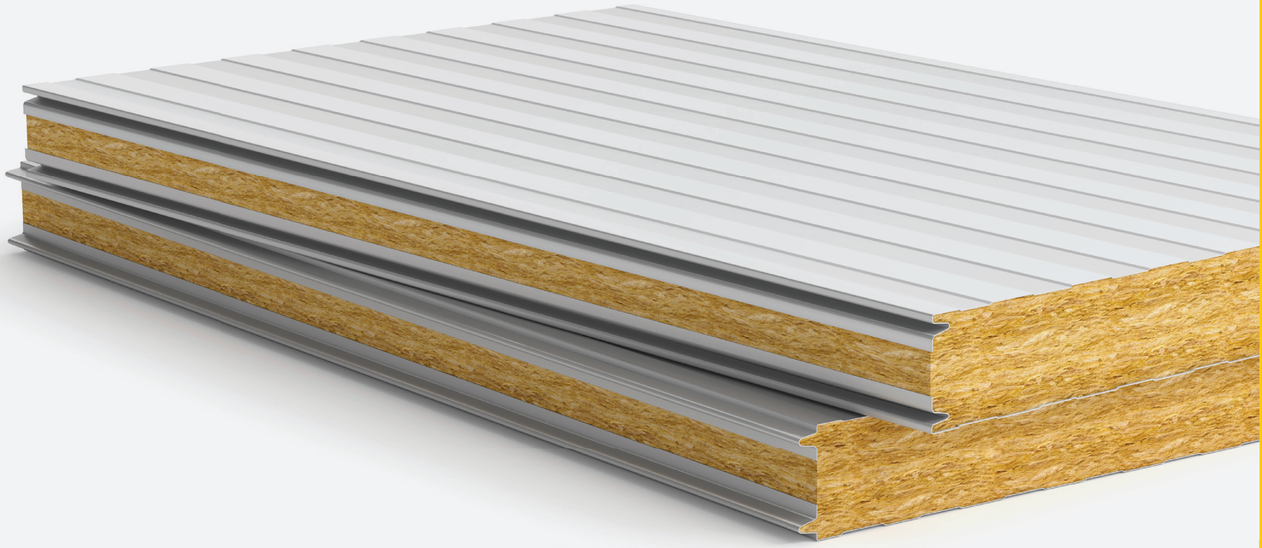


EPD
Isover SP 150

Environmental product declaration,
In accordance with EN 15804+A2 and ISO 14025

General information

Manufacturer	Saint-Gobain Construction Products CZ a.s., Isover Division, Smrčkova 2485/4, 180 00 Prague 8, Czech Republic
Manufacturer represented	Častolovice, Masarykova 197, 517 50, Czech Republic
About company	Isover offers the widest range of thermal, acoustic and fire insulation in the highest quality on the Czech market, on a global scale it is the most important and largest global manufacturer with operations and production plants all over the world. The complete offer of the Isover brand assortment includes products made of stone and glass wool, expanded polystyrene and accessories for system solutions for insulation of floors, partitions, walls, facades, ceilings, soffits, flat and sloping roofs or pipe distribution.
EPD Programme	National Environmental Labeling Program
Registration no	3015-EPD-030064905
Generic PCR review conducted by	EN 15804+A2 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
Other used standards	EN 16783
Information for the Environmental Product Declaration based on	General report Isover Častolovice, 02/2023
EPD range	„From cradle to gate with option" (details later in EPD)
Date of publication	1st November 2023
EPD validity	1st November 2028
Complier EPD	Ing. arch. Tomáš Truxa, Isover Division, Saint-Gobain Construction Products CZ a.s.
Verifier EPD	Technický a zkušební ústav stavební Praha, s.p.

Tab. 1 – Information about verifier

The norm EN 15804+A2 prepared CEN serves as a basic PCR	
Independent verification of the environmental declaration and data according to standard ČSN ISO 14025:2010 ☐ Internal External ☑	TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p. Akreditovaný Certifikační orgán č. 3015 ZÚS Vrbová
The third party verifier: Technický a zkušební ústav stavební Praha, s.p. Prosecká 811/76a, Prague 9, 190 00 Czech Republic The certification authority for EPD is accredited ČIA – Český institut pro akreditaci, o.p.s., Osvědčení č. 95/2023.	

Product description and description of use

This EPD describes the environmental impacts of 1 m^2 of mineral wool product. EPD was created from complete data included all thicknesses of the product. Each thickness influents environmental impacts specifically, their individual impacts were taken into account by the real production and sale rate. Thickness proportions are listed thereinafter.

The fibrous structure of mineral wool is very porous and can insulate thanks to the air contained in the individual air cavities. The flexible structure of mineral wool can also absorb sound from the air, from knocking, and thus acts as a comprehensive acoustic insulation. Mineral wool is also non-flammable and its use significantly increases the fire resistance of structures.

SP stone wool boards form the insulating core for the production of Sandwich panels. The SP board provides thermal, sound and fireproof insulation of the panel.

Fig. 1 – Example of Isover SP 150 application

Tab. 2 – Product parameters for EPD calculation

Parameter	Value
Thickness of product	1000 mm
Density	140 kg/m^3
Recycled briquette content	28 %
Surfacing	–
Packaging for the distribution and transportation	Stretch film, wood pallet
Product used for the Installation	–
Implementation loss rate	5 %

Tab. 3 – Technical data / physical characterictics

Parameter	Value
Thermal resistance (1000 mm) (EN 12162)	21.25 $m^2 \cdot K \cdot W^{-1}$
Thermal conductivity coefficient λ_D (EN 12667)	0.047 $W \cdot m^{-1} \cdot K^{-1}$
Water vapour transmission (EN 12086)	1 [-]
Compressive strength (EN 826)	120 kPa
Tensile strength (EN 1607)	250 kPa
Reaction to fire class (EN 13 501-1)	A1

More info www.isover.cz/dokumenty

Tab. 4 – Chemical and hazard information

Component	C.A.S. number[2)]	Amount weight (%)	Classification and labelling (Regulation (CE) n°1272/2008)
Stone wool [1)]		≥ 95 %	Not classified [3)]
Terpolymerbinder		≤ 5 %	Not classified [3)]

1) Man-made vitreous (silicate) fibres with random orientation with alkaline oxide and alkali earth oxide (Na_2O+K2O+CaO+MgO+BaO) content greater than 18% by weight and fulfilling one of the nota Q conditions.

2) C.A.S.: Chemical Abstract Service.

3) Non classified H351 “suspected of causing cancer”. Stone fibres are not classified carcinogenic according to the note Q of the Directive 97/69/EEC and the regulation n° 1272/2008 (page 335 of the JOCE L353 of December 31, 2008).

More info www.isover.cz/dokumenty

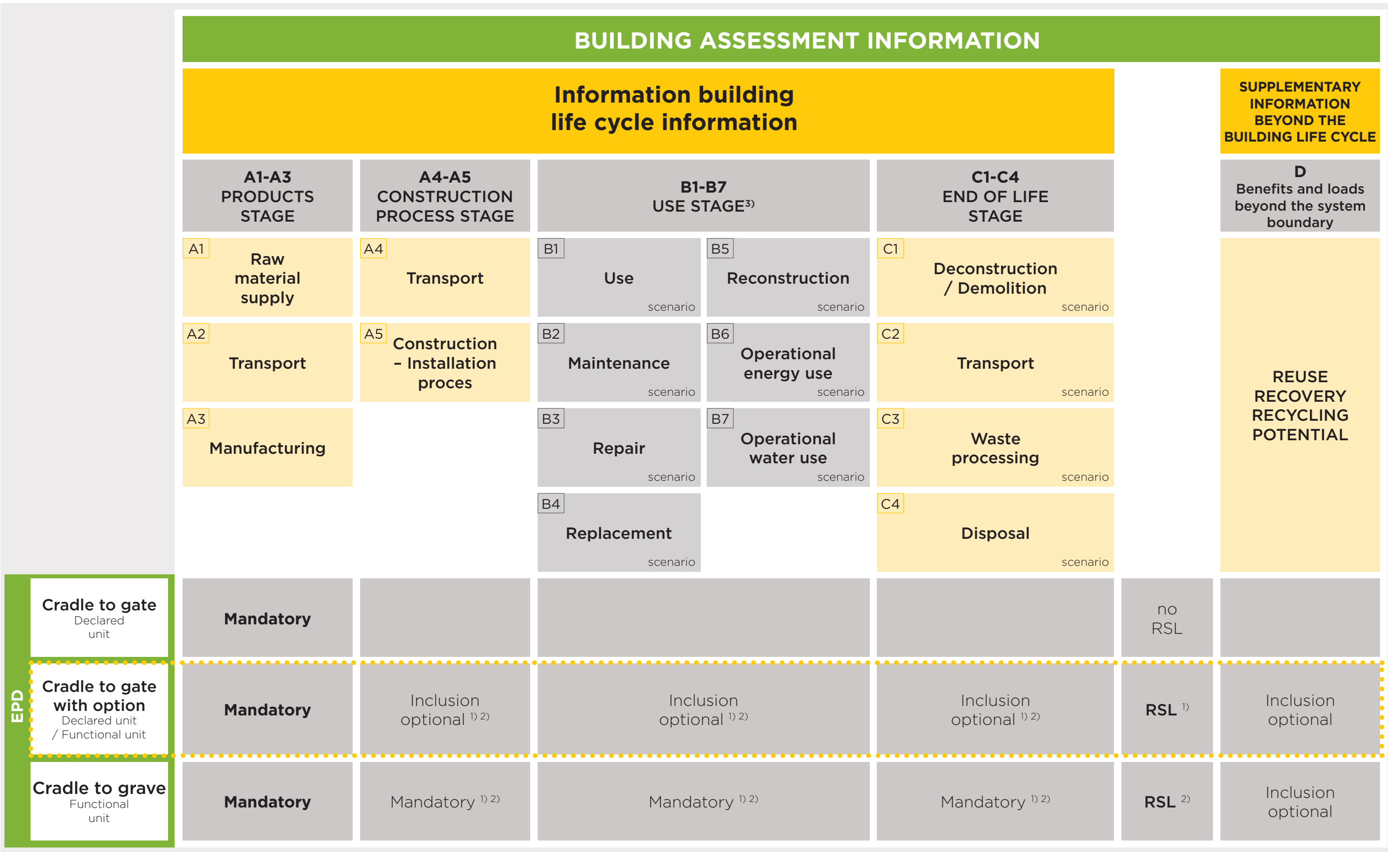
Most important hazards: there is no warning notice with this product.

The verifier and program operator make no claims and are not responsible for the legality of the product.

LCA, input values

Tab. 5 – LCA calculation information

Functional unit (FU)	Providing a thermal insulation on 1 m² with a thermal resistance of 21.25 m²·K·W⁻¹
System boundaries	„From cradle to gate with option“
Reference service life (RSL)	50 years
Cut-off rules	Boundary conditions for inputs and primary energy at the process level (1%) and information level (5%). Not included are flows resulting from human activities - transport of employees. Plant construction, machinery manufacture and transport system are not included as the associated flows are assumed to be negligible compared to the production of construction materials, relative to the life cycle.
Allocations	Allocation criteria are based on mass
Local conditions	Czech Republic
Assessed period	2021
Comparable	According to EN 15804, EPD of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPD might not be comparable if they are from different programmes.
Software	SimaPro 9.4.0.2
Characterization factors	Part of the calculation methods conforming to EN 15804+A2



1) Inclusion for a declared scenario
2) If all scenarios are given
3) The effect of the product in stage B1-B7 will be counted at the level of building construction

Fig. 2 – Life cycle phases counted (EN 15804+A2)

Life cycle stages

PRODUCT STAGE A1-A3

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

The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15804+A2 standard. This rule is applied in this EPD.

A1 – RAW MATERIAL SUPPLY

his module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

Specifically, the raw material supply covers production binder components and sourcing (quarry) of raw materials for fiber production, e.g. basalt and slag for stone wool. Besides these raw materials, recycled materials (briquettes) are also used as input. See detailed info at the end of this EPD.

A2 – TRANSPORT TO THE MANUFACTURER

The raw materials are transported to the manufacturing site. In our case, the modelling include: road transportations (average values) of each raw material.

A3 – MANUFACTURING

This module includes process taking place on the manufacturing site. Specifically, it covers stone wool fabrication including melting and fiberization see process flow diagram and packaging. The production of packaging material is taking into account at this stage.

Fig. 3 – Manufacturing process schema

CONSTRUCTION PROCESS STAGE A4-A5

Description of the stage: The construction process is divided into 2 modules: transport to the building site A4 and installation A5.

A4 – TRANSPORT TO THE BUILDING SITE

This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described in Table 6.

Tab. 6 – Scenario for the calculation of stage A4

Parameter	Value
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Average truck trailer with a 24t payload, consumption 32 liters for 100 km
Distance to construction site	350 km
Capacity utilisation (including empty returns)	95 % of the capacity in volume 30 % of empty returns
Bulk density of transported products	140 kg/m^3
Volume capacity utilisation factor	1 (by default)

A5 – INSTALLATION IN THE BUILDING

No additional accessory was taken into account for the implementation phase insulation product.

Tab. 7 – Scenario for the calculation of stage A5

Parameter	Value
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	5 %
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)	Packaging wastes are 100% collected and modeled as recovered matter
Disposal of unused material	90 % recycling 10 % landfilled
Distance to factory, recycling center, landfill	350 km (recycling) 25 km (landfilled) 60 km (energy use of wooden pallets)
Type of fuel and consumption of the car or type of car used for transport	Average truck trailer with a 7,5–16 t payload, consumption 25 liters for 100 km
Volume capacity utilisation factor	1.3

USE STAGE B1-B7

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**

Once installation of the material is completed no further technical operations are required in connection with the thermal insulation during the use of the building until the end of its service life. For this reason these values are not quantified in the EPD. The thermal savings potential shall be calculated at the building level, i.e. outside the EPD product boundaries.

END-OF-LIFE STAGE C1–C4

This stage includes various end-of-life modules, see below for details.

C1 – DECONSTRUCTION, DEMOLITION

The de-construction and/or dismantling of insolation products take part of the demolition of the entire building. In our case, the environmental impact is assumed to be very small and can be neglected.

C2 – TRANSPORT TO WASTE PROCESSING

A distance of 350 km to the recycling center and 25 km to the landfill is considered.

C3 – WASTE PROCESSING FOR REUSE, UTILIZATION AND/OR RECYCLING

It is considered that 90% of the waste will be reused in the production plant in the form of recycling.

C4 – REMOVAL

In the end-of-life scenario, 10 % landfilling of waste is considered.

Tab. 8 – Scenario for the calculation of stage C2, C3, C4

Parameter	Value
Collection process specified by type	140 kg (together with mixed construction waste)
Recovery system specified by type	126 kg is recycled and reused during the production process as a replacement for the primary raw material
Disposal specified by type	14 kg is are landfilled
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 7,5–16 t payload, consumption 25 liters for 100 km

REUSE/RECOVERY/RECYCLING POTENTIAL – D

Only the benefits and costs associated with the processing of waste packaging material from the product (recycling packaging foil and energy benefits from pallets).

Note: Savings of primary input materials cannot be precisely determined considering the complexity of production.

Results LCA

LCA model, aggregation of data and environmental impact are calculated from software SimaPro 9.4.0.2 database of generic data – Ecoinvent 3.8.

Resume of the LCA results detailed on the following tabs.

Tab. 9 – Environmental impacts of other thicknesses can be recounted by the design factor (on the material density and thickness base): except for A5

Thickness (mm)	50	100	150	200	1000
Factor	0.05	0.1	0.15	0.2	1.0

Tab. 10 – Parameters describing the basic environmental impacts

Indicator – Unit	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total Global warming potential **kg CO_2 eq.**	8.11E+01	1.17E+01	9.17E-01	ND	0	1.39E+01	2.45E+00	7.92E-02	-8.83E+00
GWP-fossil Global warming potential **kg CO_2 eq.**	9.17E+01	1.17E+01	9.15E-01	ND	0	1.39E+01	2.44E+00	7.90E-02	-7.87E+00
GWP-biogenic Global warming potential **kg CO_2 eq.**	-1.07E+01	9.93E-03	8.31E-04	ND	0	1.27E-02	5.12E-03	7.83E-05	-1.64E+01
GWP-luluc Global warming potential from land use and land-use change **kg CO_2 eq.**	7.13E-02	4.57E-03	4.31E-04	ND	0	6.60E-03	1.15E-03	7.46E-05	-9.50E-05
ODP Stratospheric ozone depletion potential **kg CFC 11 eq.**	6.91E-06	2.70E-06	2.06E-07	ND	0	3.12E-06	6.36E-07	3.20E-08	-5.64E-07
AP Acidification potential, Cumulative exceedance **mol H+ eq.**	4.79E+02	4.73E-02	3.64E-03	ND	0	5.53E-02	2.37E-02	7.43E-04	-4.48E-02
freshwater EP Eutrophication potential, proportion of nutrients entering fresh water **kg P eq.**	8.12E-02	7.50E-04	6.87E-05	ND	0	1.05E-03	2.63E-04	7.23E-06	-2.12E-05
seawater EP Eutrophication potential, proportion of nutrients entering seawater **kg N eq.**	1.46E-01	1.42E-02	1.06E-03	ND	0	1.61E-02	9.59E-03	2.58E-04	-1.83E-03
soil EP Eutrophication potential, Cumulative overshoot **mol N eq.**	1.47E+00	1.56E-01	1.16E-02	ND	0	1.75E-01	1.05E-01	2.83E-03	-1.64E-02
POCP Ground-level ozone formation potential **kg NMVOC eq.**	4.46E-01	4.77E-02	3.56E-03	ND	0	5.40E-02	2.93E-02	8.23E-04	-7.70E-03
ADP-minerals and metals Raw material depletion potential for non-fossil sources **kg Sb eq.**	3.95E-04	4.05E-05	4.17E-06	ND	0	6.40E-05	4.01E-06	1.80E-07	-1.65E-06
ADP-fossil fuels Raw material depletion potential for fossil resources **MJ, calorific value**	2.26E+03	1.76E+02	1.37E+01	ND	0	2.08E+02	4.43E+01	2.21E+00	-1.08E+02
WDP Water scarcity potential (for users), water scarcity weighted by water scarcity **m^3 eq. scarcity**	3.89E+01	5.27E-01	4.53E-02	ND	0	6.91E-01	9.70E-01	9.93E-02	-1.37E+00

ND = „not declared“
The environmental impact of the product (Module B1-B7) will only become apparent when the product is accounted for within the structure the building.

Tab. 11 – Additional environmental impacts

Indicator – Unit	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PM Potential occurrence of disease due to particulate matter emissions **Occurrence of the disease**	5.44E-06	1.01E-06	6.81E-08	ND	0	1.03E-06	2.58E-06	1.50E-08	-4.86E-07
IRP Potential effect of human exposure to the isotope U235 **kBq U235 eq.**	1.29E+01	9.06E-01	7.26E-02	ND	0	1.10E+00	2.57E-01	9.80E-03	-8.83E-01
ETP-fw Potential comparative toxic unit for ecosystems **CTUe**	2.96E+03	1.37E+02	1.11E+01	ND	0	1.70E+02	2.84E+01	1.39E+00	-2.54E+01
HTP-c Potential comparative toxic unit for humans **CTUe**	9.99E-07	1.44E-07	1.13E-08	ND	0	1.72E-07	2.04E-08	9.16E-10	-1.70E-08
HTP-nc Potential comparative toxic unit for humans **CTUh**	9.86E-08	4.45E-09	4.07E-10	ND	0	6.23E-09	1.24E-09	3.54E-11	-6.34E-10
SQP Potential Soil Quality Index **dimensionless**	1.54E+03	1.21E+02	8.07E+00	ND	0	1.22E+02	4.71E+01	4.63E+00	-1.17E+00

ND = „not declared“
The environmental impact of the product (Module B1-B7) will only become apparent when the product is accounted for within the structure the building.

Tab. 12 – Resource consumption

Indicator – Unit	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE Consumption of renewable primary energy, excluding energy sources used as raw materials **MJ**	3.93E+02	2.48E+00	2.31E-01	ND	0	3.53E+00	8.55E-01	1.88E-02	-3.21E+00
PERM Consumption of renewable primary energy sources used as raw materials **MJ**	0	0	0	ND	0	0	0	0	0
PERT Total consumption of renewable primary energy sources (primary energy and primary energy sources used as raw materials) **MJ**	3.93E+02	2.48E+00	2.31E-01	ND	0	3.53E+00	8.55E-01	1.88E-02	-3.21E+00
PENRE Consumption of non-renewable primary energy, excluding energy sources used as raw materials **MJ**	2.40E+03	1.87E+02	1.45E+01	ND	0	2.20E+02	4.70E+01	2.34E+00	-1.15E+02
PENRM Consumption of non-renewable primary energy sources used as raw materials **MJ**	0	0	0	ND	0	0	0	0	0
PENRT Total consumption of non-renewable primary energy sources (primary energy and primary energy sources used as raw materials) **MJ**	2.40E+03	1.87E+02	1.45E+01	ND	0	2.20E+02	4.70E+01	2.34E+00	-1.15E+02
SM Consumption of secondary raw materials **kg**	4.13E+01	0	0	ND	0	0	0	0	0
RSF Consumption of renewable secondary fuels **MJ**	0	0	0	ND	0	0	0	0	0
NRSF Consumption of non-renewable secondary fuels **MJ**	0	0	0	ND	0	0	0	0	0
FW Net potable water consumption **m^3**	7.08E-02	0	0	ND	0	0	0	0	0

ND = „not declared“
The environmental impact of the product (Module B1-B7) will only become apparent when the product is accounted for within the structure the building.

Tab. 13 – Waste category

Indicator – Unit	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
HWD Hazardous waste disposed of **kg**	2.30E-03	0	0	ND	0	0	0	0	0
NHWD Other waste disposed of **kg**	0	0	0	ND	0	0	0	1.50E+01	0
RWD Radioactive waste disposed of **kg**	0	0	0	ND	0	0	0	0	0

Tab. 14 – Other output flows

Indicator – Unit	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
MFR Construction units for reuse **kg**	0	0	0	ND	0	0	0	0	0
MER Materials for recycling **kg**	7.84E-02	0	4.13E-01	ND	0	0	1.35E+02	0	0
EEE Materials for energy recovery **kg**	0	0	9.64E+00	ND	0	0	0	0	0
EET Exported energy **MJ per energy carrier**	0	0	0	ND	0	0	0	0	1.26E+02

Tab. 15 – the biogenic carbon content of the plant gate (FU = 1 m²)

Indicator – Unit	At the plant gate
Biogenic carbon content of the product **kg C**	0
Biogenic carbon content in the appropriate packaging **kg C**	1.56E+01

ND = „not declared“
The environmental impact of the product (Module B1-B7) will only become apparent when the product is accounted for within the structure the building.
Packaging – wooden pallet per FU, weight 9.544 kg per FU, calculation according to EN 16449.

LCA interpretation

Tab. 16 – The interpretation of results LCA according to SG PCR

	Product stage	Construction process stage		Use stage	End-of-life stage	Environmental impacts of the product	Positive benefits of recycling
		Transport	Installation				
	A1-A3	A4	A5	B1-B7	C1-C4	TOTAL	D
Global warming kg CO_2equiv/FU	81.06	11.67	0.92	0	16.45	**110.10** kg CO_2equiv/FU	-8.83
Non-renewable resources consumption 1) MJ/FU	2255.80	176.14	13.66	0	254.12	**2699.72** MJ/FU	-108.08
Energy consumption 2) MJ/FU	2792.61	189.49	14.74	0	274.18	**3271.02** MJ/FU	-118.59
Water consumption 3) m³/FU	0.07	0.00	0.00	0	0.00	**0.07** m³/FU	0.00
Waste production 4) kg/FU	0.00	0.00	0.00	0	15.00	**15.00** kg/FU	0.00

1) This indicator corresponds to the abiotic depletion potential of fossil resources.
2) This indicator corresponds to the total use of primary energy.
3) This indicator corresponds to the use of net fresh water.
4) This indicator expresses to the sum of hazardous, non-hazardous and radioactive waste disposed.

Environmental positive contribution

WASTE PROCESSING FOR REUSE, RECOVERY AND/OR RECYCLING

Factory mineral wool waste can be processed into recycled briquettes for mineral wool production. Only internal recycled products (that never leave factory gate) can be used as a production input and it is mentioned only at part A1 - Raw material supply.

Main parts of these briquettes are Milled wet mineral waste, Cement and Bauxit.

Fig. 4 – Briquettes

Fig. 5 – Blown insulation

Second way how to reuse or recycle old mineral wool waste is to mill it and use it as a blown wool for attic floor insulation or for cavity constructions.

This option is now available only for an internal waste recycling (for products, that have never been used in real constructions). That's why this reuse and recycling is not counted also for stages C and D of this EPD.

RECYCLED CONTENT

The total amount of recycled content in the product Isover SP 150 according EN ISO 14021 part 7.8 is 68.6 %. The amount of recycled content in the product is divided as follows according to part 7.8.1.1:

Tab. 17 – Recycled content

Parameter	Value
Pre-consumer material	21 %
Recycled material	19.6 %
Recovered material	28 %

The calculation of the recycled content is based on the weight of the product.
Data on raw materials and production from 2021 are used in the calculation.

Additional information

ENVIRONMENTAL POLICY OF SAINT-GOBAIN

The Saint-Gobain company strives to be a leader in the field of sustainable smelting, therefore it optimizes all processes associated with the supply of environmentally friendly products and promotes the construction of sustainable buildings that consume less energy, resources, produce less waste and emissions in the long term with its integrated solutions.

For all Saint-Gobain products, emphasis is placed on reducing their impact on the environment at all stages of the life cycle and at the same time improving all the useful properties of the products.

The Saint-Gobain group has long-term goals: zero accidents in relation to the environment and constant reduction of environmental impacts (see following Fig. 6). Using mid-term and short-term goals, it then fulfills the long-term goals. The Group places particular emphasis on the following environmental areas: raw materials, waste and recycling, energy, atmospheric emissions, water, biodiversity and accidents with an impact on the environment.

By 2030, Saint-Gobain has set ambitious commitments in the areas of reducing CO_2 emissions, recycling waste, reducing water consumption and product transparency.

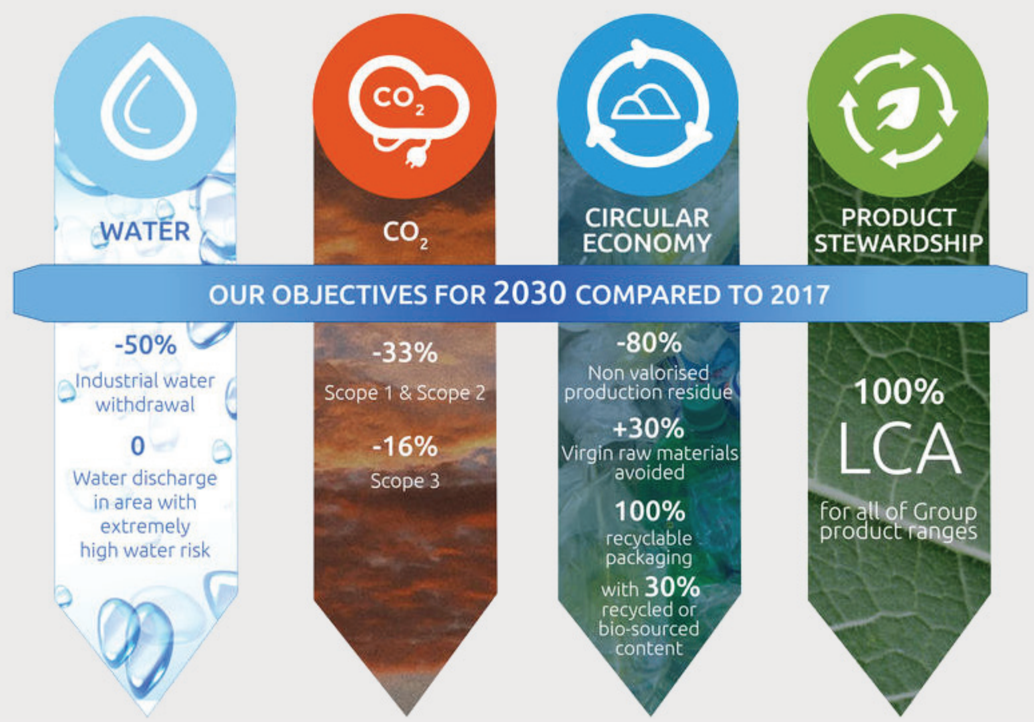


Fig. 6 – Long term goals of the group Saint Gobain in the environmental

More informations CSR (Corporate Sustainability Report) on the website www.saint-gobain.com

Production process follows in addition these international standards:
EN ISO 9001, ISO 14001, OHSAS 18001 a ISO 50001

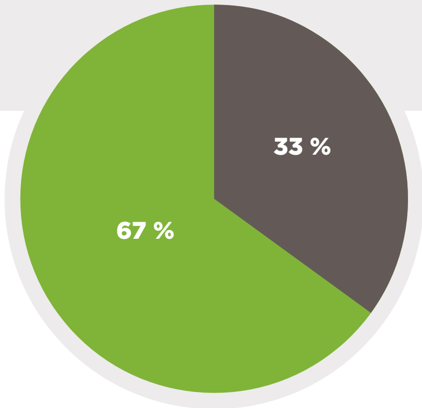
CERTIFIED
ISO 9001 · ISO 14001
OHSAS 18001 · ISO 50001

THE ELECTRICITY PRODUCTION MODEL CONSIDERED FOR THE MODELLING OF SAINT-GOBAIN PLANT IS:

401 Electricity (Czech Republic, 2021)

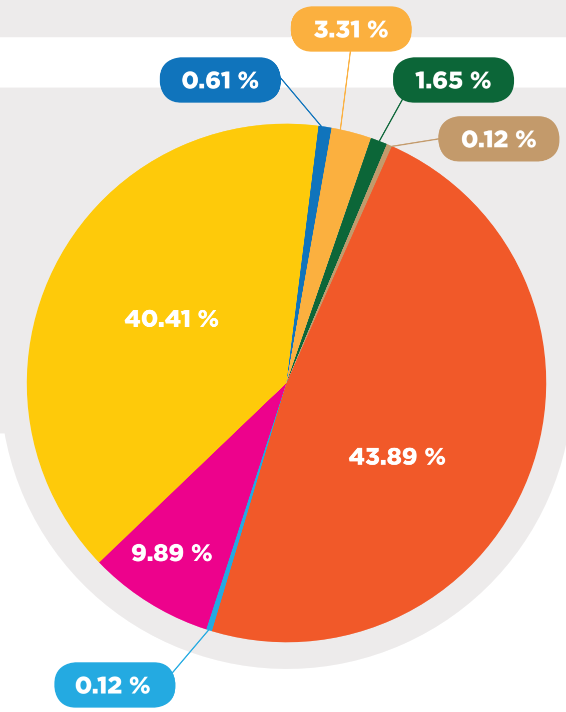
Tab. 18 – Energy mix for Saint-Gobain production plants

Type of information	Description
Reference year	2021
Energy mix	Distribution of energy sources in production plants Renewable energy sources (hydro): 67 % Energy mix of the Czech Republic: 33 %



Tab. 19 – National energy mix

Type of information	Popis
Location	Representative of average production in Czech Republic
Reference year	2021
Type of data set	Cradle to gate
Source	OTE CZ*
Geographical representativeness description	Split of energy sources in Czech republic Coal and peat: 43.89 % Fuel oil: 0.12 % Gas: 9.89 % Nuclear: 40.41 % Hydro: 0.61 % Biomass: 3.31 % Solar PV: 1.65 % Other non-thermal: 0.12 %



*Residual energy mix. OTE CZ [online]. [cit. 2023-01-13].
Available from www.ote-cr.cz/cs/statistika/zbytkovy-energeticky-mix

Source

1) EN 15804. Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products. Prague: Úřad pro technickou normalizaci, metrologii a státní zkušebnictví, 2012.
2) ČSN ISO 14025. Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Prague: ČESKÝ NORMALIZAČNÍ INSTITUT, 2006
3) Environdec PCR (International EPD system). Product group: Multiple UN CPC Codes: INSULATION MATERIALS. version 1.0 (2014:13). Sweden.
4) General report Isover Častolovice, 02/2023.

Do you need advice?
Contact our Business and Technical Support Center:

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SAINT-GOBAIN

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