Environmental Product Declaration

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

SOPRATHERM TB4000, SOPRATHERM GA4000, SOPRATHERM XR4000 AND SOPRATHERM CW4000

from

Soprema Group

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	This EPD refers to multiple products, based on a representative product.
EPD registration number:	EPD-IES-0026914:002
Version date:	2026-03-18
Validity date:	2030-11-14
	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

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 – Version 2.0.1*
PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com for a list of members*
c-PCR: *c-PCR-005 Thermal insulation products (EN 16783) (c-PCR to PCR 2019:14)*

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: *Elisabet Amat, GREENIZE* Approved by: International EPD System
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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
SOPREMA Group

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Address and contact information of the LCA practitioner commissioned by the EPD owner:
SGS Search, Meerstraat 7, 5473 AA Heeswijk Dinther.

Description of the organisation:
The SOPREMA Group is an independent group since its inception in 1908, Soprema specializes in the design and implementation of cutting-edge waterproofing systems and thermal and acoustic insulation solutions, in line with the requirements of sustainable construction. SOPREMA Group is a global leader in the construction materials industry, with a comprehensive industrial and commercial network comprising 128 production facilities, more than 120 branch offices, and over 70 authorized distributors. Operating in 90 countries, the Group supports its innovation strategy through 23 dedicated Research and Development (R&D) centers and 48 technical training centers worldwide. These facilities are instrumental in transferring over 100 years of technical know-how to new generations of professionals.

SOPREMA's product portfolio is developed through close collaboration between its Marketing and R&D teams to ensure alignment with market demands and evolving regulatory standards. The company's approach emphasizes innovation and continuous improvement, driven by a core focus on sustainable design and environmental responsibility.

SOPREMA provides a broad range of solutions for construction professionals, including synthetic and bituminous waterproofing membranes, thermal and acoustic insulation systems, liquid-applied products, and specialized materials for civil engineering applications. All products are engineered to deliver high performance in terms of durability, reliability, and longevity.

Environmental sustainability is integral to SOPREMA's business model. The company is committed to an eco-design approach, incorporating life cycle analysis (LCA) as a central component of its product development process. This approach enables the reduction of environmental impacts throughout the product life cycle, from raw material sourcing to end-of-life management.

Product information

Product name:
SOPRATHERM Insulation Panels

Product identification:
SOPRATHERM TB4000, SOPRATHERM GA4000, SOPRATHERM XR4000 AND SOPRATHERM CW4000

Product description:
SOPREMA's SOPRATHERM insulation panels are high-performance, polyisocyanurate (PIR) boards designed for use in waterproofing and thermal insulation applications. These insulation panels serve as both insulation and a waterproofing layer, making them suitable for installation on roofs, walls, and floors. The reference service life for all products is 50 years. No maintenance necessary for reaching the RSL.

The products in this EPD are manufactured at the following production site(s):

1. Lady Lane Industrial Estate, Hadleigh, Ipswich IP7 6BA, United Kingdom
2. Weeland Rd, Eggborough, Goole DN14 0FG, United Kingdom

Products included in the EPD:
The SOPRATHERM product variants TB, GA, XR, and CW are included in this EPD. The products differ primarily in their physical dimensions—specifically thickness, length, and width—as well as their packaging formats (measured in m² per pallet). However, the core composition and material ratios remain consistent across all variants. As a result, these

product types are grouped within a single EPD, as their environmental impacts per functional unit are representative and comparable.

SOPRATHERM CW4000 - Is a Lightweight 1200 x 450mm rigid thermal insulation board made of polyisocyanurate (PIR) foam. The boards are provided on both sides with a low emissivity aluminium composite foil facing. Available in thicknesses from 25mm to 100mm

Applications: CW4000 is suitable for use in partial fill cavity wall applications.

SOPRATHERM TB4000 - is a rigid thermal insulation board 1200 x 2400mm made of polyisocyanurate (PIR) foam. The boards are provided on both sides with a low emissivity aluminium composite foil facing. Available in thicknesses from 20mm to 45mm

Applications: TB4000 is mainly used as thermal insulation in roof, wall and floor applications.

SOPRATHERM GA4000 - is a rigid thermal insulation board 1200 x 2400mm made of polyisocyanurate (PIR) foam. The boards are provided on both sides with a low emissivity aluminium composite foil facing. Available in thicknesses from 50mm to 100mm

Applications: GA4000, is mainly used as thermal insulation in roof, wall and floor applications

SOPRATHERM XR4000 - is a rigid thermal insulation board 1200 x 2400mm made of polyisocyanurate (PIR) foam. The boards are provided on both sides with a low emissivity aluminium composite foil facing. Available in thicknesses from 110mm to 200mm.

Applications: XR4000, is mainly used as thermal insulation in roof, wall and floor applications.

	CW4000	GA4000	TB4000	XR4000
Thickness (mm)	25 ≤ d ≤ 100	50 ≤ d ≤ 100	20 ≤ d ≤ 45	110 ≤ d ≤ 200
Thermal conductivity insulation - λ_D (W/(m.K)) (EN 12667)	0.022	0.022	0.022	0.022
Thermal resistance - R_D (m².K/W)	1,10-4,50	2,25-4,50	0,90-1,80	5,00-9,05
Length (mm) (EN 822)	1200 ± 7,5	2400 ± 10	2400 ± 10	2400 ± 10
Width (mm) (EN 822)	450 ± 5	1200 ± 7,5	1200 ± 7,5	1200 ± 7,5
Thickness tolerance - d_N (mm) (EN 823)	T2	T2	T2	T2
Density (kg/m³)	NPD	NPD	NPD	NPD
Edge profile	straight	straight	straight	straight
Compressive strength at 10% deformation (kPa) (EN 826)	CS(10\Y)120	CS(10\Y)140	CS(10\Y)120	CS(10\Y)140
Dimensional stability (%) (EN 1604)	DS(70,90)3	DS(70,90)3	DS(70,90)3	DS(70,90)3
	DS(-20,-)1	DS(-20,-)1	DS(-20,-)1	DS(-20,-)1
Long term water absorption by total immersion (%) (EN 12087)	NPD	NPD	NPD	NPD
Reaction to fire (EN 13501-1)	F	F	F	F
Water vapour diffusion resistance - μ (EN 12086)	NPD	NPD	NPD	NPD
Tensile strength perpendicular to faces (kPa) (EN 1607)	NPD	NPD	NPD	NPD
Durability of compressive creep against ageing/degradation (kPa) (EN 1606)	NPD	NPD	NPD	NPD

Further information can be found at www.soprema.com or Celotex.co.uk

Declared Product and Justification for Representation:

In accordance with the requirements of the International EPD System and relevant PCR, similar products manufactured by the same company, using the same core production processes, and covered under the same PCR, may be grouped within a single EPD.

This EPD includes multiple SOPRATHERM PIR insulation board variants (TB, GA, XR, CW), all produced by SOPREMA at two UK manufacturing sites (Hadleigh and Eggborough), using identical raw materials and major processing steps.

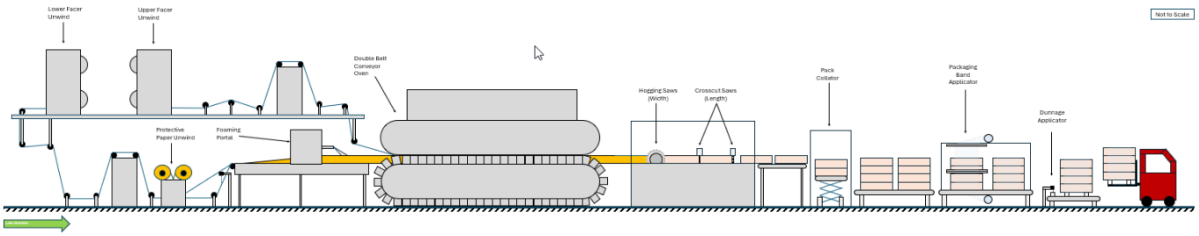
Environmental impacts are declared for a single representative product, SOPRATHERM TB4025, selected based on its highest production volume during the reference year.

The use of production volume as a statistical parameter ensures that the declared results accurately reflect the most representative product in the group. Since the product variants only differ in physical dimensions of the core and packaging configurations, while maintaining consistent composition and formulation, the TB4025 is considered suitable to represent the environmental profile of the entire product group.

UN CPC code:
54650 Insulation services

Geographical scope:
SOPRATHERM Insulation Boards are manufactured at two production sites in the United Kingdom: Hadleigh and Eggborough. The geographical scope considered for the use and end-of-life stages of the product's life cycle assessment has been defined as Global.

Manufacturing Process
PIR insulation boards are formed through a reaction of components, polyol, Isocyanate (MDI) and various other additives including water, catalysts, blowing agents and flame retardant. These are components are poured via the foaming panel onto the base aluminium foil facer and then expands to meet the top layer, before going through a heating and cutting process to create a finished product of various dimensional and thicknesses values.



LCA information

Functional unit / declared unit:
The declared unit is 1 m² of installed product. The mass of the insulation panel per declared unit for the product TB4025 is 0,807 kg/m^2.

The SOPRATHERM TB4025 is used as reference product, as it is considered as the most representative product and is among the most produced products in the reference year of this study. This product has a thickness of 25 mm and a R_d value of 1,10 m^2.K/W.

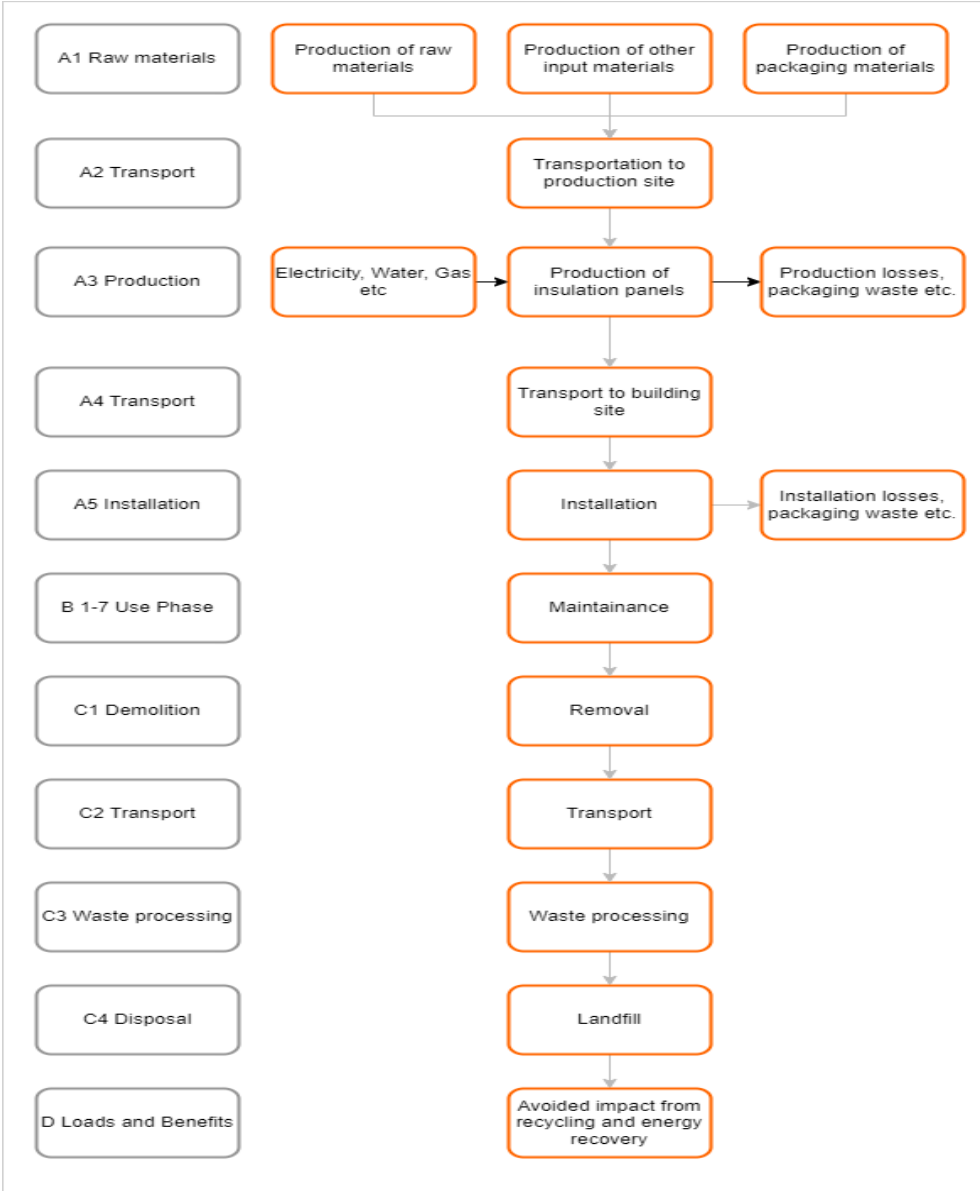
Reference service life:
The reference service life (RSL) of the insulation panels is considered to be 50 years based of the RSL of buildings.

Time representativeness:
Production data was obtained over the year 2024.

Database(s) and LCA software used:
ecoinvent 3.9.1; Plastic Europe for MDI and Polyol data; SimaPro 9.5.0.0.

Description of system boundaries:
Cradle to grave and module D (A + B + C + D).

System diagram:



Product Life Cycle

Manufacturing and packaging (A1-A3):
Modules A1–A3 cover the product stage, including the extraction and processing of raw materials (A1), transport to the manufacturing site (A2), and the manufacturing processes (A3). The environmental impacts associated with this stage include:

- Production of raw materials and ancillary substances used in the manufacturing of the product and its packaging.
- Energy consumption and fuel use during manufacturing.
- Emissions and waste generated during production.
- Material losses during manufacturing and electricity transmission.

The primary raw materials used in the production of the SOPRATHERM insulation boards include polyol, methylene diphenyl diisocyanate (MDI), various additives, aluminium foil facers, and adhesives. Plastic film is used for packaging the finished product. The packaged product is stored and transported using expanded polystyrene (EPS) bearers and wooden pallets.

Transport (A4):
This module includes the transportation of finished SOPRATHERM insulation boards from production sites to customers across various regions in Europe. The distribution routes vary by product and production location. Soprema provided detailed data on distribution distances, which were used to calculate transport impacts. Although some shipments may involve overseas transport (e.g., via ferry or the Eurotunnel), transport by lorry was conservatively assumed as it covers the largest share or products.

The average transport distances for each production site are summarised below:

Production location	Distance A4 (km)
Hadleigh	212
Eggborough	335

Installation (A5):
Installation of SOPRATHERM insulation panels is performed manually. Panels are typically fixed using mechanical fasteners or adhesive bonding, depending on the application. Due to the high variability in installation methods, these processes are excluded from the study. However, an average installation loss of 2% is assumed.

This module also includes the end-of-life treatment of packaging materials, knowing: pallet, plastic film, and EPS bearers. Disposal scenarios are based on the UK's Extended Producer Responsibility for Packaging guidance published by DEFRA.

Material	Incinertion	Recycling
Paper	19%	81%
Wood	61%	39%
Plastic	49%	51%
PIR bearers	49%	51%

Product use and Maintenance (B1-B7):
No maintenance is required once the product has been installed. SOPRATHERM insulation boards are known for their durability and can remain effective throughout the service life of a building, provided they are properly installed and protected from ultraviolet (UV) exposure and physical damage.

End of life (C1-C4):
At the end of life, the insulation panels are assumed to be manually removed without significant energy or resource consumption.

The waste is first transported by lorry to a waste sorting facility, from the sorting facility, the materials are then transported to a landfill site with a total transport distance of 80 km. The transport is modelled using lorry transport as the most common method. It is assumed that 100% of the product waste is sent to landfill for final disposal.

Benefits Beyond the System Boundary (D):
Module D accounts for potential environmental

benefits from energy recovery and material recycling processes that occur beyond the system boundary. These benefits are modelled as avoided burdens, representing the substitution of conventional energy sources such as district heating and electricity.

Cut-off Criteria:
The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Allocation, Estimates and Assumptions:
Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 m^2 of the product, which is used within this study, are calculated by considering the total product weight for one year of production. The product output is fixed to 1 m^2 and the corresponding amount of product is used in the calculations.

In the production plant, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the produced product output fixed to 1 m^2 and the corresponding amount of product is used in the calculations.

In order to divide impacts over the main products (as declared in this EPD) and B-grade products, economic allocation was applied on the inputs and energy consumption in manufacturing.

Allocation used in Ecoinvent 3.9.1 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard. This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below.

Module A1: Within the product stage accurate data has been used. In case products that are not available in the database, those are modelled as close to reality as possible using proxy, representative datapoint.

Module A3: In the plant, different products are produced. Therefore, electricity and natural gas are allocated on yearly consumption and allocated based on mass

For electricity consumption a specific electricity mix purchased from an electricity supplier has been used. The electricity mix originates from renewable sources which consists largely of wind, solar and hydro which has an impact of 3,23E-2 kg CO2 eq./kWh GWP-GHG.

Module A4: Transportation doesn't cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 0,5 for the packaged products. Additionally, transportation distances are averaged delivery in the last year.

Module A5: Energy consumption and used ancillary materials during installation are not considered. The end-of-life treatment of packaging materials such as pallets, plastic film, and EPS bearers are based on the scenario given by UK's Extended Producer Responsibility for Packaging guidance published by DEFRA. The distance is assumed as 50 km and the transportation method assumed to be lorry.

Module C1: The impacts of the disassembly from manual dismantling at end-of-life product stage are considered. Default values from PCR are considered (1,1kWh/tonne for demolition).

Module C2: The waste transported distance to the waste sorting facility from the sorting facility, the materials are then transported to a landfill site, with a total distance of 80km.

Module C3, C4, D: According to the manufacturer's information, 100% of waste is taken to landfill for final disposal.

Module D considers the benefits of recycling and energy recovery which replaces district heat and electricity. This only applies to the product's packaging as the product itself is send to landfill, for which not avoided impacts are considered

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	UK	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Primary data used	13%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	>95% / -10%*					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10 %					-	-	-	-	-	-	-	-	-	-	-	-

*The variation between the products is due to its sensitivity to the Polystyrene content in the product. As the share of polystyrene is dependent on specific product and it's respective thickness, no linear trend can be established. The variations are determined by calculating the results for each individual product, as shown in the sensitivity analysis.

Data Quality assessment

The inventory analysis was based on a combination of specific and generic data. Site-specific primary data were collected by Soprema for the year 2024, reflecting actual operations and considered to be of high quality and representative of current production conditions. A comprehensive data quality assessment was conducted in accordance with EN 15941. Each dataset was evaluated for representativeness in terms of technology, geography, and time, as well as for completeness and consistency. The raw material datasets sourced from Ecoinvent demonstrated good technological, geographical, and temporal representativeness. The manufacturing phase was modelled using site-specific data that accurately reflect the processes at Soprema's Eggborough and Hadleigh facilities. No datasets were identified as having poor or very poor data quality.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product	Collected data	EPD owner	2024	Primary data	3,5%
Generation of electricity used in manufacturing of product	Energy contracts	EPD owner	2024	Primary data	0,3%
Transportation of raw materials to the manufacturing facilities	Collected data	EPD owner	2024	Primary data	1%
MDI production data	Report	Plastics Europe (ISOPA)	2025	Secondary data	0%
Polyol Production data	Report	Plastics Europe (ISOPA)	2025	Secondary data	0%
Production of Facing	Database	Ecoinvent v3.9.1	2020	Primary data	9%
Production of Additives	Database	Ecoinvent v3.9.1	2020	Secondary data	0%
Packaging production	Database	Ecoinvent v3.9.1	2020	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					13,8%

Content information

The composition of the representative product is provided in the table below, along with the packaging material composition.

Product components	Mass, %	Post-consumer material, mass-%	Biogenic material, mass-% and kg C/kg
Methylene Diphenyl Diisocyanate (MDI)	40-80%	0%	0 % resp. 0
Facings	10-40%	0%	4,2 % resp 0.034
Cyclopentane	1-20%	0%	0 % resp. 0
Additives	1-20%	0%	0 % resp. 0
TOTAL	100 %	0%	0,5-5% resp. 0,02-0,05
Packaging materials	**Mass, kg/m^2**	**Mass-% (versus the product)**	**Biogenic material, kg C/product or declared unit**
Film LDPE	8,9E-03	1,1 %	0
Label	6,5E-05	0,008 %	1,78E-05
Pallet (EPS)	0,006	0,77 %	0
TOTAL	0,07	1,88 %	1,78E-05

Based on our knowledge, no substance listed as a candidate for Authorization (Candidate List SVHC) or subject to Authorization (Annex XIV - REACH) is contained in the product at a concentration greater than 0.1% weight/ weight.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

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. When interpreting the results of the product stage (modules A1–A3), it is important to also consider the outcomes of the end-of-life stage (modules C1–C4). Additionally, biogenic carbon flows leaving the product system in modules A5 and C have already been accounted for and balanced within modules A1–A3.

The results presented are based on 1 m2 of the representative product TB4025. This product has a thickness of 25mm and 0,81kg/m2

Results per functional or declared unit.

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	2,72E+00	2,04E-02	1,39E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,93E-04	4,79E-03	0,00E+00	7,62E-02	-1,00E-02
GWP-fossil	kg CO_2 eq.	2,66E+00	2,04E-02	1,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,93E-04	4,79E-03	0,00E+00	7,62E-02	-1,00E-02
GWP-biogenic	kg CO_2 eq.	7,06E-03	1,38E-06	1,31E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,92E-08	3,23E-07	0,00E+00	1,96E-05	-2,38E-05
GWP-luluc	kg CO_2 eq.	5,59E-02	4,14E-07	9,80E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-08	9,71E-08	0,00E+00	4,17E-07	-9,03E-06
ODP	kg CFC 11 eq.	8,01E-06	4,57E-10	1,41E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,62E-12	1,07E-10	0,00E+00	6,70E-11	-1,37E-10
AP	mol H^+ eq.	9,54E-03	2,64E-05	2,74E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,80E-06	6,18E-06	0,00E+00	4,96E-05	-3,53E-05
EP-freshwater	kg P eq.	9,82E-05	1,66E-08	1,80E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,51E-10	3,89E-09	0,00E+00	1,04E-08	-3,88E-07
EP-marine	kg N eq.	2,09E-03	6,48E-06	8,40E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E-06	1,52E-06	0,00E+00	9,61E-04	-6,36E-06
EP-terrestrial	mol N eq.	2,04E-02	6,27E-05	6,42E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,43E-05	1,47E-05	0,00E+00	2,53E-04	-7,03E-05

POCP	kg NMVOC eq.	7,78E-03	4,95E-05	7,34E-04	1,44E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,21E-06	1,16E-05	0,00E+00	4,06E-03	-3,72E-05
ADP-minerals &metals *	kg Sb eq.	3,89E-07	7,27E-10	9,54E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,23E-11	1,70E-10	0,00E+00	2,33E-10	-4,10E-10
ADP-fossil*	MJ	5,93E+01	2,81E-01	2,07E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,85E-03	6,59E-02	0,00E+00	7,41E-02	-3,06E-01
WDP*	m^3	5,21E-01	2,58E-04	1,02E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,94E-06	6,03E-05	0,00E+00	2,15E-04	-7,88E-03
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

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

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	2,72E+00	2,04E-02	1,39E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,93E-04	4,79E-03	0,00E+00	7,62E-02	-1,00E-02

Resource use indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6,47E+00	7,39E-04	1,89E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,50E-06	1,73E-04	0,00E+00	2,10E+00	-1,79E-02
PERM	MJ	2,09E+00	0,00E+00	-1,43E-02	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	0,00E+00	-2,08E+00	0,00E+00
PERT	MJ	8,56E+00	7,39E-04	1,74E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,50E-06	1,73E-04	0,00E+00	2,27E-02	-1,79E-02
PENRE	MJ	4,40E+01	2,99E-01	2,67E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,10E-03	7,01E-02	0,00E+00	1,61E+01	-3,27E-01
PENRM	MJ	1,64E+01	0,00E+00	-3,83E-01	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	0,00E+00	-1,60E+01	0,00E+00
PENRT	MJ	6,05E+01	2,99E-01	2,29E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,10E-03	7,01E-02	0,00E+00	7,76E-02	-3,27E-01
SM	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	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

[1] 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.

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,84E-02	1,17E-05	6,15E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,81E-07	2,74E-06	0,00E+00	7,53E-05	-1,34E-04
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,50E-04	1,86E-06	1,29E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,57E-08	4,35E-07	0,00E+00	3,54E-07	-1,95E-07
Non-hazardous waste disposed	kg	2,79E-01	1,37E-05	2,12E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E-07	3,21E-06	0,00E+00	7,92E-01	-1,38E-04
Radioactive waste disposed	kg	8,34E-04	2,41E-08	1,46E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,88E-10	5,65E-09	0,00E+00	3,06E-07	-6,37E-07

Output flow indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	4,03E-05	0,00E+00	3,68E-05	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	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,41E-04	0,00E+00	4,95E-03	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	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	2,14E-03	0,00E+00	6,56E-03	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	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	1,50E-02	0,00E+00	4,89E-02	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	0,00E+00	0,00E+00	0,00E+00

Exported energy, thermal	MJ	2,59E-02	0,00E+00	8,41E-02	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	0,00E+00	0,00E+00	0,00E+00

Single Score value

The single score value presents the result obtained after characterisation using a common reference impact, followed by aggregation into a single score that assigns different weights to various impact categories. It is calculated using JRC Environmental Footprint (EF) weighting factors

Single Score	2,49E+03

Additional environmental information

Sensitivity analysis for variation in thickness

Variation in the Climate Change total values for the insulation boards with different thickness compared to the representative was analysed, resulting in the table below. In order to understand the consequences for the Climate Change total score, the following formula is used.

Y = X*Variation

Where:

X – environmental impact value obtained for the representative product
Y – interpolated value for the new board thickness

Product range name	Board thickness (mm)	Variation
SOPRATHERM TB/GA/XR	20	0,89
	25	1,00
	30	1,15
	35	1,02
	40	1,45
	50	1,77
	60	2,02
	70	2,31
	75	2,30
	80	2,61
	90	2,84
	100	3,11
	110	3,60
	120	3,74
	130	3,92
	140	4,30
	150	4,49
	165	5,03
	200	6,30
SOPRATHERM CW	40	1,61
	50	1,77
	60	2,09
	75	2,50
	85	2,85
	100	3,23

In addition to the above analysis on variation in GWP in A1-A3, the variation over A1-C4 per impact category is calculated and shown in the table below. The main cause of the variation is the thickness of the products, as the amount of material per square meter is highly dependent on the thickness of the product. Between some products the percentage of secondary material deviates, causing variations in the results. The table summarizes the declared product as well as the deviation with the lowest and highest score measures in the product group.

LCA result of one declared unit product (A-C)	Unit	Min - %	Representative	Max - %
GWP-total	kg CO_2 eq.	-11%	2,96E+00	513%
GWP-fossil	kg CO_2 eq.	-11%	2,90E+00	519%
GWP-biogenic	kg CO_2 eq.	-4%	7,23E-03	365%
GWP-luluc	kg CO_2 eq.	-22%	5,70E-02	234%
ODP	kg CFC 11 eq.	-4%	8,17E-06	828%
AP	mol H^+ eq.	-6%	9,91E-03	327%
EP-freshwater	kg P eq.	-6%	1,00E-04	496%
EP- marine	kg N eq.	-10%	3,15E-03	458%
EP-terrestrial	mol N eq.	-8%	2,14E-02	428%
POCP	kg NMVOC eq.	-12%	1,41E-02	480%
ADP-minerals&metals	kg Sb eq.	-12%	4,01E-07	525%
ADP-fossil	MJ	-13%	6,19E+01	591%
WDP	m_3	-8%	5,33E-01	386%
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption			

ABBREVIATIONS

All abbreviations used in the are presented as below.

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
DEFRA	Department for Environment, Food & Rural Affairs
PCR	Product Category Rules
LCA	Life Cycle Assessment
PIR	polyisocyanurate
MDI	Methylene diphenyl diisocyanate
UV	ultraviolet

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