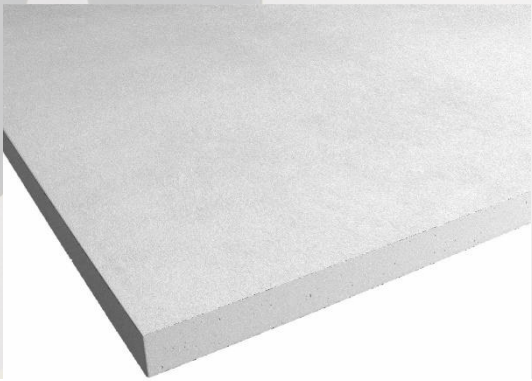
ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804:2012+A2:2019 and ISO 14025

Glasroc GTX 9 Tuulensuojalevy – Sheathing Board



Date of issue: 2021-03-26
Revision: 2022-12-14
Validity: 5 years
Valid until: 2027-12-13
Version: 2
Scope of the EPD®: Finland and Baltic

The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

Registration number
The International EPD® System:
S-P-03416

General information

Manufacturer: Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum
Programme used: International EPD System **http://www.environdec.com/**
EPD registration number/declaration number: S-P-03416
PCR identification: EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System PCR 2019:14 Construction products (EN 15804:A2) (1.11)
Site of manufacture: Kirkkonummi/SG Finland Gypsum
Owner of the declaration: Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum
Product / product family name and manufacturer represented: Glasroc GTX 9 Tuulensuojalevy – Sheathing Board produced by Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum
UN CPC code: 37530 Articles of plaster or of composition based on plaster
Declaration issued: 2021-03-26 **Revision:** 2022-12-14 **Valid until:** 2027-12-13
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.
EPD Prepared by: LCA Central Team, Saint-Gobain and by Eva Hellgren.
Contact: Sandra Perez Jimenez (Sandra.Perez-Jimenez@saint-gobain.com) and Eva Hellgren (Eva.Hellgren@saint-gobain.com).

The Functional Unit is: 1m^2 of installed plasterboard 9,5 mm with a weight of 7,8 kg/m^2 with a useful life of 50 years

Declaration of Hazardous substances: (Candidate list of Substances of Very High Concern): none

Geographical scope of the EPD®: Finland and Baltic

The intended use of this EPD is for B2B communication.

Programme	The international EPD© System
Adress:	EPD© International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN standard UNE-EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products, version 1.1
PCR review was conducted by: El Comité Técnico del Sistema Internacional EPD© President: Claudia A. Peña. Contact via info@environdec.com
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Martin Erlandsson IVL Swedish Environmental Research Institute In case of recognized individual verifiers: Approved by: The International EPD© System
Procedure for follow-up of data during EPD validity involves third part verifier: ☒ Yes ☐ No

Product description

Product description and use:
This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m² of installed plasterboard 9,5 mm with a weight of 7,8 kg/m² and an expected average service life of 50 years.

Glasroc GTX 9 Tuulensuojalevy – Sheathing board is a 9,5 mm thick gypsum based sheathing board with a water resistant core and covered with glassfiber mats. Glasroc GTX 9 is a square edge wind resistant plasterboard for weather protection on exterior walls. The board can be exposed to the weather for 6 months which allows greater flexibility in the construction process before the permanent cladding.

Technical data/physical characteristics:

EN classification	GM-H2 according EN 15283-1:2008
Reaction to Fire	Euroclass A2-S1, d0 according EN 15283-1:2008
Water vapour resistance	10 µ according to EN 15283-1:2008
Thermal conductivity	0,25 W/(m.K) according to EN 15283-1:2008

Description of the main product components and/or materials:

Product components	Weight (%)	Post-consumer material weight (%)	Renewable material weight (%)
GTX 9	100%	0%	0%
Gypsum (Natural)	70% – 95%	0%	0%
Gypsum (Recycled)	10% – 20%	100%	0%
Additives	0% – 5%	0%	0%
Glassfiber mat	5% – 10 %	0%	0%
Packaging materials	**Weight (%)**		
Wooden pallet	0,5% – 2%		

During the life cycle of the product any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has not been used in a percentage higher than 0,1% of the weight of the product.
The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

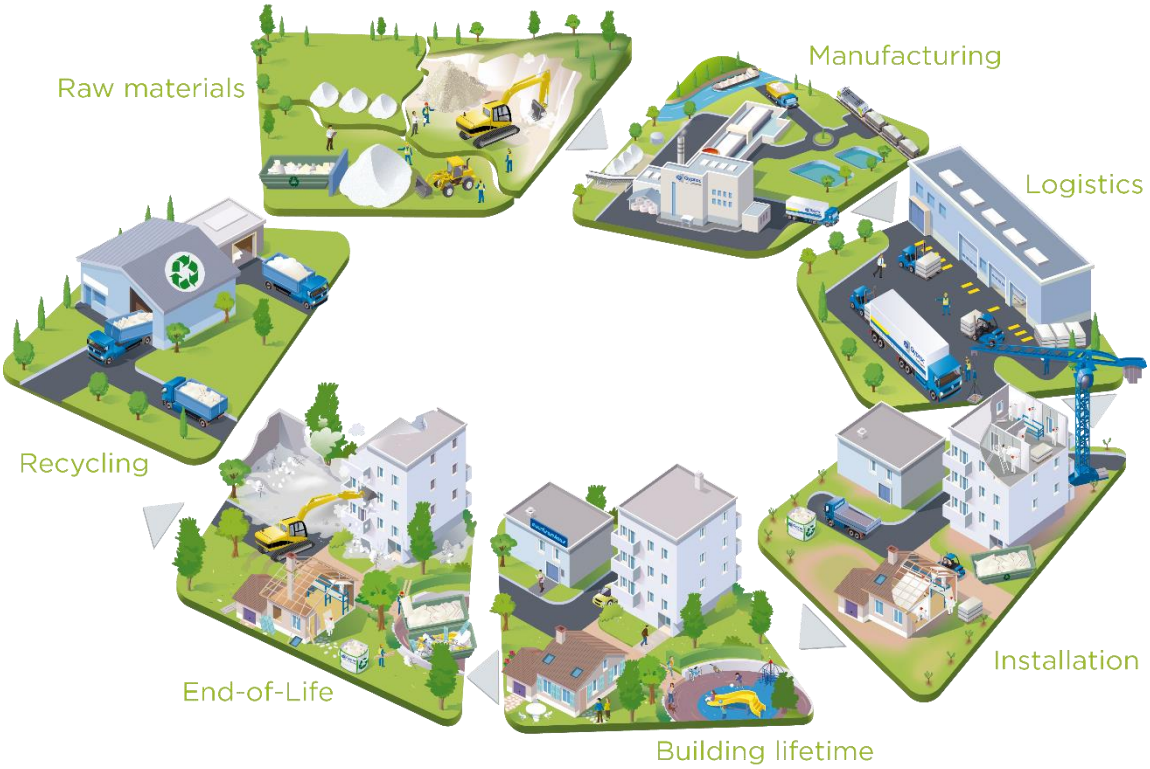
LCA calculation information

EPD TYPE DECLARED	Cradle to grave and module D Product-specific (one product, one manufacturing site)
FUNCTIONAL UNIT	1 m² of installed board with a weight of 7,8 kg/m² and an expected average service life of 50 years
SYSTEM BOUNDARIES	Cradle to grave + Module D = (A + B + C) +D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the Gypsum product is considered to be 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	Production data, recycling, energy and waste data have been calculated on a mass basis. The polluter pays as well as the modularity principles have been followed.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope includes: Finland and Baltic Data is collected from one production site in Kirkkonummi, Finland, Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum Data collected for the year 2021. Background data: Background data: Ecoinvent 3.6 and GaBi ts 9.2
PRODUCT CPC CODE	37530 Articles of plaster or of composition based on plaster

According to EN 15804:2012+A2:2019, EPDs of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPDs might not be comparable if they are from different programs.

Life cycle stages

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage: the product stage of plaster products is subdivided into 3 modules A1, A2 and A3 respectively “Raw material supply”, “transport to manufacturer” and “manufacturing”.

A1, raw material supply.
This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

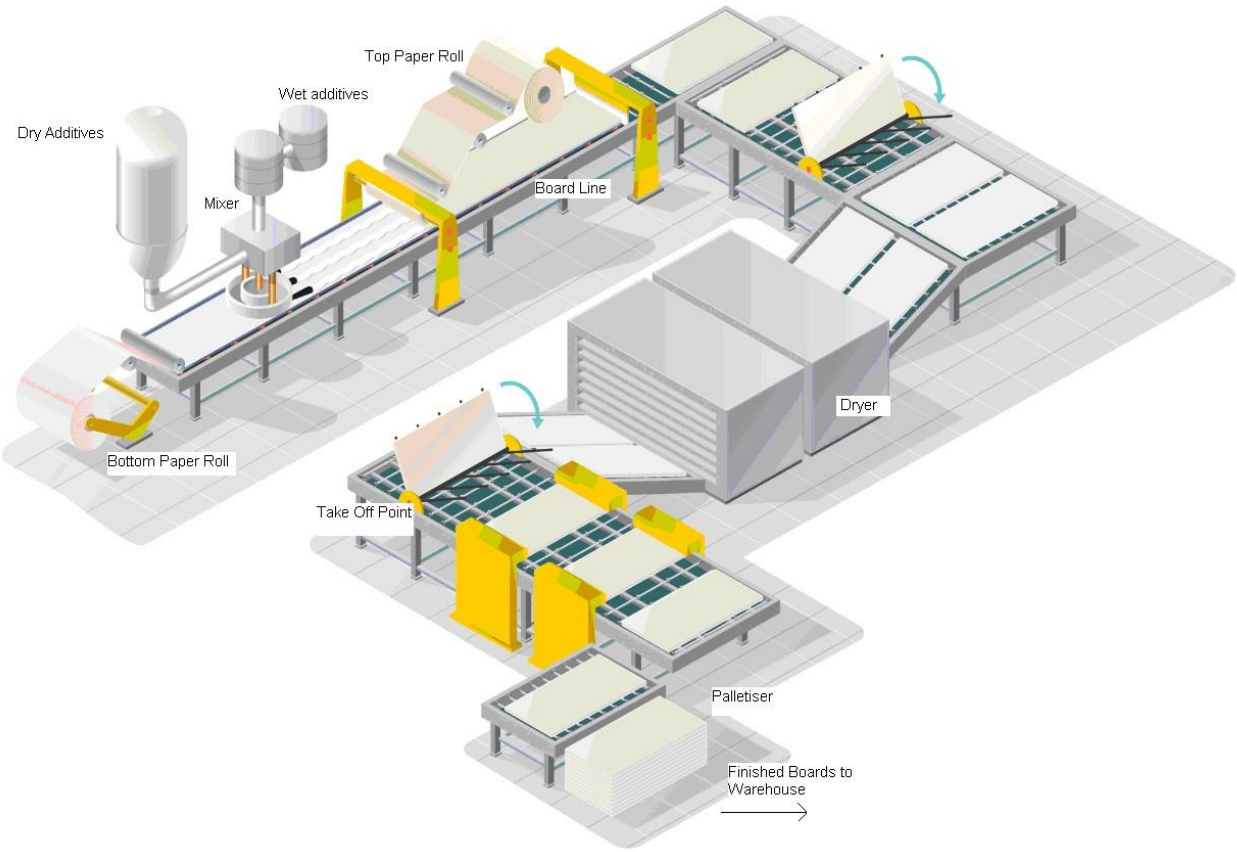
A2, transport to the manufacturer.
The raw materials are transported to the manufacturing site. The modelling includes road, boat and/or train transportations of each raw material.

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

Object	Value	Data quality
A3 data quality of electricity and CO_2 emission kg CO_2 eq. / kWh	0.006	The emission of Finnish electricity is based on Thinkstep 2016 dataset valid until 2022 and Guarantee of Origin certificate.

The LCA calculation has been made taking into account the fact that during the manufacturing process it is used 100% renewable electricity. This 100% renewable electricity bought is evidenced by Guarantee of Origin certificates (GOs) from LOS.

Manufacturing process flow diagram



Manufacturing in detail:
The initial materials are homogenously mixed to form a gypsum slurry that is spread via multiple hose outlets onto a glassfiber mat on a moving conveyor belt. A second glassfiber mat is fed onto the production line from above to form the plasterboard. The plasterboard continues along the production line where it is finished, dried, and cut to size.

Construction process stage, A4-A5

Description of the 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 on the basis of a scenario with the parameters described in the following table.

PARAMETER	VALUE (expressed per functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Long distance truck, maximum load weight of 27 t and consumption of 0.38 liters per km
Distance	205 km
Capacity utilisation (including empty returns)	85% (30% empty returns) : default values in Gabi
Bulk density of transported products	828 kg/m^3
Volume capacity utilisation factor	< 1

A5, installation into the building.
The accompanying table quantifies the parameters for installing the product at the building site. All installation materials and their waste processing are included.

PARAMETER	VALUE (expressed per functional unit)
Ancillary materials for installation (specified by materials)	Screws 8 units /m^2 board
Water use	None
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	None
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	Plasterboard: 0,39 kg (5% loses)
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)	Plasterboard: 0,39 kg (5% loses) to landfill Screws: 0,001 kg to landfill Paper for label: 0,0009 kg PP band: 0,0001 kg Pallet 0,102 kg
Direct emissions to ambient air, soil and water	None

Use stage (excluding potential savings), B1-B7

Description of the stage:
The use stage, related to the building fabric includes:

B1, use or application of the installed product;
B2, maintenance;
B3, repair;
B4, replacement;
B5, refurbishment;
B6, operational energy use
B7, operational water use

Description of scenarios and additional technical information:
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.

Maintenance:

PARAMETER	VALUE (expressed per functional unit)
Maintenance process	None required during product lifetime
Maintenance cycle	None required during product lifetime
Ancillary materials for maintenance (e.g. cleaning agent, specify materials)	None required during product lifetime
Wastage material during maintenance (specify materials)	None required during product lifetime
Net fresh water consumption during maintenance	None required during product lifetime
Energy input during maintenance (e.g. vacuum cleaning), energy carrier type, (e.g. electricity) and amount, if applicable and relevant	None required during product lifetime

Repair:

PARAMETER	VALUE (expressed per functional unit)
Repair process	None required during product lifetime
Inspection process	None required during product lifetime
Repair cycle	None required during product lifetime
Ancillary materials (e.g. lubricant, specify materials)	None required during product lifetime
Wastage material during repair (specify materials)	None required during product lifetime
Net fresh water consumption during repair	None required during product lifetime
Energy input during repair (e.g. crane activity), energy carrier type, (e.g. electricity) and amount if applicable and relevant	None required during product lifetime

Replacement:

PARAMETER	VALUE (expressed per functional unit)
Replacement cycle	None required during product lifetime
Energy input during replacement (e.g. crane activity), energy carrier type, (e.g. electricity) and amount if applicable and relevant	None required during product lifetime
Exchange of worn parts during the product's life cycle (e.g. zinc galvanized steel sheet), specify materials	None required during product lifetime

Refurbishment:

PARAMETER	VALUE (expressed per functional unit)
Refurbishment process	None required during product lifetime
Refurbishment cycle	None required during product lifetime
Material input for refurbishment (e.g. bricks), including ancillary materials for the refurbishment process (e.g. lubricant, specify materials)	None required during product lifetime
Wastage material during refurbishment (specify materials)	None required during product lifetime
Energy input during refurbishment (e.g. crane activity), energy carrier type, (e.g. electricity) and amount	None required during product lifetime
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants)	None required during product lifetime

Use of energy and water:

PARAMETER	VALUE (expressed per functional unit)
Ancillary materials specified by material	None required during product lifetime
Net fresh water consumption	None required during product lifetime
Type of energy carrier (e.g. electricity, natural gas, district heating)	None required during product lifetime
Power output of equipment	None required during product lifetime
Characteristic performance (e.g. energy efficiency, emissions, variation of performance with capacity utilisation etc.)	None required during product lifetime
Further assumptions for scenario development (e.g. frequency and time period of use, number of occupants)	None required during product lifetime

End-of-life stage C1-C4

Description of the stage: This stage includes the next modules:

C1, de-construction, demolition;
C2, transport to waste processing;
C3, waste processing for reuse, recovery and/or recycling;
C4, disposal, including provision and all transport, provision of all materials, products and related energy and water use.

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

PARAMETER	VALUE (expressed per functional unit)
Collection process specified by type	52% collected separately for recycling and 48% collected with mixed deconstruction and demolition waste to landfill
Recovery system specified by type	4,06 kg recycled includes glassfiber mat, board, screws
Disposal specified by type	3,75 kg to landfill
Assumptions for scenario development (e.g. transportation)	Gypsum board waste is transported 200 km by truck from deconstruction/demolition sites to recycling plant and 32 km by truck to landfill

Reuse/recovery/recycling potential, D

An end of life recycling 52% (48% of wastes are landfilled) has been assumed using local demolition waste data and adjusted considering the recyclability of the product.

LCA results

As specified in EN 15804:2012+A2:2019 and also the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors from the ILCD. Specific data has been supplied by the plant, and generic data come from GaBi ts 9.2 and Ecoinvent 3.6 databases. All emissions to air, water, and soil, and all materials and energy used have been included.

All figures refer to a functional unit of 1 m² of installed plasterboard 9,5 mm with a weight of 7,8 kg/m² and an expected average service life of 50 years.

The following results corresponds to a single product manufactured in a single plant.

Description of the system boundary (X = Included in LCA, MNA = Module Not Assessed)

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	**RER**	**RER**	**RER**	**RER**	**RER**	-	-	-	-	-	-	-	**RER**	**RER**	**RER**	**RER**	**RER**
Specific data used	**>59% GWP- GHG**																
Variation products	**One site one product**																
Variation sites	**Only one site is reported for this product**																

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. The data was collected from internal records and reporting documents from Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects good inventory data quality.

Environmental Impacts

		Product stage	Construction stage		Use stage							End of life stage				Reuse, Recovery Recycling
	Environmental 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
	Climate Change [kg CO2 eq.]	**2,02E+00**	**7,79E-02**	**3,66E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,57E-02**	**4,58E-02**	**3,37E-02**	**5,89E-02**	**-7,16E-03**
	Climate Change (fossil) [kg CO2 eq.]	**2,23E+00**	**7,74E-02**	**1,56E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,56E-02**	**4,55E-02**	**3,29E-02**	**5,81E-02**	**-7,12E-03**
	Climate Change (biogenic) [1] [kg CO2 eq.]	**-2,11E-01**	**0,00E+00**	**2,09E-01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,70E-05**	**0,00E+00**	**7,40E-04**	**6,83E-04**	**-1,73E-05**
	Climate Change (land use change) [kg CO2 eq.]	**9,77E-04**	**6,31E-04**	**1,31E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7,83E-07**	**3,71E-04**	**5,80E-05**	**1,67E-04**	**-2,26E-05**
	Ozone depletion [kg CFC-11 eq.]	**2,39E-05**	**9,36E-18**	**1,19E-06**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,79E-18**	**5,88E-18**	**1,21E-09**	**2,15E-16**	**-9,27E-17**
	Acidification terrestrial and freshwater [Mole of H+ eq.]	**8,64E-03**	**4,45E-04**	**5,87E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,05E-04**	**2,62E-04**	**1,56E-04**	**4,17E-04**	**-5,06E-05**
	Eutrophication freshwater [kg P eq.]	**1,15E-04**	**2,37E-07**	**5,82E-06**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7,87E-09**	**1,39E-07**	**1,45E-05**	**9,97E-08**	**-2,05E-08**
	Eutrophication freshwater [kg (PO4)3 eq.]	**3,52E-04**	**7,27E-07**	**1,79E-05**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,42E-08**	**4,28E-07**	**4,45E-05**	**3,06E-07**	**-6,29E-08**
	Eutrophication marine [kg N eq.]	**2,20E-03**	**2,15E-04**	**1,54E-04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,95E-05**	**1,27E-04**	**3,03E-05**	**1,07E-04**	**-2,36E-05**
	Eutrophication terrestrial [Mole of N eq.]	**2,36E-02**	**2,38E-03**	**1,66E-03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,14E-04**	**1,40E-03**	**3,05E-04**	**1,18E-03**	**-2,68E-04**
	Photochemical ozone formation - human health [kg NMVOC eq.]	**1,80E-02**	**4,06E-04**	**1,02E-03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6,13E-05**	**2,39E-04**	**8,13E-05**	**3,25E-04**	**-6,60E-05**
	Resource use, mineral and metals [2] [kg Sb eq.]	**4,36E-06**	**5,59E-09**	**2,03E-06**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,30E-10**	**3,34E-09**	**5,06E-08**	**5,22E-09**	**-1,44E-09**
	Resource use, energy carriers [2] [MJ]	**3,37E+01**	**1,04E+00**	**2,16E+00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,35E-01**	**6,10E-01**	**5,01E-01**	**7,62E-01**	**-9,40E-02**
	Water scarcity [2] [m³ world equiv.]	**5,14E-01**	**6,96E-04**	**3,40E-02**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7,39E-05**	**4,14E-04**	**8,98E-03**	**6,09E-03**	**-1,55E-04**

[1] GWP biogenic includes renewable carbon stored in packaging materials and the product.
[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				Reuse, recovery, recycling
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]	4,83E+00	5,83E-02	3,08E-01	0	0	0	0	0	0	0	1,52E-03	3,44E-02	4,19E-02	9,98E-02	-2,43E-02
Primary energy resources used as raw materials (PERM)* [MJ]	1,74E+00	0,00E+00	8,68E-02	0	0	0	0	0	0	0	0,00E+00	0,00E+00	-8,58E-01	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT) [MJ]	6,57E+00	5,83E-02	3,95E-01	0	0	0	0	0	0	0	1,52E-03	3,44E-02	-8,16E-01	9,98E-02	-2,43E-02
Use of non-renewable primary energy (PENRE) [MJ]	1,13E+01	1,04E+00	1,04E+00	0	0	0	0	0	0	0	4,36E-01	6,11E-01	5,04E-01	7,62E-01	-9,40E-02
Non-renewable primary energy resources used as raw materials (PENRM)* [MJ]	2,24E+01	0,00E+00	1,12E+00	0	0	0	0	0	0	0	0,00E+00	0,00E+00	-1,11E+01	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	3,37E+01	1,04E+00	2,16E+00	0	0	0	0	0	0	0	4,36E-01	6,11E-01	-1,06E+01	7,62E-01	-9,40E-02
Input of secondary material (SM) [kg]	8,85E-01	0,00E+00	4,43E-02	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]	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
Use of non-renewable secondary fuels (NRSF) [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
Use of net fresh water (FW) [m^3]	1,21E-02	6,75E-05	8,58E-04	0	0	0	0	0	0	0	2,70E-06	3,99E-05	2,09E-04	1,92E-04	-1,60E-05

*For this study, both the product and its packaging are reported in the indicators "Use of renewable primary energy resources used as raw materials" ("PERM") and "Use of non-renewable primary energy resources used as raw materials" ("PENRM"). PERM and PENRM are reported as negative values were materials are recycled or recovered, but not when landfilled.

Waste Category & Output flows

Waste Category & Output Flows	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
Hazardous waste disposed (HWD) [kg]	4,87E-08	4,83E-08	7,09E-09	0	0	0	0	0	0	0	4,42E-11	2,84E-08	1,33E-11	1,16E-08	-1,78E-09
Non-hazardous waste disposed (NHWD) [kg]	9,34E-03	1,59E-04	4,00E-01	0	0	0	0	0	0	0	1,08E-04	9,39E-05	6,52E-06	3,83E+00	-3,89E-05
Radioactive waste disposed (RWD) [kg]	2,43E-05	1,29E-06	1,07E-05	0	0	0	0	0	0	0	5,00E-07	8,04E-07	7,89E-08	8,67E-06	-3,27E-06
Components for re-use (CRU) [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
Materials for Recycling (MFR) [kg]	5,16E-02	0,00E+00	2,58E-03	0	0	0	0	0	0	0	0,00E+00	0,00E+00	4,15E+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

Information on biogenic carbon content

		Product stage
	Biogenic Carbon Content	A1 / A2 / A3
	Biogenic carbon content in product [kg]	3,79E-04
	Biogenic carbon content in packaging [kg]	6,01E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 (approx. 3,67) kg CO_2.

There is a small biogenic carbon content in product, mainly due to the use of accelerator in production. For packaging, the biogenic carbon content is due to pallet use.

LCA results interpretation

The following figure refers to a functional unit of 1 m² of installed plasterboard 9,5 mm with a weight of 7,8 kg/m² and for specific application of external building for an expected average service life of 50 years.

[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 corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.

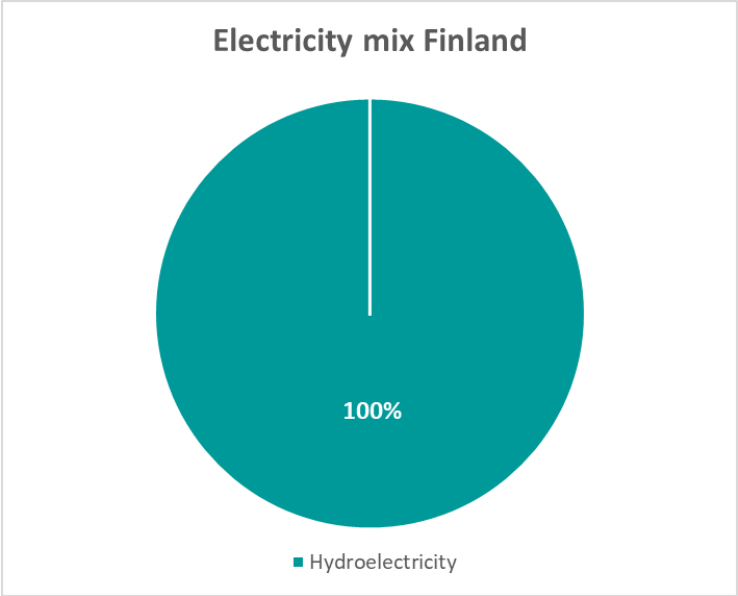
The product stage (A1-A3) is responsible for 75 % or more in its lifetime of gypsum plasterboard for climate change, ozone depletion, freshwater, marine and terrestrial eutrophication, resource use, energy carriers and water scarcity. Relevant impacts can also be seen in stage End of life, C3 (waste processing) and C4 (disposal), due to wastes disposed in landfill. The impacts are reflected in climate change and freshwater eutrophication (C3) respectively climate change, terrestrial and freshwater acidification, terrestrial and marine eutrophication (C4).

Module D declares the environmental benefits from reusable products, recyclable materials or energy recovery. In this analysis, the benefits come from the recycling process that takes places at the end of life of Gyproc board.

Additional information

Electricity description

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of Electricity purchased by Saint-Gobain Finland Oy – Kirkkonummi/SG Finland Gypsum Finland
Geographical representativeness description	Split of energy sources in Finland - Hydro 100%
Reference year	2016. Dataset valid until 2022
Type of data set	Cradle to gate from Thinkstep database
Source	Guarantee of Origin certificates (GOs) - 2021
CO_2 emissions	0.006 kg CO_2 eq. / kWh



Influence of transportation to other countries

The results of stage A4 (transportation of product) in the table of this EPD refer to transportation in Finland. This product is also delivered to the countries in the table below. In order to adapt the impact of transportation in the A4 column, figures from the current EPD shall be multiply by the multiplication factors below.

Country	Average distance	Multiplication factor
Finland	205 km truck	1,0
Estonia	86 km truck + 90 km boat	0,6
Lithuania	396 km truck + 90 km boat	2,1
Latvia	689 km truck + 90 km boat	3,5

Carbon footprint

Carbon footprint	Product stage	Construction stage		End of life stage				D Reuse, recovery, recycling
	A1 / A2 / A3	A4 Transport	A5 Installation	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
GWP [kg CO2 eq.]	2,02E+00	7,74E-02	3,65E-01	3,57E-02	4,55E-02	3,36E-02	5,88E-02	-7,13E-03
GWP-IOBC [kg CO2 eq.]	2,23E+00	7,74E-02	1,56E-01	3,56E-02	4,55E-02	3,29E-02	5,81E-02	-7,12E-03
GWP-BC [kg CO2 eq.]	-2,11E-01	0,00E+00	2,09E-01	4,70E-05	0,00E+00	7,40E-04	6,83E-04	-1,73E-05

Note : The columns with values for the stages B1 – B5 were excluded since all the values are equal to zero (0 $kgCO_2$ eq.)

Environmental impacts according to EN 15804:2012 + A1

The following tables presents results of 1 m² of installed Glasroc GTX 9 Tuulensuojalevy – Sheathing Board, with a reference service life of 50 years according to EN 15804:2012 +A1.

	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 CO_2 eq.]	2,17E+00	7,63E-02	1,52E-01	0	0	0	0	0	0	0	3,52E-02	4,49E-02	3,20E-02	5,68E-02	-7,02E-03
Ozone depletion (ODP) [kg R11 eq.]	3,18E-05	1,25E-17	1,59E-06	0	0	0	0	0	0	0	5,05E-18	7,84E-18	1,27E-09	2,87E-16	-1,24E-16
Acidification potential (AP) [kg R11 eq.]	7,00E-03	3,05E-04	4,74E-04	0	0	0	0	0	0	0	8,72E-05	1,80E-04	1,34E-04	3,35E-04	-3,50E-05
Eutrophication potential (EP) [kg Phosphate eq.]	1,77E-03	7,65E-05	1,05E-04	0	0	0	0	0	0	0	6,94E-06	4,50E-05	5,66E-05	3,77E-05	-8,77E-06
Photochemical ozone creation [kg Ethene eq.]	2,29E-03	1,06E-05	1,27E-04	0	0	0	0	0	0	0	6,40E-06	6,23E-06	2,53E-06	2,69E-05	-3,44E-06
Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.]	2,22E-04	6,31E-09	1,29E-05	0	0	0	0	0	0	0	9,78E-10	3,77E-09	5,10E-08	2,01E-08	-1,17E-04
Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ]	3,31E+01	1,04E+00	2,11E+00	0	0	0	0	0	0	0	4,34E-01	6,09E-01	4,37E-01	7,40E-01	-8,58E-02

Differences with previous versions of the EPD

This EPD was updated according to the data collected for the year 2021.

References

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3. EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
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9. 2022_11_22_LCA_REPORT_EN15804+A2_Finland_v2