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The Norwegian EPD Foundation

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

Owner of the declaration:	Saint-Gobain Sweden AB, ISOVER
Program operator:	The Norwegian EPD Foundation
Publisher:	The Norwegian EPD Foundation
Declaration number:	NEPD-2075-936-EN
Registration number:	NEPD-2075-936-EN
ECO Platform reference number:	-
Issue date:	28.02.2020
Valid to:	28.02.2025

Regelisolering, lambda 0,034

Saint-Gobain Sweden AB

GLAVA ISOLASJON

www.epd-norge.no

General information

Product

GLAVA PROFF 34 PLATE

Program operator

The Norwegian EPD Foundation
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Declaration number

NEPD-2075-936-EN

ECO Platform reference number

This declaration is based on Product Category Rules

CEN Standard EN 15804 serve as core PCR.
The Product Category Rules, NPCR 012:2018 Part B for Thermal insulation products is used in addition to the core PCR.

Statement of liability

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit

1m² with a thermal resistance of 1,0 K.m²/W a thickness of 34 mm.

Functional unit

1m² with a thermal resistance of 1,0 K.m²/W with a reference service life of 60 years

Verification

Independent verification of calculation data and other environmental information and test of the computer program was carried out by Martin Erlandsson in accordance with ISO14025, 8.1.3 and 8.1.4 + EN 15804

☑ Externally

Martin Erlandsson

IVL Swedish Environmental Research Institute
(Independent verifier approved by EPD Norway)

Owner of the declaration

Saint-Gobain Sweden AB, ISOVER

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Manufacture

Saint-Gobain Sweden AB, ISOVER

Place of production

Billesholm, Sweden

Management system

SS-EN ISO 9001:2008
SS-EN ISO 14001:2004

Org. No.

556241-2592

Issue date

28.02.2020

Valid to

28.02.2025

Year of study

2018

Comparability

EPD of construction products may not be comparable if they do not comply with EN15804 and seen in a building context.

The EPD has been worked out by

The EPD has been worked by the use of EPD tool, GaBi, version 8.7 by Saint-Gobain LCA central team and by Malin Dalborg.

Company-specific data has been verified by Patricia Jimenez Diaz, Saint-Gobain central LCA team.

Approved

Håkon Hauan

Håkon Hauan
Managing Director of EPD-Norway

Product description

Product description and description of use:

This EPD describes the potential environmental impacts of 1 m² of glass wool insulation, ISOVER Träregelskiva 34, Stålregelskiva 34, Bjälklagsskiva 34, Regelskiva 34, Våningsskiva 34, Skiva 34 and GLAVA PROFF 34 PLATE, with a thermal resistance equal to 1 K.m².W-1. 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 Sweden AB, ISOVER in Billesholm, uses a small amount of natural and abundant raw materials (sand, soda, limestone, feldspar) and high share of recycled glass cullets (more than 50% post-consumer recycled content of the glass). This material is converted by using fusion and fiberizing techniques to produce glass wool. The products obtained come in the form of a glass wool pipe section.

On Earth, naturally, the best insulator is dry immobile air at 10°C: its thermal conductivity factor, expressed in λ, is 0.025 W/(m.K) (watts per meter Kelvin degree). The thermal conductivity of mineral wool at 10°C 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). For technical insulation the thermal conductivity is declared for different temperatures.

With its entangled structure, glass 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 and offers acoustic correction inside premises. Glass wool mainly containing incombustible materials and does not react to fire.

Glass wool insulation is used in buildings as well as industrial facilities. It ensures a high level of comfort, minimizes carbon dioxide (CO_2) emissions by preventing heat losses through roofs, walls, floors, pipes and boilers. It reduces noise and protects homes and industrial facilities against fire.

Correctly installed glass wool products and solutions do not require maintenance and last throughout the lifetime of the building (which is set at 60 years as a default value in the model), or as long as the insulated building component is a part of the building.

Technical data/physical characteristics (for a thickness of 34 mm):

Thermal resistance of the Product: 1 K.m²/W (UNE EN 12667)
The thermal conductivity of the Glass wool is: 0.034 W/(m·K) at 10° (EN 14303)
Reaction to fire: A1 (EN 13501-1)

Description of the main product components and or materials:

Main components

Glass wool	90-95% (REACH registration number 01-2119472313-44-0041)
Binder	0-10%

Description of the main components and/or materials for 1 m² of product with a thermal resistance of 1 K.m^2.W^{-1} a thickness of 34 mm for the calculation of the EPD®:

PARAMETER	VALUE (per functional unit)
Quantity of wool for 1 m² of product	0.714 kg
Thickness of wool	34 mm
Surfacing	None
Packaging for the transportation and distribution	Polyethylene: 32.4 g/m² Wood pallet: 115.5 g/m² Label: 0.418 g/m²
Product used for the Installation	None

LCA calculation information

FUNCTIONAL UNIT	Providing a thermal insulation on 1 m² with a thermal resistance of equals 1 K.m^2.W-1
SYSTEM BOUNDARIES	Cradle to Grave. Mandatory stages: A1-3, A4-5, B1- 7, C1-4
REFERENCE SERVICE LIFE (RSL)	60 years
CUT-OFF RULES	See detailed explanation page 4
ALLOCATIONS	See detailed explanation page 4
ELECTRICITY USED FOR THE MANUFACTORING PROCESS	Renewable electricity mix (reference year 2018). This 100% renewable electricity bought is evidenced by Guarantee of Origin certificates, GO's, from LOS, contracted 2018- 2020, to be prolonged to be valid at least equal to the validity of this EPD.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Sweden 2018

Cut-off criteria

The cut-off criterion used in Saint-Gobain EPD will be the mass criterion with the following details:

- Taking into account all input and output flows in a unit process i.e. taking into account the value of all flows in the unit process and the corresponding LCI whenever available
- No simplification of the LCI by additional exclusions of material flows

Data collected at the manufacturing site was used. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items, and the associated transport to the manufacturing site. Process energy and water use, direct production waste and emissions to air and water are included. Scenarios have been developed to account for downstream processes such as demolition and waste treatment in accordance with the requirements of EN 15804:2012+A1:2013

All inputs and outputs to the manufacturing plants have been included and made transparent. All assumptions regarding the materials and water balances have also been included.

All hazardous and toxic materials and substances are considered in the inventory even though they are below the cut off criteria

There are excluded processes in the inventory:

- Flows related to human activities such as employee transport and administration activity.

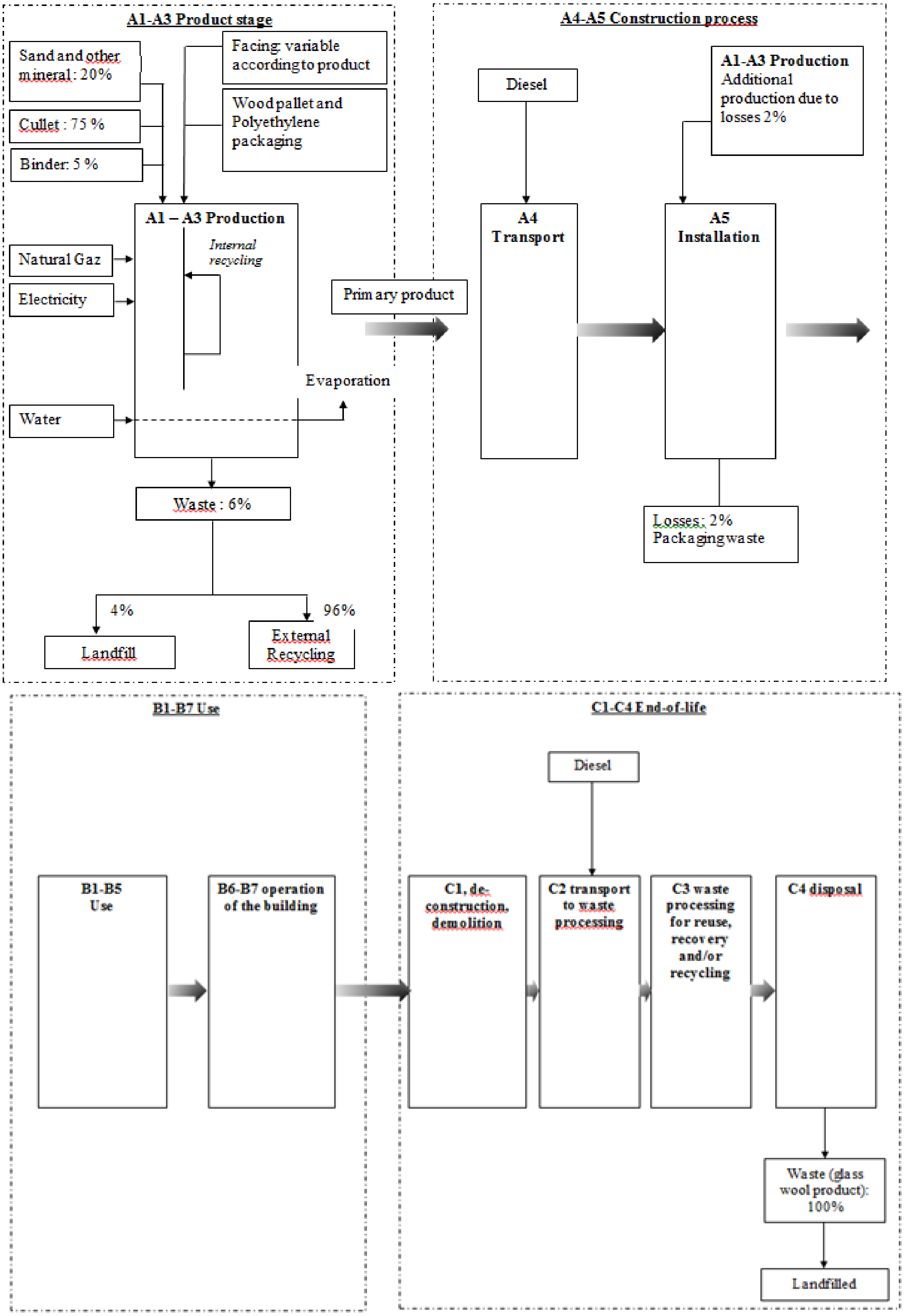
Allocation

Allocation criteria are based on mass.

The allocation of all the air emissions, wastes and energy usage are based on mass (kg). The reason we can use a mass basis is because we use the exact same manufacturing process shown for every product. We only produce glass mineral wool in the Billesholm site using the same process and therefore all the factors can be allocated by a mass basis. The amount of binder varies for different products and is accounted for as well as if different surface layers are used.

A mass balance was conducted for the 2018 production year to ensure that we have not excluded any materials, emissions and hence potential environmental impacts. Regarding the mass balance, all the raw materials and corresponding production goods and wastes generated were taken into account.

Flow diagram of the Life Cycle



System boundaries (X=included, MND=module not declared)																	
Product stage			Construction installation stage		Use stage							End of life stage					Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Construction installation stage	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal		Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X

Product stage, A1-A3

Description of the 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".

The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15 804 standard. This rule is applied in this EPD.

A1, Raw material supply

This 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 of binder components and sourcing (quarry) of raw materials for fiber production, e.g. sand and borax for glass wool. Besides these raw materials, recycled material/glass cullet is also used as input.

About cullet: The main raw material for the production of glass insulation material is cullets or/and sand. Only specific cleaning activities and transport is included for the cullets – and thus not the impacts from the full life cycle of glass. The reason is that cullets are considered a waste product and not initially produced for the purpose of glass wool insulation production. The only activities included are:

- Magnetic separation of metallic piece
- Separation of other piece-crushing of glass (<20 mm)
- Separation of bottle cap crushing (<2 mm) sieving
- Transport

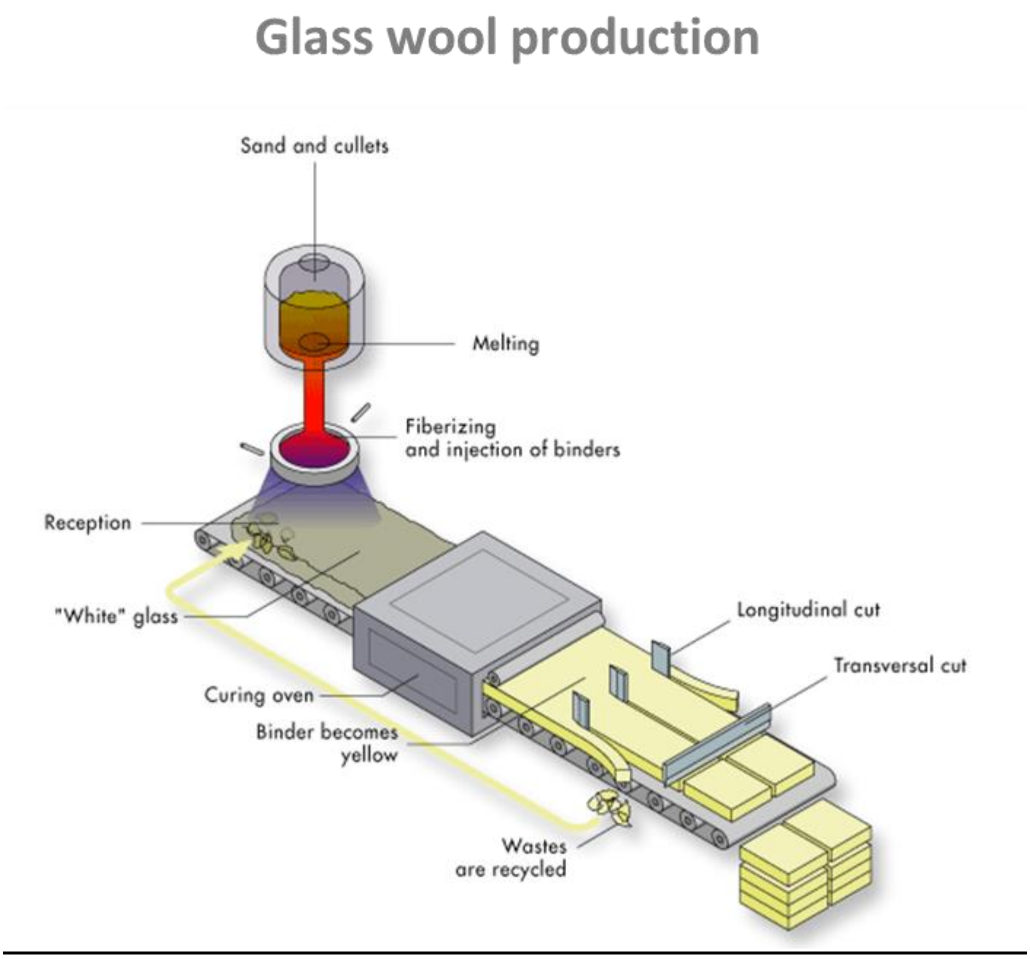
A2, transport to the manufacturer

The raw materials are transported to the manufacturing site. In our case, the modeling includes: road and boat transportations (specific values) of each raw material.

A3, manufacturing

This module covers glass wool fabrication, including melting and fiberization (see process flow diagram). In addition, the production of packaging material is taking into account at this stage.

Manufacturing process flow diagram



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.

Description of scenarios and additional technical information:

A4, Transport to the building site:

- This module includes transport from the production gate to the building site. (Representative as average for the Swedish and Norwegian market).
- Transport is calculated on the basis of a scenario with the parameters described in the following table.

PARAMETER	VALUE (per functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Average truck trailer with a 27t payload, diesel consumption 38 liters for 100 km
Distance	500 km
Capacity utilisation (including empty returns)	77 % of the capacity in volume (40% capacity utilisation including 40 % of empty returns in mass)
Bulk density of transported products	60-65 kg/m3
Volume capacity utilisation factor	1 (by default)

A5, Installation in the building:

This module includes:

- Wastage of products: see following table 5 %. These losses are landfilled (landfill model for glass see chapter End of life),
- Additional production processes to compensate for the loss
- Processing of packaging wastes: they are 100 % collected and modeled as recovered matter.

This module does not include:

- Energy for installation of the insulation, as the installation is done manually, and do not require energy

PARAMETER	VALUE (per functional unit)
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	5 %
Distance	25 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)	Packaging wastes are 100 % collected and modeled as recovered matter Glass wool losses are landfilled

Use stage (excluding potential savings), B1-B7

Description of the stage: 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

Description of scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, glass wool insulation products have no impact (excluding potential energy savings) on this stage.

End-of-life stage C1-C4

Description of the stage: The stage includes the different modules of end-of-life detailed below.

C1, de-construction, demolition

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

C2, transport to waste processing

Transport is included and calculated on the basis of a scenario with the parameters described in the End-of-life table.

C3, waste processing for reuse, recovery and/or recycling;

Today the product is considered to be landfilled without reuse, recovery or recycling.

C4, disposal;

The glass wool is assumed to be 100% landfilled.

Description of scenarios and additional technical information: See below

End-of-life:

PARAMETER	VALUE (per functional unit)
Collection process specified by type	The entire insulation product (wool and surfacing) is collected with mixed construction waste 0.714 kg of glass wool (collected with mixed construction waste)
Recovery system specified by type	No re-use, recycling or energy recovery
Disposal specified by type	The entire insulation product (wool and surfacing) is landfilled 0.714 kg of glass wool are landfilled
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 27t payload, diesel consumption 38 liters for 100 km 25 km (default distance from the building site to landfill).

Reuse/recovery/recycling potential, D

Description of the stage: For module D we only take into consideration the materials used within the product, and not e.g. packaging and that the benefit then will be equal to zero.

LCA results

LCA model, aggregation of data and potential environmental impact are calculated from the GaBi software 8.7 and CML impact method has been used, together with thinkstep 8.7 (2018) and ecoinvent V3.1 (2014) databases to obtain the inventory of generic data. Biogenic carbon is not reported in the context of GWP.

Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant of Saint-Gobain Sweden A, ISOVER in Billesholm (Production data according 2018).

Resume of the LCA results detailed on the following tables.

ENVIRONMENTAL IMPACTS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Global Warming Potential (GWP) - *kg CO2 equiv/FU*	8,24E-01	3,56E-02	4,46E-02	0	0	0	0	0	0	0	0	3,45E-03	0	1,17E-02	0
	The global warming potential of a gas refers to the total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.														
Ozone Depletion (ODP) *kg CFC 11 equiv/FU*	9,20E-08	5,44E-18	4,60E-09	0	0	0	0	0	0	0	0	3,76E-15	0	6,55E-17	0
	Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which break down when they reach the stratosphere and then catalytically destroy ozone molecules.														
Acidification potential (AP) *kg SO2 equiv/FU*	5,57E-03	1,52E-04	2,94E-04	0	0	0	0	0	0	0	0	1,41E-05	0	6,69E-05	0
	Acid depositions have negative impacts on natural ecosystems and the man-made environment incl, buildings. The main sources for emissions of acidifying substances are agriculture and fossil fuel combustion used for electricity production, heating and transport.														
Eutrophication potential (EP) *kg (PO4)3- equiv/FU*	2,43E-03	3,72E-05	1,25E-04	0	0	0	0	0	0	0	0	3,40E-06	0	7,58E-06	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects.														
Photochemical ozone creation (POPC) *kg Ethene equiv/FU*	5,25E-04	5,55E-06	2,70E-05	0	0	0	0	0	0	0	0	5,25E-07	0	5,51E-06	0
	Chemical reactions brought about by the light energy of the sun. The reaction of nitrogen oxides with hydrocarbons in the presence of sunlight to form ozone is an example of a photochemical reaction.														
Abiotic depletion potential for non-fossil ressources (ADP-elements) - *kg Sb equiv/FU*	6,65E-05	4,73E-10	3,32E-06	0	0	0	0	0	0	0	0	4,69E-11	0	3,99E-09	0
Abiotic depletion potential for fossil ressources (ADP-fossil fuels) - *MJ/FU*	1,40E+01	4,96E-01	7,48E-01	0	0	0	0	0	0	0	0	4,81E-02	0	1,56E-01	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

RESOURCE USE

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU*	1,62E+01	1,1E-02	8,1E-01	0	0	0	0	0	0	0	0	1,3E-03	0	2,1E-02	0
Use of renewable primary energy used as raw materials *MJ/FU*	2,05E+00	-	1,0E-01	-	-	-	-	-	-	-	-	-	-	-	-
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) *MJ/FU*	1,82E+01	1,1E-02	9,2E-01	0	0	0	0	0	0	0	0	1,3E-03	0	2,1E-02	0
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - *MJ/FU*	1,48E+01	5,0E-01	7,9E-01	0	0	0	0	0	0	0	0	4,8E-02	0	1,6E-01	0
Use of non-renewable primary energy used as raw materials *MJ/FU*	1,72E+00	-	8,6E-02	-	-	-	-	-	-	-	-	-	-	-	-
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU*	1,65E+01	5,0E-01	8,7E-01	0	0	0	0	0	0	0	0	4,8E-02	0	1,6E-01	0
Use of secondary material *kg/FU*	4,32E-01	0	2,2E-02	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels- *MJ/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels - *MJ/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water - *m3/FU*	1,86E-02	3,8E-06	9,3E-04	0	0	0	0	0	0	0	0	4,1E-07	0	4,1E-05	0

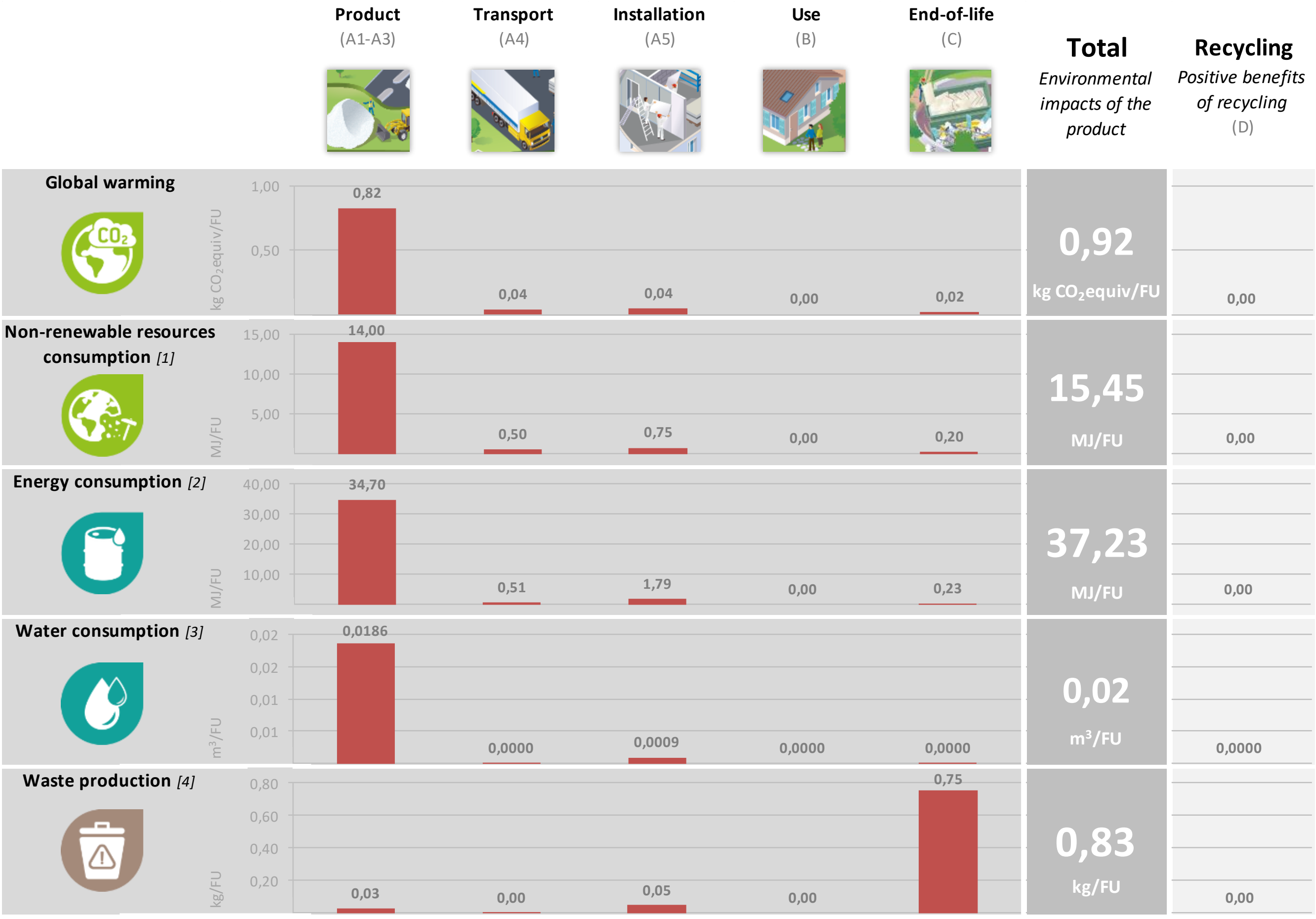
WASTE CATEGORIES

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Hazardous waste disposed *kg/FU*	3,10E-08	1,78E-09	1,85E-09	0	0	0	0	0	0	0	0	1,73E-10	0	2,76E-09	0
Non-hazardous waste disposed *kg/FU*	2,77E-02	6,03E-06	4,63E-02	0	0	0	0	0	0	0	0	6,53E-07	0	7,51E-01	0
Radioactive waste disposed *kg/FU*	1,05E-05	5,80E-07	6,96E-07	0	0	0	0	0	0	0	0	5,64E-08	0	2,14E-06	0

OUTPUT FLOWS

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				D 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	
Components for re-use *kg/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling *kg/FU*	1,29E-02	0	1,49E-01	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery *kg/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy *MJ/FU*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LCA interpretation



[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.

Global Warming Potential (Climate Change) (GWP)
When analyzing the above figure for GWP, it can clearly be seen that the majority of contribution to this environmental impact is from the production modules (A1-A3). This is primarily because the sources of greenhouse gas emissions are predominant in this part of the life cycle. CO2 is generated upstream from the production of electricity and is also released on site by the combustion of natural gas. We can see that other sections of the life cycle also contribute to the GWP; however, the production modules contribute to over 80% of the contribution. Combustion of fuel in transport vehicles will generate the second highest percentage of greenhouse gas emissions together the waste during the installation stage.
Global warming potential does not account for emission and uptake of biogenic CO_2.

Non-renewable resources consumptions
We can see that the consumption of non – renewable resources is once more found to have the highest value in the production modules. This is because a large quantity of natural gas is consumed within the factory, and non – renewable fuels such as natural gas and coal are used to generate the large amount of electricity we use. The contribution to this impact from the other modules is very small and primarily due to the non – renewable resources consumed during transportation.

Energy Consumptions
As we can see, modules A1-A3 have the highest contribution to total energy consumption. Energy in the form of electricity and natural gas is consumed in a vast quantity during the manufacture of glass mineral wool so we would expect the production modules to contribute the most to this impact category.

Water Consumption
As we don't use water in any of the other modules (A4-A5, B1-B7, C1-C4), we can see that there is no contribution to water consumption. For the production phase, water is used within the manufacturing facility and therefore we see the highest contribution here. However, we recycle a lot of the water on site so the contribution is still relatively low.

Waste Production
Waste production does not follow the same trend as the above environmental impacts. The largest contributor is the end of life module. This is because the entire product is sent to landfill once it reaches the end of life state. However, there is still an impact associated with the production module since we do generate waste on site. The following small impact associated with installation is due to the loss rate of product during implementation.

Additional information

Influence of particular thicknesses

All the results in the table of this EPD refer to ISOVER Träregelskiva 34, Stålregelskiva 34, Bjälklagsskiva 34, Regelskiva 34, Våningsskiva 34, Skiva 34 and GLAVA PROFF 34 PLATE with a thickness of 34 mm for a functional unit of 1 m² with a thermal resistance equals to 1.00 m² K/W

This EPD of ISOVER products mentioned above includes a range of thicknesses between 34 mm and 250 mm. For every thickness, use a multiplication factor in order to obtain the environmental performance of every thickness. In order to calculate the multiplication factors, a reference unit has been selected R=1.

The various multiplication factors are obtained by making the LCA calculations for all thicknesses, including packaging. Using the thickness factor will for some indicators give higher values than calculated for the specific thickness in GaBi.

In the table below the multiplication factors are shown for products and specific thickness of the product family. In order to obtain the environmental performance associated with every specific product and thickness, the results expressed in this EPD must be multiplied by its corresponding multiplication factor.

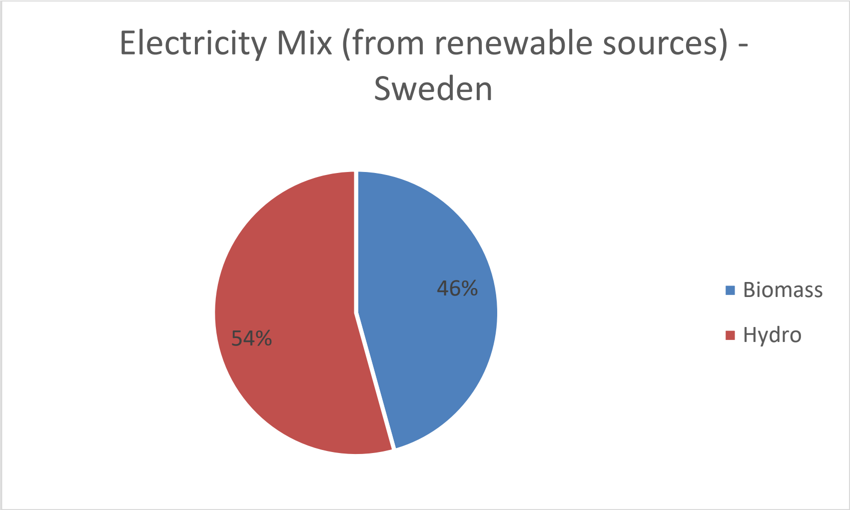
PRODUCT THICKNESS (mm)	THERMAL RESISTANCE	MULTIPLICATION FACTOR
34	1.00	1.00
45	1.32	1.29
50	1.47	1.43
70	2.06	1.96
95	2.79	2.62
100	2.94	2.75
120	3.53	3.29
145	4.26	3.95
150	4.41	4.08
170	5.00	4.61
195	5.74	5.28
200	5.88	5.43
220	6.47	5.92
250	7.35	6.72

Additional Norwegian requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

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, GO's, from LOS, contracted 2018- 2020, to be prolonged to be valid at least equal to the validity of this EPD

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of average production in Sweden
Geographical representativeness description	Split of energy sources in Sweden - Hydro: 54% - Biomass: 46%
Reference year	2018
Type of data set	Cradle to gate from Thinkstep
Source	Gabi database from International Energy Agency -2013 Guarantee of Origin certificates (GOs) - 2018



The dataset used to model the renewable electricity mix used for these calculations come from thinkstep database,

DATA SOURCE	AMOUNT	UNIT
thinkstep (2018)	0,05	kg CO2 eq /KWh

Dangerous substances

The product contains no substances given by the REACH Candidate list (of 15,01,2018) or the Norwegian priority list, (REACH registration number 01-2119472313-44-0039)

Indoor environment

No test performed

Carbon footprint

Carbon footprint has not been worked out for the product

Bibliography

- Product-Category Rules, NPCR 012:2018 Part B for Thermal insulation products
- Environmental labels and declarations - Type III environmental declarations -Principles and procedures (ISO 14025:2006)
- Environmental management - Life cycle assessment – Requirements and guidelines (ISO 14044:2006)
- Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products (EN 15804:2012+2013:A1)
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