ENVIRONMENTAL PRODUCT DECLARATION

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

Unirol Plus

This EPD covers Unirol Plus products with thicknesses from 50 mm to 240 mm. The full list of included products is provided in the Product Information section.

Version date: 2026/05/06
Validity: 5 years
Validity date: 2031/05/05
EPD of multiple products based on a representative product

The International EPD® System
Programme operator: EPD international AB
Registration number: EPD-IES-0027094:001

Isover, Saint-Gobain

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
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PCR information

Product Category Rules (PCR)

CEN standard EN 15804:2012 + A2:2019/AC:2021 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction Products, version 2.0.1
Complementary PCR: (c-PCR-005), 2019-12-20. Thermal insulation products (EN 16783:2017)

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.

Chairs of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair).

Verification

External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through:

☒ Individual EPD verification without a pre-verified LCA/EPD tool
☐ Individual EPD verification with a pre-verified LCA/EPD tool
☐ EPD process certification* without a pre-verified LCA/EPD tool
☐ EPD process certification* with a pre-verified LCA/EPD tool
☐ Fully pre-verified EPD tool

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☒ EPD verification by Joanna Zhuravlova, Cradle Metrics

Approved by: The International EPD© System

Procedure for follow-up of data during EPD validity involves third part verifier: ☐ Yes ☒ No

Ownership and limitation on use of EPD

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterization factors); and be valid at the time of comparison.

Information about EPD owner

Address and contact information of the EPD owner: Saint-Gobain Construction Products Polska Sp. z o.o. – ISOVER
Description of the organization of the EPD owner: Saint-Gobain Construction Products Polska Sp. z o.o. is a manufacturer of construction materials, operating production sites in Poland.
The company is part of the Saint-Gobain Group and supplies products for the building and renovation market.
Management system-related certification: The manufacturer has implemented the principles of Factory Production Control (FPC). Certificate of consistency of Performance issued by notified body. The products have a declaration of performance in accordance with the requirements of the CPR and EN 14303 in System 1 and System 3 The Assessment and Verification of Constancy of Performance (AVCP)
LCA Practitioner: Gabriela Kania, e-mail: gabriela.kania@saint-gobain.com, Aneta Jarosz aneta.jarosz@saint-gobain.com
Communication: The intended use of this EPD is for B2B communication.

Product information

Product name: Unirol Plus
Visual representation of the product: Unirol Plus
UN CPC CODE: 37990 Non-metallic mineral products n.e.c. (including mineral wool, expanded mineral materials, worked mica, articles of mica, non-electrical articles of graphite or other carbon and articles of peat)
Manufacturing site(s): **Saint-Gobain Construction Products Polska Sp. z o. o. –** ISOVER, ul. Okrężna 16; 44-100 Gliwice (Poland)

Product description

This Environmental Product Declaration (EPD) describes the environmental impacts of 1 m2 of mineral wool with a thermal resistance of 2,85 $m^2 \cdot K/W$ of Unirol Plus. To calculate the impact of the range of commercial thicknesses between 50 to 240mm, see table “influence of particular thickness” in additional information.

Included products

This EPD includes a product family with different thicknesses ranging from 50 mm to 240 mm. The declared results refer to a representative product with a thickness of 100 mm.

The representative product (100 mm) has been selected based on its production volume and its representativeness within the product range. It reflects typical production conditions and material composition of the Unirol Plus product family.
Unirol Plus 50 mm
Unirol Plus 60 mm
Unirol Plus 80 mm
Unirol Plus 100 mm (representative product)
Unirol Plus 120 mm
Unirol Plus 140 mm
Unirol Plus 150 mm
Unirol Plus 160 mm
Unirol Plus 180 mm
Unirol Plus 200 mm
Unirol Plus 220 mm
Unirol Plus 240 mm

The intended use of this EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

The production site of Saint-Gobain Construction Products Polska Sp. Z o. o.- Isover uses natural and abundant raw materials (sand), using fusion and fiberizing techniques to produce glass wool. The products obtained come in the form of a "mineral wool mat" consisting of a soft, airy structure. On Earth, naturally, the best insulator is dry immobile air at 10°C: its thermal conductivity factor, expressed in λ is 0,035 W/(m·K) (watts per meter Kelvin degree). The thermal conductivity of mineral wool is close to immobile air as its lambda varies from 0,030 W/(m·K) for the most efficient to 0,040 W/(m·K) to the least.

With its entangled structure, mineral wool is a porous material that traps the air, making it one of the best insulating materials. The porous and elastic structure of the wool also absorbs noise in the air, knocks and offers acoustic correction inside premises. Mineral wool containing incombustible materials does not fuel fire or propagate flames.

Mineral wool insulation (glass wool) is used in buildings as well as industrial facilities. It ensures a high level of comfort, lowers energy costs, minimizes carbon dioxide (CO2) emissions, prevents heat loss through pitched roofs, walls, floors, pipes and boilers, reduces noise pollution and protects homes and industrial facilities from the risk of fire.

Correctly installed glass wool products and solutions do not require maintenance and last throughout the lifetime of the building (which is set at 50 years as a default value in the model), or as long as the insulated building component is a part of the building.

For more information: www.isover.pl

Technical data/physical characteristics:

TECHNICAL ASPECT	VALUE / DESCRIPTION
Thermal resistance	2,85 $m^2 \cdot K/W^{-1}$ (EN 12667)
Thermal conductivity	0,035 W/(m·K) (EN 12667)
Reaction to fire	A1 (EN 13501-1)
Density	16,5 kg/m^3

APPLICATION	VALUE / DESCRIPTION
Intended use and key functionalities	Internal use in buildings: roofs, walls and floors
Expected influence on the operational aspects and impact of the building or other construction work	Insulation significantly impacts both the operational performance and environmental footprint of a building. It reduces energy consumption, lowers heating and cooling costs, enhances indoor comfort, and minimizes the building's carbon footprint
Restrictions to a type of construction or building	To reduce thermal bridges in a pitched roof, a two-layer thermal insulation system (along and across the rafters) is recommended."
Lifespan	50 years

Content declaration

This EPD uses 100 mm thickness as a reference. The content declaration is representative of this thickness.

Description of the main components and/or materials:

Quantity for 1 functional unit	1 m² of product with a thickness of 100 mm			
Product components	**Mass (%)**	**Post-consumer recycled material (mass - % of product)**	**Biogenic material (mass - % of product)**	**Biogenic material (kg C/DU)**
Mineral materials	94-97	0	0,0%	0,00E+00
> Recycled glass	55-65	0,0%	0,0%	0,00E+00
Binder	3-6	0,0%	0,000%	0,00E+00
Sum	**100%**	0%	0,00%	0,00E+00
Packaging materials	**Mass (%)**	**Mass - % (vs the product)**	**Biogenic material, weight- kg C/DU**	
Low-density polyethylene (LDPE) film	10-20	1,06%	0,00%	
Paper label - w/o adhesive	1-2	0,09%	0,10%	
Thermal ribbon	0-1	0,01%	0,00%	
Wooden Pallet	80-90	5,46%	5,93%	

Hazardous substances

At the date of issue of this declaration, there is no “Substance of Very High Concern” (SVHC) in concentration above 0.1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

LCA Information

TYPE OF EPD	Cradle to grave and module D
FUNCTIONAL UNIT	Providing a thermal insulation on 1 m^2 of product with a thermal resistance of 2,85 $m^2 \cdot K/W^{-1}$ and a thickness of 100 mm for 50 years.
CONVERSION FACTOR TO MASS	Density = 16,5 kg/m^3 for all thicknesses. Except 50mm presenting a 16kg/m^3 density
SYSTEM BOUNDARIES	Cradle to grave and module D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the insulation product is 50 years, provided that the product is installed correctly into the building. This 50-year value is the amount of time that we recommend our products last without refurbishment and corresponds to standard building design life.
CUT-OFF RULES	In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than 5% of the whole mass and energy used, as well as the emissions to the environment occurred. Flows related to human activities, such as employee transport, are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
ALLOCATIONS	Allocation has been avoided when possible, and when not possible, a mass allocation has been applied. The polluter-pays principle and the modularity principle have been followed. **Allocation of materials for recycling:** **- Pre-consumer: When a flow enters the manufacturing process (A1–A3), it is considered as an incoming co-product that carries a fraction of the impact of the original manufacturing process where it was generated (which might be 0, e.g. in case of an economic allocation with a negligible (<1%) economic value).** The incoming flow does not contribute to module D nor Secondary Materials indicator. Pre-consumer cullet is considered a product with 0 impact following an economic allocation (the value of cullet is <1% of that of the glass). **Recycled material used in this study is modelled as an external secondary raw material using datasets representing recycled glass. The dataset "GLO: glass cullet supply, for Saint-Gobain ISOVER SA" from ecoinvent 3.10 is applied.** The applied dataset includes environmental impacts associated with the preparation and supply of recycled glass, and transport to the manufacturing site is modelled separately.

	In the LCA model, this input is included in the raw material category (“Wool”) and its impacts are accounted for within modules A1–A3. A contribution analysis (GWP-GHG A1–A3) confirms that external cullet represents less than 1% of the total impact. Since the contribution is below the 10% threshold, the intensity is not separately declared.
DATA QUALITY ASSESSMENT	Data quality of primary and secondary data had been judged by its precision (measured, calculated, or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied), and representativeness (geographical, technological, and temporal).
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Data is collected from one production site Saint-Gobain Construction Products Polska Sp. z o. o. production site ISOVER located in Poland Data collected for the year 2024
BACKGROUND DATA SOURCE	Databases Sphera CUP2024.2 and ecoinvent v.3.10 GWP100, EN 15804+A2. Version: EF 3.1, February, 2023
SOFTWARE	Sphera LCA for experts (GaBi) 10

Data quality declaration

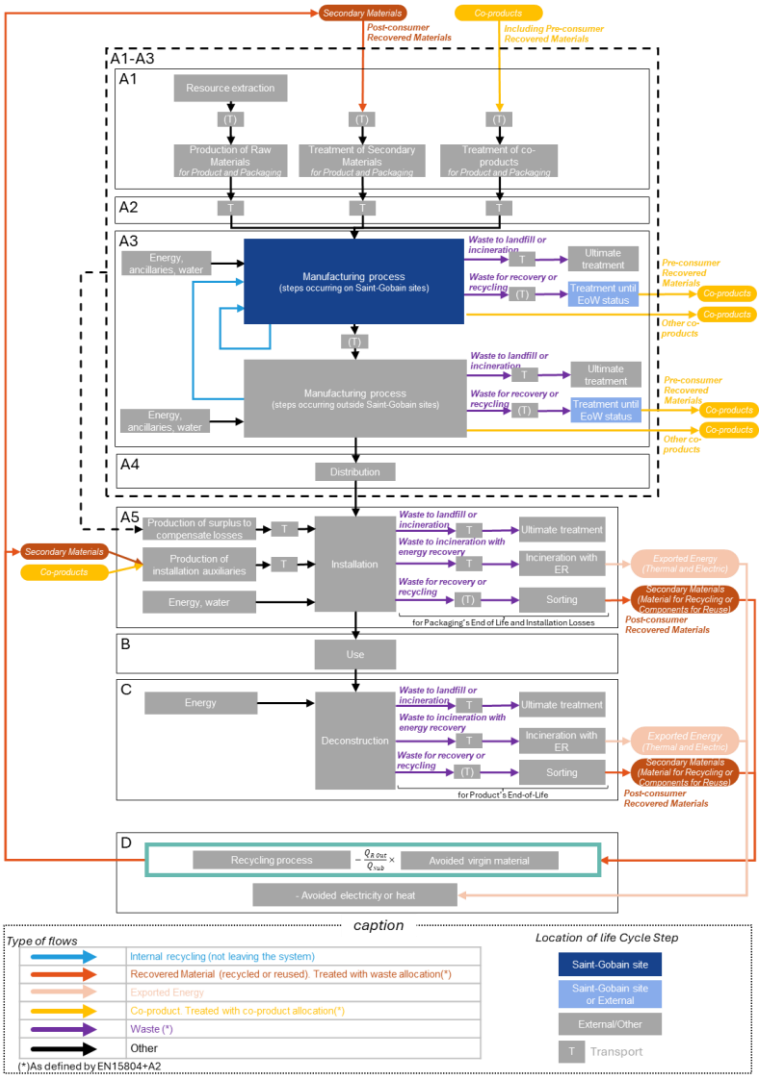
Data Collection	01.01.2024 to 31.12.2024
Sites used	1
Geography	Produced in Poland Sold in EU Use and disposal in EU
Technology	Mineral wool is made from high-temperature molten material that is blown away using centrifugal force to form fine cotton-like fibers. Then, a binder is sprayed on the material to form it, and the product is heated in an oven. Hereafter, the product is cut to size and packed.
Averaging	Production weighted average covering 100 % of production by the company
LCI/LCA database	Sphera CUP2024.2 and ecoinvent v.3.10
EPD used	None
Data Quality Scheme	EN 15804:2012+A2:2019, Annex E, Table E.1
Use of Fair data with more than 30 % of a core impact	None
Use of Poor relevant data	None
Use of Very Poor relevant data	None

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA OF GWP-GHG RESULTS FOR A1-A3
Plant data					
Electricity	Database	Sphera 2024.2/ecoinvent 3.10	<5 years old	Primary data	63,6%
Emissions Specific	Collected data	EPD Owner	<5 years old	Primary data	2,1%
Thermal Energy	Database	Sphera 2024.2	<5 years old	Primary data	1,2%
Transport of RM					
Transport of RM Packaging	Database	Sphera 2024.2	<5 years old	Primary data	0%
Transport of RM Product	Database	Sphera 2024.2	<5 years old	Primary data	0%
				Total share of primary data	66,9%

Description of system boundaries

System boundaries (X=included. MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU	EU	PL	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU



Note that the previous graph is generic. In this specific study, no secondary materials are generated. In addition, there is no exported energy.

Life cycle stages

A1-A3. Product stage

The product stage of the mineral wool products is subdivided into 3 modules A1, A2 and A3 respectively “raw material supply”, “transport” and “manufacturing”.

A1. Raw materials supply

This module includes the extraction and transformation of raw materials.

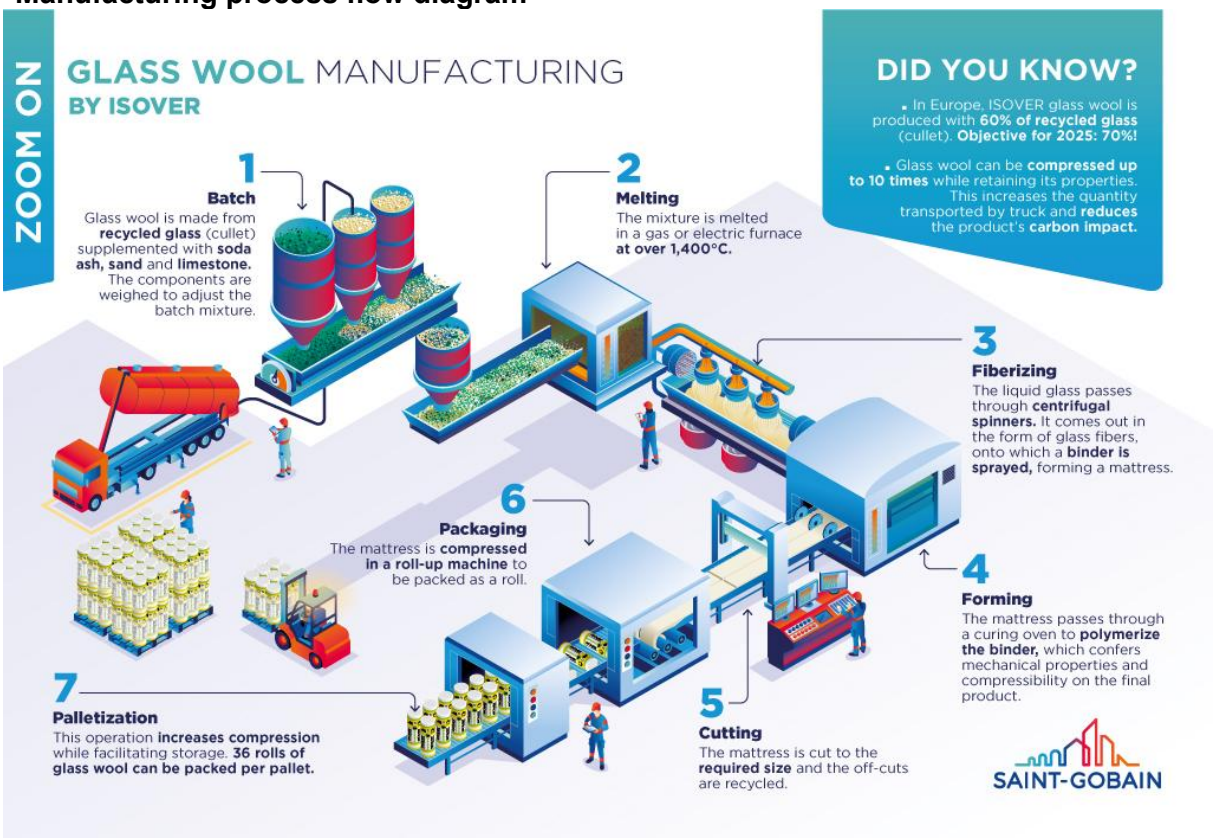
A2. Transport to the manufacturer

This module includes the transportation of raw materials and packaging to the manufacturing site. The modelling includes road, boat, and/or train transportation.

A3. Manufacturing

This module includes the manufacture of products (such as fusion, fiberizing, etc.) and the manufacture of packaging. The production of packaging material is considered at this stage. The processing of any waste arising from this stage is also included.

Manufacturing process flow diagram



Mineral wool is made from high-temperature molten glass that is blown away using centrifugal force to form fine cotton-like fibers. Then, a binder is sprayed on the material to form it, and the product is heated in an oven. Hereafter, the product is cut to size and packed.

A4-A5. Construction process stage

The construction process is divided into 2 modules: A4, Transport to the building site, and A5, Installation in the building.

A4. Transport to the building site

This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

PARAMETER	VALUE / DESCRIPTION
Fuel type and consumption of vehicle or vehicle type used for transport, e.g., long-distance truck, boat, etc.	Freight truck, maximum load weight of 27 t, real load 6 t, and consumption of 0.38 liters per km
Distance	329 km by truck
Capacity utilization (including empty returns)	23 % of the capacity in weight 30% of empty returns
Bulk density of transported products	16,5 kg/m^3
Volume capacity utilization factor	1 (by default)

A5. Installation in the building

This module includes: the installation of the product, the surplus of raw materials and packaging (cradle to gate) to compensate for the loss of product during the installation, the transport and management of packaging and product waste.

Assumption:

- A loss of 2% of the product is considered during the installation
- The wooden pallet is reused 8 times before end-of-life
- The transport of product waste is modelled as in C2-C4.

PARAMETER	VALUE / DESCRIPTION
Waste of materials on the building site before waste processing, generated by the product's installation (specified by type)	Product: 0,033 kg/DU Pallet: 0,145 kg/DU Low-density polyethylen (LDPE): 0,028 kg/DU Paper label: 0,002 kg/DU
Transport of packaging waste	Landfill: 80km
Output materials (specified by type) as results of waste processing at the building site, e.g., of collection for recycling, for energy recovery, disposal (specified by route)	Product: 0,033 kg/DU to landfill (100%) Pallet: 0,145 kg/DU to landfill (100%) Low-density polyethylen (LDPE): 0,028 kg/DU to landfill (100%) Paper label: 0,002 to landfill (100%)
Direct emissions to ambient air, soil, and water	None

B1-B7. Use stage (excluding potential savings)

The use stage is divided into the following modules:

- **B1:** Use
- **B2:** Maintenance
- **B3:** Repair
- **B4:** Replacement
- **B5:** Refurbishment
- **B6:** Operational energy use
- **B7:** Operational water use

The product has a reference service life of 50 years. This assumes that the product will last in situ with no requirements for maintenance, repair, replacement, or refurbishment throughout this period. Therefore, it has no impact at this stage.

C1-C4. End of Life Stage

This stage includes the following modules:

- **C1**: **Deconstruction, demolition**. The deconstruction and/or dismantling of the product takes part of the demolition of the entire building. In our case, the energy considered for demolition is 0.004 MJ/kg.
- **C2: Transport to waste processing**
- **C3: Waste processing for reuse, recovery, and/or recycling**
- **C4: Waste disposal**, including physical pre-treatment and site management. It is assumed that 100% of the product is disposed of via landfilling at the end of life.

Description of the scenarios and additional technical information for the end of life:

PARAMETER	VALUE/DESCRIPTION
Energy for demolition	0.004 MJ/kg diesel
Collection process specified by type	The entire product, including any facing, is collected with mixed construction waste. 1,65 kg of product are landfilled
Recovery system specified by type	There is no recovery, recycling or reuse of the product once it has reached its end-of-life phase.
Assumptions for scenario development (e.g., transportation)	The waste going to landfill is transported 80 km by truck from deconstruction/demolition sites to landfill

D. Reuse/recovery/recycling potential

All end-of-life flows are assumed to be landfilled; therefore, no potential benefits or loads beyond the system boundary are accounted for. No reuse, recycling or energy recovery processes are included in the modelling. In accordance to EN 15804:2012+A2:2019, module D is null.

Environmental performance

As specified in EN 15804:2012+A2:2019/AC:2021 and the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors based on EF 3.1. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant.

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

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

- Resource use, mineral and metals [kg Sb eq.]
- Resource use, energy carriers [MJ]
- Water deprivation potential [m³ world equiv.]
- Land use [Pt]
- Human toxicity (cancer) [CTUh]
- Human toxicity (noncancer) [CTUh]
- Ecotoxicity (freshwater) [CTUe]

Disclaimer 2: The impact category Ionizing radiation, human health [kBq U235 eq.] 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 material is also not measured by this indicator.

Disclaimer 3: The assumptions for the modules are in accordance with the project report (LCA study).

The following non-mandatory additional environmental indicators are not declared:

- Ecotoxicity freshwater [CTUe]
- Particulate Matter emissions [Disease incidence]
- Cancer human health effects [CTUh]
- Ionizing radiation - human health [kBq U235 eq.]
- Non-cancer human health effects [CTUh]
- Land Use [Pt].

Results refer to a functional unit of 1 m^2 of mineral wool with thermal resistance of 2,85 $m^2 \cdot K/W^{-1}$ for a thickness of 100 mm.

Environmental Impacts

Environmental indicators		PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
		A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	GWP-total [kg CO2 eq.]	2,86E+00	1,06E-01	2,88E-01	0	0	0	0	0	0	0	6,55E-04	1,32E-02	0,00E+00	2,50E-02	0,00E+00
	GWP-fossil [kg CO2 eq.]	3,07E+00	1,04E-01	6,48E-02	0	0	0	0	0	0	0	6,55E-04	1,30E-02	0,00E+00	2,47E-02	0,00E+00
	GWP-biogenic [kg CO2 eq.]	-2,12E-01	2,85E-04	2,24E-01	0	0	0	0	0	0	0	5,28E-08	3,64E-05	0,00E+00	1,32E-04	0,00E+00
	GWP-luluc [kg CO2 eq.]	1,54E-03	1,71E-03	4,98E-05	0	0	0	0	0	0	0	5,68E-08	2,12E-04	0,00E+00	1,48E-04	0,00E+00
	ODP [kg CFC-11 eq.]	4,31E-07	1,02E-14	8,63E-09	0	0	0	0	0	0	0	1,00E-11	1,86E-15	0,00E+00	6,66E-14	0,00E+00
	AP [Mole of H+ eq.]	8,41E-03	1,30E-04	1,86E-04	0	0	0	0	0	0	0	5,91E-06	1,69E-05	0,00E+00	1,75E-04	0,00E+00
	EP-freshwater [kg P eq.]	2,45E-05	4,34E-07	1,05E-06	0	0	0	0	0	0	0	2,30E-09	5,39E-08	0,00E+00	5,61E-08	0,00E+00
	EP-marine [kg N eq.]	1,52E-03	4,53E-05	3,66E-05	0	0	0	0	0	0	0	2,74E-06	6,10E-06	0,00E+00	4,51E-05	0,00E+00
	EP-terrestrial [Mole of N eq.]	2,79E-02	5,47E-04	6,18E-04	0	0	0	0	0	0	0	3,00E-05	7,26E-05	0,00E+00	4,97E-04	0,00E+00
	POCP [kg NMVOC eq.]	4,56E-03	1,21E-04	1,12E-04	0	0	0	0	0	0	0	8,95E-06	1,68E-05	0,00E+00	1,38E-04	0,00E+00
	ADPE [kg Sb eq.][1]	1,34E-04	8,66E-09	2,67E-06	0	0	0	0	0	0	0	2,34E-10	1,10E-09	0,00E+00	1,60E-09	0,00E+00
	ADPF [MJ][1]	4,25E+01	1,33E+00	9,01E-01	0	0	0	0	0	0	0	8,49E-03	1,66E-01	0,00E+00	3,26E-01	0,00E+00
	WDP [m³ world equiv.][1]	5,28E-01	1,51E-03	1,09E-02	0	0	0	0	0	0	0	2,63E-05	1,95E-04	0,00E+00	2,83E-03	0,00E+00

[1] The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Resources Use

Resources Use indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Use of renewable primary energy (PERE) [MJ] [2]	7,50E+00	1,12E-01	1,56E-01	0	0	0	0	0	0	0	5,26E-05	1,43E-02	0,00E+00	5,68E-02	0,00E+00
Primary energy resources used as raw materials (PERM) [MJ] [2]	2,21E+00	0,00E+00	-1,90E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT) [MJ] [2]	9,71E+00	1,12E-01	-1,74E+00	0	0	0	0	0	0	0	5,26E-05	1,43E-02	0,00E+00	5,68E-02	0,00E+00
Use of non-renewable primary energy (PENRE) [MJ] [2]	3,90E+01	1,33E+00	8,31E-01	0	0	0	0	0	0	0	8,49E-03	1,66E-01	0,00E+00	3,26E-01	0,00E+00
Non-renewable primary energy resources used as raw materials (PENRM) [MJ] [2]	2,81E+00	0,00E+00	5,61E-02	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ] [2]	4,18E+01	1,33E+00	8,87E-01	0	0	0	0	0	0	0	8,49E-03	1,66E-01	0,00E+00	3,26E-01	0,00E+00
Use of secondary material (SM) [kg]	5,66E-04	0,00E+00	1,13E-05	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF) [MJ]	2,00E-30	0,00E+00	4,00E-32	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	2,35E-29	0,00E+00	4,70E-31	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW) [m3]	1,43E-02	1,26E-04	2,95E-04	0	0	0	0	0	0	0	6,12E-07	1,59E-05	0,00E+00	8,63E-05	0,00E+00

[2] From EPD International Construction Product PCR 2.0.1 (Annex 3). Option B was retained to calculate the primary energy use indicators.

Waste Category & Output flows

Waste Category & Output Flows	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
Hazardous waste disposed (HWD) [kg]	1,22E-02	4,30E-11	2,44E-04	0	0	0	0	0	0	0	7,42E-06	6,36E-12	0,00E+00	8,11E-11	0,00E+00
Non-hazardous waste disposed (NHWD) [kg]	8,73E-01	2,07E-04	9,21E-02	0	0	0	0	0	0	0	5,72E-05	2,71E-05	0,00E+00	1,65E+00	0,00E+00
Radioactive waste disposed (RWD) [kg]	1,00E-04	1,72E-06	2,55E-06	0	0	0	0	0	0	0	9,41E-10	3,03E-07	0,00E+00	3,41E-06	0,00E+00
Components for re-use (CRU) [kg]	0,00E+00	0,00E+00	1,29E-01	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for Recycling (MFR) [kg]	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for Energy Recovery (MER) [kg]	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy (EEE) [MJ]	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy (EET) [MJ]	0,00E+00	0,00E+00	0,00E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional environmental impact indicators

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
GWP-GHG [kg CO2 eq.][3]	3,06E+00	1,05E-01	6,96E-02	0	0	0	0	0	0	0	6,50E-04	1,31E-02	0,00E+00	2,48E-02	0,00E+00

Information on biogenic carbon content

Biogenic Carbon Content	PRODUCT STAGE
	A1 / A2 / A3
Biogenic carbon content in product [kg]	0,00E+00
Biogenic carbon content in packaging [kg]	6,03E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2.

The product contains biogenic carbon due to the additives used. Regarding packaging, biogenic carbon is quantified due to wooden pallets production.

[3] 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 CO2 is set to zero.

Declaration of variation

Variation between products

According to PCR 2.0.1, since this EPD is multi-product, the variation of impact between products shall be declared. This variation is declared on modules A-C.
The following table provides this variation of impact between

- reference and minimum (if the minimum is not the reference product).
- reference and the maximum (if the maximum is not the reference product).
- the minimum and the maximum.

DEVIATION	BETWEEN REFERENCE AND MINIMUM	BETWEEN REFERENCE AND MAXIMUM	BETWEEN MINIMUM AND MAXIMUM
GWP-GHG	50%	-136%	369%
Climate Change (total)	50%	-136%	371%
Climate Change (fossil)	50%	-136%	372%
Climate Change (biogenic)	43%	-113%	272%
Climate Change (land use change)	47%	-129%	335%
Ozone depletion	51%	-139%	388%
Acidification terrestrial and freshwater	50%	-135%	367%
Eutrophication freshwater	43%	-118%	284%
Eutrophication marine	49%	-134%	362%
Eutrophication terrestrial	50%	-136%	375%
Photochemical ozone formation - human health	46%	-125%	316%
Resource use, mineral and metals	51%	-139%	391%
Resource use, energy carriers	48%	-132%	349%
Water deprivation potential	45%	-123%	307%

Additional environmental information:

Conversion to specific thicknesses

This EPD® includes the range of products with different thicknesses between 50 mm and 240 mm. A multiplication factor can be applied to obtain the environmental performance of every thickness. All the results of this EPD® refer to the reference thickness of 100 mm with a value of R = 2,85 $m^2 \cdot K/W$.

To obtain the environmental performance associated with every specific thickness, the results expressed in this EPD® must be multiplied by its corresponding multiplication factor.

Conversion factor for the GWP-GHG indicator for A1-A3.

PRODUCT THICKNESS (mm)	THERMAL RESISTANCE (M^2K/W)	CONVERSION FACTOR	GWP-GHG ($KgCO2/m^2$) FOR A1-A3 STAGE
50	1,40	0,50	1,53
60	1,70	0,61	1,87
80	2,25	0,80	2,46
100	**2,85**	**1,00**	**3,06**
120	3,40	1,19	3,65
140	4,00	1,39	4,25
150	4,25	1,48	4,54
180	5,10	1,77	5,43
200	5,70	1,97	6,03
220	6,25	2,16	6,62
240	6,85	2,36	7,22

Electricity information

The electricity used during the manufacturing (A3) is based on the following:

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of residual mix in the country where the plant is located
Geographical & technical representativeness	Share of energy sources Biogas 0,0 % Biomass 0,7 % Coal gases % Geothermal 0,0% Hard coal 40,4% Heavy fuel oil (HFO) 1,4% Hydro 1,4% Lignite 0,0% Natural gas 7,1% Nuclear 0,7% Peat 0,0% Photovoltaic 8,5% Solar thermal 0,0% Waste 0,0% Wind 39,7% 2% transmission losses

Type of dataset/dataset version	Sphera CUP2024.2 ecoinvent 3.10 (medium voltage)
Source of electricity mix	Sphera/ecoinvent/AIB report 2024/IEA
GWP-GHG CO_2 eq.	0,874 kg of CO_2 eq./kWh

The Saint-Gobain Construction Products Polska Sp. z o. o. factory based in Poland uses electricity with Guarantee of Origin certificate (GO).
Hence, the electricity mix considered for the manufacturing of the studied product is modelled according to the electricity mix described in the Guarantee of Origin certificate. The amount of electricity purchased with GO covers 19,8% of the electricity consumption on the manufacturing site.

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of the Guarantee of Origin purchased by Saint-Gobain
Share of electricity covered by the Guarantee of Origin	19,8% of the energy consumption is covered by the GO
Energy sources for electricity	Share of energy sources Wind 100% 2% transmission losses
Dataset version	Sphera CUP2024.2
Source	Guarantee of Origin certificate: RGP
GWP-GHG CO_2 eq.	0,013 kg of CO_2 eq./kWh

An EPD is valid for 5 years. Therefore, the GO will be prolonged continuously to be valid for the whole validity of the EPD. If not prolonged, the EPD will be updated.

Other additional environmental information

No additional information displayed

Additional social and economic information

N/A

Version history

First EPD version for this product according to EN 15804+A2.

Abbreviation

DU	Declared unit
EPD	Environmental Product Declaration
eq.	equivalents
FU	Functional unit
g	gram
GJ	Giga Joules (as Net Calorific Value)
kg	kilogram
kWh	kilowatt-hour
L	liter
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
MJ	Mega Joules (as Net Calorific Value)

m²·K/W	kilowatt per square meter
PCR	Product Category Rules
RSL	Reference Service Life (in years)
ton	metric ton
W/(m·K)	Watts per meter-Kelvin
GWP	Global warming potential
GWP-GHG	Global warming potential - Greenhouse gas
GHG	Greenhouse gas
GO	Guaranty of origin
AIB	Association of issuing bodies
IOBC	Instantaneous Oxidation of Biogenic Carbon
EF	Environmental footprint

References

1. ISO 14040:2006 Environmental Management - Life Cycle Assessment - Principles and framework.
2. ISO 14044:2006 Environmental Management - Life Cycle Assessment - Requirements and guidelines.
3. ISO 14025:2006 Environmental labels and Declarations - Type III Environmental Declarations - Principles and procedures.
4. EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
5. EN 15941 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data
6. EPD International. General Program Instructions (GPI) for the International EPD® System (version 5.0.1) http://www.environdec.com/.
7. European Chemical Agency, Candidate List of substances of very high concern for Authorization. https://echa.europa.eu/candidate-list-table.
8. Product Environmental Footprint Category Rules (PEFCRs) for products in buildings (2019).
9. The International EPD System PCR 2019:14 Construction products and Construction services. Version 2.0.1
10. EN 16783 Thermal insulation products - Environmental Product Declarations (EPD) - Product Category Rules (PCR) complementary to EN 15804 for factory made and in-situ formed products
11. LCA Report