 3.8 and Industry 2.0).

The composed datasets for this project are representative and relevant for MICROTHERM® Flexible panels range produced by MICROTHERM® in Sint-Niklaas.

Data are as much as possible representative for the modern state-of-technology. As such, the period post 2008 is considered as the time coverage for the life cycle inventory data. The data collected by MICROTHERM® are based on data from the year 2021.

The MICROTHERM® plant in Sint-Niklaas purchases hydropower from Norway, so the electricity consumption has been modelled using the Ecoinvent 3.8 data record 'Electricity, high voltage {NO} electricity production, hydro, reservoir, alpine region | Cut-off, U'.

### 3.7 Period under review

The data collected by MICROTHERM® are based on data from the year 2021.

### 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

No co-products are produced.  
No secondary raw materials are used.

The following allocations have been considered for the production data:

- For the energy consumption specific data per production step was available. The production steps have been divided into steps that are common to all the products produced in the plant in Sint-Niklaas and steps that are specific to certain products. The energy consumption of the common production steps has been allocated to the individual product using the annual production volume of the product's materials (physical relationship, kg). Besides, the energy consumption in the specific steps only used for MICROTHERM® Flexible panels range, has been added to the energy consumption.
- Only facility level data were available for the production waste and the packaging of the final product. The production waste has been allocated to the individual product using the annual production volume of the products materials (physical relationship, kg).

### 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. Ecoinvent 3.8 and Industry 2.0

## 4. LCA: Scenarios and additional technical information

### Characteristic product properties biogenic carbon

The product does not contain biogenic carbon. Its accompanying packaging contains biogenic carbon in the form of wooden pallets, core boards and carton. Note: 1 kg of biogenic Carbon is equivalent to 44/12 kg of CO<sub>2</sub>.

### Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.139	kg C

### Installation into the building (A5)

Only packaging waste is included in module A5. As different applications and installation scenarios can be applied, the installation scenario itself is not included.

Name	Value	Unit
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### End of life (C1 - C4)

100% landfill scenario is considered as the average European scenario for flexible panels.

Name	Value	Unit
Collected separately waste type	-	kg
Collected as mixed construction waste	2.2	kg
Reuse	-	kg
Recycling	-	kg
Energy recovery	-	kg
Landfilling	2.2	kg

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

No benefits and loads regarding the product are allocated to module D, as the product is 100 % landfilled. However, some minor benefits and loads regarding the packaging of the product are allocated to module D.

Name	Value	Unit
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## 5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR 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	MND	X	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> MICROTHERM Flexible panel

Parameter	Unit	A1-A3	A5	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO <sub>2</sub> eq	7.99E+00	5.58E-01	2.87E-02	0	1.34E-02	-3.76E-01
Global Warming Potential fossil fuels (GWP-fossil)	kg CO <sub>2</sub> eq	8.32E+00	7.91E-02	2.87E-02	0	1.33E-02	-1.89E-01
Global Warming Potential biogenic (GWP-biogenic)	kg CO <sub>2</sub> eq	-3.81E-01	4.78E-01	1.03E-05	0	2.53E-05	-1.87E-01
Global Warming Potential luluc (GWP-luluc)	kg CO <sub>2</sub> eq	5.08E-02	4.61E-06	1.15E-05	0	9.84E-06	-3.3E-04
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	2.07E-06	2.51E-09	6.64E-09	0	4.94E-09	-1.46E-08
Acidification potential of land and water (AP)	mol H <sup>+</sup> eq	4.61E-02	7.53E-05	8.14E-05	0	1.18E-04	-6.55E-04
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	5.87E-04	1.23E-07	2.04E-07	0	4.09E-07	-7.33E-06
Eutrophication potential aquatic marine (EP-marine)	kg N eq	1.8E-02	3.15E-05	1.62E-05	0	4.02E-05	-1.26E-04
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	1.02E-01	3.12E-04	1.8E-04	0	4.44E-04	-1.41E-03
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	2.55E-02	9.26E-05	6.93E-05	0	1.26E-04	-5.57E-04
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	6.11E-05	2.92E-08	7.76E-08	0	3.16E-08	-5.8E-07
Abiotic depletion potential for fossil resources (ADPF)	MJ	1.39E+02	1.74E-01	4.35E-01	0	3.81E-01	-4.83E+00
Water use (WDP)	m <sup>3</sup> world eq deprived	1.61E+01	9.9E-04	1.32E-03	0	1.78E-03	-8.77E-02

### RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m<sup>2</sup> MICROTHERM Flexible panel

Parameter	Unit	A1-A3	A5	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	2.21E+01	1.37E+00	6.11E-03	0	1.97E-02	0
Renewable primary energy resources as material utilization (PERM)	MJ	4.36E+00	-2.75E+00	0	0	0	2.8E+00
Total use of renewable primary energy resources (PERT)	MJ	2.65E+01	-1.38E+00	6.11E-03	0	1.97E-02	2.8E+00
Non renewable primary energy as energy carrier (PENRE)	MJ	1.57E+02	1.09E+00	4.37E-01	0	3.91E-01	0
Non renewable primary energy as material utilization (PENRM)	MJ	2.86E+00	-1.75E+00	0	0	0	8.33E-01
Total use of non renewable primary energy resources (PENRT)	MJ	1.6E+02	-6.52E-01	4.37E-01	0	3.91E-01	8.33E-01
Use of secondary material (SM)	kg	0	0	0	0	0	3.08E-01
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m <sup>3</sup>	3.88E-01	1.08E-04	3.2E-05	0	4.1E-04	-1.92E-03

### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m<sup>2</sup> MICROTHERM Flexible panel

Parameter	Unit	A1-A3	A5	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1.31E-04	4.13E-07	1.13E-06	0	4.18E-07	-2.83E-06
Non hazardous waste disposed (NHWD)	kg	1.27E+00	1.51E-01	2.28E-02	0	2.2E+00	-1E-02
Radioactive waste disposed (RWD)	kg	5.37E-04	1.12E-06	2.94E-06	0	2.6E-06	-9.63E-06
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	1.9E-01	1.17E-01	0	0	0	-3.08E-01
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	3.26E-02	2.28E-01	0	0	0	-2.6E-01
Exported thermal energy (EET)	MJ	6.52E-02	4.55E-01	0	0	0	-5.21E-01

### RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m<sup>2</sup> MICROTHERM Flexible panel

Parameter	Unit	A1-A3	A5	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	4.81E-07	1.27E-09	2.3E-09	0	2.28E-09	-7.93E-09
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	5.03E-01	7.65E-04	1.89E-03	0	1.95E-03	-1.07E-02
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	5.99E+02	1.65E-01	3.41E-01	0	2.19E-01	-1.17E+00
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	7.06E-09	4.08E-11	1.1E-11	0	6.35E-12	-5.89E-11

Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	7.08E-07	2.72E-10	3.45E-10	0	1.29E-10	-1.37E-09
Soil quality index (SQP)	SQP	1.65E+02	1.76E-01	3.03E-01	0	7.19E-01	-2.14E+01

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. 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.

## 6. LCA: Interpretation

For MICROTHERM® Flexible panels produced in Belgium, the raw materials used in the formulation mix has the highest contribution on all impact categories, and more specific the fumed silica and fumed alumina. Also, the manufacturing is the

second most important life cycle stage (i.e. energy consumption), but far less than the raw materials. Module D is not significant as the product is not recycled nor incinerated.

## 7. Requisite evidence

No evidence is required

## 8. References

### Standards

#### EN15804

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

#### EN16757

EN 16757:2017, Sustainability of construction works— Environmental product declarations – Product Category Rules for concrete and concrete elements

#### ISO 9001

ISO 9001:2015: Quality management systems — Requirements

#### ISO 14001

ISO 14001:2015: Environmental management systems — Requirements with guidance for use

#### ISO 14025

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

#### ISO 14040

ISO 14040:2006: Environmental management – Life cycle assessment – Principles and framework.

#### ISO 14044

ISO 14044:2006: Environmental management – Life cycle assessment – Requirements and guidelines.

#### ISO 45001

ISO 45001:2018: Occupational health and safety management systems Requirements with guidance for use

#### PCR Part A

Calculation rules for the Life Cycle Assessment and Requirements on the Background Report, Institut Bauen und Umwelt e.V., [www.bauumwelt.com](http://www.bauumwelt.com).

#### PCR Part B

Institut Bauen und Umwelt e.V, Berlin (pub.): PCR Guidance- Texts for Building-Related Products and Services From the

range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU) : Requirements on the EPD for Mineral insulating materials

### Further references

#### Biocide Products No. 528/2012

EU, REGULATION (EU) No 528/2012 OF THE EUROPEAN PARLIAMENT

#### CPR

European Regulation N° 305/2011 (CPR)

#### Ecoinvent

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at:<http://link.springer.com/10.1007/s11367-016-1087-8>.

Enperas Quadrant tool. 2022. Genk, Belgium.

#### IBU

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](http://www.ibu-epd.com)

#### Industry 2.0

Industry 2.0 (from PlasticsEurope, worldsteel and ERASM). LCA database as integrated in SimaPro 9.3.0.3.

#### PEFCR

European commission (2018). Product Environmental Footprint Category Rules PEFCR Guidance, version 6.3.

Pré Consultants (2021) SimaPro 9.2.0.1 [Computer Software]. Amersfoort, The Netherlands.

#### REACH candidate list

ECHA, REACH Candidate List of substances of very high concern for Authorisation

The literature referred to in the Environmental Product Declaration must be listed in full. Standards already fully quoted in the EPD do not need to be listed here again.

The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.





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