ENVIRONMENTAL PRODUCT DECLARATION

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

Isover MJ

イゾベール・MJ

Version 1
Date of publication: 2025/01/23
Validity: 5 years
Valid until: 2030/01/22
Scope of the EPD®: Japan

THE INTERNATIONAL EPD® SYSTEM

Programme: The International EPD® System, www.environdec.com

Programme operator: EPD international AB

Registration number: EPD-IES-0016860

ECO PLATFORM EPD VERIFIED

EPD of multiple products: based on a representative product

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

Programme information

PROGRAMME:	The International EPD® System
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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 1.3.2

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.

President: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact - Contact via info@environdec.com

LCA accountability: Martin, Joffrey (Saint-Gobain LCA central team)

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☒ EPD verification by individual verifier

Third party verifier: Marcel Gómez
Marcel Gómez Consultoria Ambiental - info@marcelgomez.com, Tlf 0034 630 64 35 93
Approved by: The International EPD© System

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

EPDs within the same product category but registered 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 version number up to the first two digits) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical DU/FU); 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 15804:2012+A2:2019/AC:2021 and ISO 14025:2006.

Product information

Company information

Manufacturer: MAG-ISOVER
Production plant: Akeno, Japan
Management system-related certification: ISO 9001: Quality management systems (JP13/062467) & ISO 14001 - Environment management systems (JP13/071252)
Programme used: EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System.
PCR identification PCR 2019:14 version 1.3.2 for Construction products
Prepared by: IVL Swedish Environmental Research Institute, EPD International Secretariat
Owner of the declaration: MAG-ISOVER
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)
Products name and manufacturer represented:
Isover MJ – 100 mm (reference product)
Isover MJ – 50 mm
All products are produced in: MAG-ISOVER, 〒102-0083 Saint-Gobain Bldg 3F, 3-7 Kojimachi, Chiyoda-ku, Tokyo 102-0083 Japan
EPD® prepared by: Bouzouzou, Axel (Saint-Gobain LCA central team); Martin, Joffrey (Saint-Gobain LCA central team); Perez-Jimenez, Sandra (Saint-Gobain LCA central team)
Contacts: Takahashi, Keigo (keigo.takahashi@saint-gobain.com); Fukushima, Hideki (hideki.fukushima@saint-gobain.com); Nishimoto, Rie (rie.nishimoto@saint-gobain.com)
The intended use of this EPD is for B2B communication.
Geographical scope of the EPD®: Japan
EPD® registration number: EPD-IES-0016860
Declaration issued: 2025/01/23 valid until: 2030/01/22
Demonstration of verification: An independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the following third party based on the PCR mentioned above.

Product description

Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m² of glass wool with a thermal resistance of 2.6 K.m².W^{-1}, for 100 mm-thick Isover MJ with a density of 2.4 kg/m². For this EPD, the Isover MJ – 100 mm was retained as a reference since it is the best seller in its range.

This EPD applies for one specific product produced in one single plant.

The production site of MAG-ISOVER in Akeno uses mineral raw materials, which are sent to follow melting and fiberizing techniques to produce glass wool. The products obtained come in the form of a "mineral wool mat" consisting of a soft and airy structure.

The Isover MJ is used for a wide range of purposes, including heat and cold insulation in partition walls.

Technical data/physical characteristics:

PARAMETER	VALUE / DESCRIPTION
Thermal resistance	2.6 K.m^2.W^{-1} (JIS A 1412-2)
Thermal conductivity	0.038 W/(m.K) (JIS A 1412-2)
Reaction to fire	Certification NM-4596(1)
Bulk density	24 kg/m^3

Declaration of the main product components and/or materials

Description of the main components and/or materials:

Product components	Weight (%)	Post-consumer material weight (%)	Biogenic material weight (kg C/product)
Mineral materials	85 – 95 %	46 %[1]	0
Additives	0 – 1 %	0 %	0
Binder	2 – 5%	0 %	0
Facing	2 – 5 %	0 %	0
Sum	**2.4 kg/m²**	**40% – 50%**	**0**
Packaging materials	**Weight (%)**	**Weight-% (vs the product)**	**Biogenic material, weight (kg C/product)**
Low-density polyethylene (LDPE)	90 – 100 %	< 1 %	0
PP straps	5 – 10 %	< 1 %	0
Sum	**0,015 kg/m²**	**< 1 %**	**0**

The post-consumer material used in mineral wool production is cullet come from glass bottle collection.

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).

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

[1] Pre-consumer glass cullet is also used in the mineral wool recipe.

LCA calculation information

TYPE OF EPD	Cradle to grave and module D
FUNCTIONAL UNIT	Providing a thermal insulation on 1 m² with a thermal resistance of 2.6 m².K/W for a thickness of 100 mm and a weight of 2.4 kg/m², for 50 years.
SYSTEM BOUNDARIES	Cradle to grave (A1, A2, A3, A4, A5, B1–B7, C1–C4) and module D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the insulation product is 50 years. This 50-year value is the amount of time that we recommend our products last for 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 the 5% of the whole mass and energy used, as well of the emissions to 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 and the modularity principles as well have been followed.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope: Japan Data is collected from one production site (Akeno plant) located in Japan. Data collected for the year 2023
BACKGROUND DATA SOURCE	The databases Sphera 2023.2 and ecoinvent v.3.9.1
SOFTWARE	Sphera LCA for experts (GaBi) 10

LCA scope

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	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP	JP

Specific data used	77% GWP - GHG
Variation products	-48%
Variation sites	0%

Life cycle stages

A1-A3, Product stage

The product stage of the mineral wool products is subdivided into three 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 train transportations.

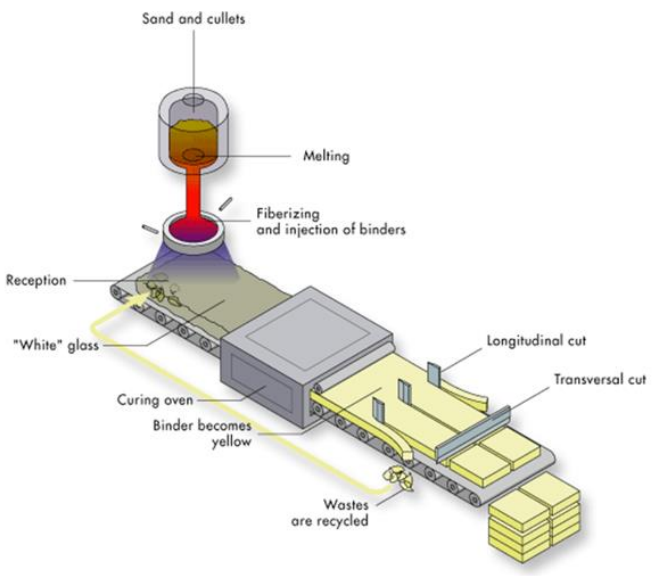
A3, Manufacturing
This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is considered at this stage. The processing of any waste arising from this stage is also included.

Electricity information

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of average electricity production in Japan
Geographical representativeness description	Share of energy sources: - 32.1 % Coal - 37.6 % Natural gas - 6.2 % Nuclear - 8.5 % Hydro - 7.8 % Wind, solar and geothermal - 4.3 % Biofuels and waste - 3.5 % Fuel oil
Reference year	2022
Type of dataset	Cradle to gate from Gabi and ecoinvent databases
Source	Sphera
CO_2 emission	0.597 kg of CO_2 eq/kWh Based on GWP-GHG indicator

Manufacturing process flow diagram

System diagram:



Manufacturing in detail:
Mineral wool is made from high-temperature molten glass that is blown away using centrifugal force to form fine cotton-like fibres.

Then, a binder is sprayed on the material to form it, and the product is heated in an oven.

A4-A5, Construction process stage

The construction process is divided into two 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 in Japan. Transport is calculated based on a scenario with the parameters described in the following table.

PARAMETER	VALUE
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 13 t and consumption of 0.38 litres per km
Distance	1441 km by truck 76 km by boat
Capacity utilisation (including empty returns)	100% of the capacity in volume 27% of the capacity in weight 0% of empty returns
Bulk density of transported products	24 kg/m^3
Volume capacity utilisation factor	1

A5, Installation in the building: this module includes the installation of the product manually and no additional accessories, nor energy are considered.

PARAMETER	VALUE/DESCRIPTION
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	2 %
Distance	50 km to landfill by truck
Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovering, disposal (specified by route)	Product loss: 100% landfilled: 0,048 kg sent to landfill Packaging waste: 100% landfilled: 0,015 kg sent to landfill

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**: The de-construction and/or dismantling of the product takes part of the demolition of the entire building. In our case, the energy is considered is 0.05 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.

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

PARAMETER	VALUE/DESCRIPTION
Collection process specified by type	The entire product is collected with mixed construction waste. 2.4 kg of glass wool
Recovery system specified by type	There is no recovery, recycling, or reuse of the product once it has reached its end-of-life phase.
Disposal specified by type	2.4 kg of glass wool are landfilled
Assumptions for scenario development (e.g. transportation)	The waste going to landfill is transported 50 km by truck from deconstruction/demolition sites to landfill

D, Reuse/recovery/recycling potential

100% of wastes are landfilled. There is no reuse, nor recycling, nor incineration with energy recovery for the product nor its packaging.

The benefits and loads reported in module D result from the use of external cullets (post-consumer) in the product recipe.

LCA results

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 are from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant. Characterisation factors EN15804 based on EF 3.1.

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.

All emissions to air, water, and soil, and all materials and energy used have been included.

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological, and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

This EPD including module C, we strongly advise against using the results of modules A1-A3 without considering the results of module C.

The following results refer to a Isover MJ with a thickness of 100 mm, a bulk density of 24 kg/m^3 and a surface density of 2.4 kg/m^2.

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
Climate Change [kg CO2 eq.]	4.89E+00	9.97E-01	1.50E-01	0	0	0	0	0	0	0	4.47E-03	8.98E-03	0	1.58E-01	9.93E-01
Climate Change (fossil) [kg CO2 eq.]	4.97E+00	9.85E-01	1.49E-01	0	0	0	0	0	0	0	4.47E-03	8.87E-03	0	4.37E-02	9.94E-01
Climate Change (biogenic) [kg CO2 eq.]	-8.41E-02	2.60E-03	5.89E-04	0	0	0	0	0	0	0	5.63E-07	2.37E-05	0	1.14E-01	-1.28E-03
Climate Change (land use change) [kg CO2 eq.]	2.15E-03	9.21E-03	4.75E-05	0	0	0	0	0	0	0	5.03E-07	8.17E-05	0	1.13E-04	4.63E-04
Ozone depletion [kg CFC-11 eq.]	4.09E-07	8.73E-14	8.19E-09	0	0	0	0	0	0	0	7.10E-11	1.15E-15	0	1.72E-11	7.68E-09
Acidification terrestrial and freshwater [Mole of H+ eq.]	1.51E-02	1.35E-03	3.12E-04	0	0	0	0	0	0	0	4.14E-05	1.12E-05	0	2.62E-04	3.35E-03
Eutrophication freshwater [kg P eq.]	2.49E-04	3.63E-06	5.00E-06	0	0	0	0	0	0	0	1.37E-07	3.23E-08	0	2.58E-07	6.87E-05
Eutrophication marine [kg N eq.]	3.83E-03	4.78E-04	7.98E-05	0	0	0	0	0	0	0	1.92E-05	3.93E-06	0	9.65E-05	6.88E-04
Eutrophication terrestrial [Mole of N eq.]	3.99E-02	5.57E-03	8.37E-04	0	0	0	0	0	0	0	2.09E-04	4.60E-05	0	7.51E-04	6.46E-03
Photochemical ozone formation - human health [kg NMVOC eq.]	9.94E-03	1.17E-03	2.06E-04	0	0	0	0	0	0	0	6.18E-05	9.85E-06	0	2.11E-04	1.83E-03
Resource use, mineral and metals [kg Sb eq.][2]	7.29E-05	6.46E-08	1.46E-06	0	0	0	0	0	0	0	1.56E-09	5.85E-10	0	3.19E-09	1.03E-04
Resource use, energy carriers [MJ][1]	6.88E+01	1.36E+01	1.40E+00	0	0	0	0	0	0	0	5.83E-02	1.20E-01	0	4.97E-01	1.52E+01
Water deprivation potential [m³ world equiv.][1]	9.65E-01	1.15E-02	2.39E-02	0	0	0	0	0	0	0	1.97E-04	1.07E-04	0	4.64E-03	2.14E-01

[2] 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

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
Resources Use indicators	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] [3]	9.25E+00	9.57E-01	1.88E-01	0	0	0	0	0	0	0	3.33E-04	8.75E-03	0	7.74E-02	6.81E+00
Primary energy resources used as raw materials (PERM) [MJ] [2]	7.45E-01	0	1.49E-02	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ] [2]	1.00E+01	9.57E-01	2.03E-01	0	0	0	0	0	0	0	3.33E-04	8.75E-03	0	7.74E-02	6.81E+00
Use of non-renewable primary energy (PENRE) [MJ] [2]	6.51E+01	1.36E+01	1.32E+00	0	0	0	0	0	0	0	5.83E-02	1.21E-01	0	4.97E-01	1.58E+01
Non-renewable primary energy resources used as raw materials (PENRM) [MJ] [2]	3.70E+00	0	-2.13E-01	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ] [2]	6.89E+01	1.36E+01	1.11E+00	0	0	0	0	0	0	0	5.83E-02	1.21E-01	0	4.97E-01	1.58E+01
Input of secondary material (SM) [kg]	1.11E+00	0	2.22E-02	0	0	0	0	0	0	0	0	0	0	0	-1.11E+00
Use of renewable secondary fuels (RSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.04E-28
Use of non-renewable secondary fuels (NRSF) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.22E-27
Use of net fresh water (FW) [m3]	2.83E-02	1.06E-03	6.74E-04	0	0	0	0	0	0	0	4.59E-06	9.58E-06	0	1.37E-04	8.20E-03

[3] From EPD International Construction Product PCR 1.3.2 (Annex 3). The option B was reatined to calculate the primary energy use indicators.

Waste Category & Output flows

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
Waste Category & Output Flows	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]	2.83E-05	5.03E-11	5.68E-07	0	0	0	0	0	0	0	3.94E-07	3.74E-13	0	7.80E-08	1.12E-05
Non-hazardous waste disposed (NHWD) [kg]	1.08E+00	1.96E-03	7.12E-02	0	0	0	0	0	0	0	3.60E-04	1.84E-05	0	2.48E+00	3.57E-01
Radioactive waste disposed (RWD) [kg]	7.27E-04	1.76E-05	1.50E-05	0	0	0	0	0	0	0	6.41E-09	2.26E-07	0	5.14E-06	1.74E-03
Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	4.25E-02	0	8.49E-04	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0.0155	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0.103	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0.184	0	0	0	0	0	0	0	0	0	0	0	0

Additional voluntary indicators from EN 15804

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE CYCLE
Environmental indicators	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.][4]	4.99E+00	9.97E-01	1.49E-01	0	0	0	0	0	0	0	4.47E-03	8.98E-03	0	4.70E-02	9.93E-01

Information on biogenic carbon content

	PRODUCT STAGE
Biogenic Carbon Content	**A1 / A2 / A3**
Biogenic carbon content in product [kg]	0.0272
Biogenic carbon content in packaging [kg]	0.00E+00

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

Biogenic carbon in product is quantified due to citric acid and maltitol.

[4] 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.

Additional information

Influence of thicknesses

This EPD covers the 100 mm-thick Isover MJ.
All the results of this EPD® refer to the reference thickness of 100 mm with a value of R = 2.6 m².K/W.
The isover MJ is available in a range of thicknesses between 50 mm and 100 mm. A multiplication factor can be applied to obtain the environmental performance of every thickness.

To obtain the environmental performance associated with every specific thickness, the results expressed in this EPD® must be multiplied by its corresponding multiplication factor. The calculation of the conversion factor is based on the GWP-GHG indicator for A1-A3.

PRODUCT THICKNESS (MM)	THERMAL RESISTANCE (m².K/W)	CONVERSION FACTOR	GWP-GHG (kg CO2 / m²) for A1-A3 stage
50	1.4	0.52	2.59
100 (ref)	2.9	1.00	4.99

Declaration of variation

According to PCR 1.3.2, since this EPD covers products with variations above 10%, the variation of each impact indicator results for which variation is above 10% shall be displayed.
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).
- minimum and the maximum (if the minimum is not the reference product).

DEVIATION	BETWEEN REFERENCE AND MINIMUM	BETWEEN REFERENCE AND MAXIMUM	BETWEEN MINIMUM AND MAXIMUM
Climate Change	-48%	N/A	93%
Climate Change (fossil)	-48%	N/A	93%
Climate Change (biogenic)	-48%	N/A	93%
Climate Change (land use change)	-50%	N/A	101%
Ozone depletion	-47%	N/A	87%
Acidification terrestrial and freshwater	-50%	N/A	100%
Eutrophication freshwater	-48%	N/A	91%
Eutrophication marine	-40%	N/A	68%
Eutrophication terrestrial	-48%	N/A	93%
Photochemical ozone formation - human health	-48%	N/A	93%
Resource use, mineral and metals	-46%	N/A	85%
Resource use, energy carriers	-49%	N/A	98%
Water deprivation potential	-45%	N/A	83%

Data quality

Inventory data quality is judged by geographical, temporal, and technological representativeness. To cover these requirements and to ensure reliable results, first-hand industry data crossed with LCA background datasets were used. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects good inventory data quality for the geographical representation, and good for technological, and very good for temporal representation.

Environmental impacts according to EN 15804:2012 + A1

The following table presents results for 1 m² of glass wool with a thermal resistance of 2.6 K.m².W^{-1} for a thickness of 100 mm.

Environmental impacts	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY, RECYCLING
	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
Global Warming Potential (GWP) [kg CO2eq.]	4.82E+00	9.82E-01	1.46E-01	0	0	0	0	0	0	0	4.41E-03	8.70E-03	0	4.43E-02	1.00E+00
Ozone depletion (ODP) [kg CFC 11eq.]	5.36E-07	1.03E-13	1.07E-08	0	0	0	0	0	0	0	5.79E-11	1.35E-15	0	1.42E-11	5.52E-09
Acidification potential (AP) [kg SO2eq.]	1.18E-02	9.76E-04	2.43E-04	0	0	0	0	0	0	0	2.92E-05	8.12E-06	0	2.08E-04	2.43E-03
Eutrophication potential (EP) [kg (PO4)3-eq.]	3.19E-03	2.07E-04	7.20E-05	0	0	0	0	0	0	0	7.03E-06	1.73E-06	0	3.69E-04	4.57E-04
Photochemical ozone creation (POCP) - [kg Ethylene eq.]	1.08E-03	-1.01E-04	2.23E-05	0	0	0	0	0	0	0	3.92E-06	-6.47E-07	0	1.79E-05	1.92E-04
Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.]	7.29E-05	6.43E-08	1.46E-06	0	0	0	0	0	0	0	1.56E-09	5.82E-10	0	3.22E-09	1.03E-04
Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ]	6.44E+01	1.34E+01	1.31E+00	0	0	0	0	0	0	0	5.79E-02	1.18E-01	0	4.78E-01	9.58E+00

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