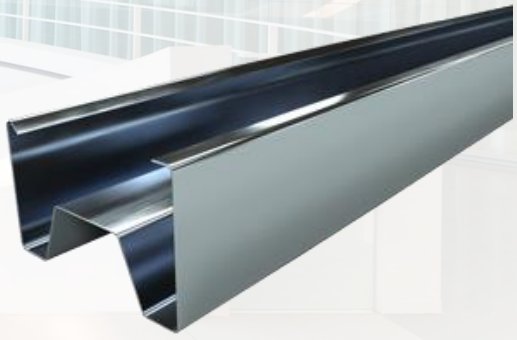
EPD®

THE INTERNATIONAL EPD® SYSTEM

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and 15804+A2:2019

Gyproc® Steel Profiles and Accessories



Date of issue: 2017-02-24
Revision date: 2022-10-27
Validity: 5 years
Valid until: 2026-12-22
Version 2.1
Scope of the EPD®: Sweden

EPD VERIFIED

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.

SAINT-GOBAIN

Gyproc SAINT-GOBAIN

Registration number
The International EPD® System:
SP - 00782

ECO PLATFORM EPD VERIFIED

General information

Manufacturer: Saint-Gobain Sweden AB, Gyproc, Kalmarleden 50, 746 37 Bålsta, Sweden

Program used**:** International EPD System http**://**www**.**environdec**.**com**/**

EPD registration number**/**declaration number**:** SP - 00782

PCR identification**:** The International EPD® System PCR 2019:14 version 1.11 for Construction Products. EN 15804:2012+A2:2019 Sustainability of construction works.

Site of manufacture**:** The production site is Ruukki Sverige AB in Anderslöv, Sweden for Saint-Gobain Sweden AB.

Owner of the declaration**:** Saint-Gobain Sweden AB, Gyproc, Kalmarleden 50, 746 37 Bålsta, Sweden

Product **/** product family name and manufacturer represented**:** Gyproc® Steel profiles and accessories

Declaration issued**:** 2017-02-24 Revision date: 2022-10-27 Valid until**:** 2026-12-22

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: Martin Erlandsson, IVL, based on the PCR mentioned above.

EPD Prepared by: Eva Hellgren (Saint-Gobain Sweden, Gyproc, R&D Nordics), eva.hellgren@saint-gobain.com) and Galdric Sibiude (Saint-Gobain LCA central TEAM, galdric.sibiude@saint-gobain.com).

Scope: The LCA is based on 2020 production data for one site in Sweden.
This EPD covers information modules A1 to C4 + module D (cradle to grave) as defined in EN 15804:2012+A2:2019

The declared unit is 1000 kg of Gyproc® steel profile components for gypsum plasterboard.

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

EPD® program operator	**The International EPD® System. Operated by EPD® International AB. www.environdec.com.**
PCR review conducted by	**The Technical Committee of the International EPD® System**
CEN standard EN 15804+A2 serves as the core PCR[a]	
PCR:	**EN 15804+A2 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product.**
Independent verification of the declaration, according to EN ISO 14025:2010 Internal ☐ External ☒	
Third party verifier:	Martin Erlandsson **IVL Swedish Environmental Research Institute**
Accredited or approved by	**The International EPD System**

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

EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804+A2. For further information about comparability, see EN 15804+A2 and ISO 14025.

Product description

Product description and use:

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 metric tonne of Gyproc® steel profiles and steel accessories (including fixing screws for framing – not for gypsum fixing) for interior and exterior applications which are available with different surface treatments. The profiles have been manufactured from hot-dip galvanized sheet steel in conformity with EN 10346. Zinc coating provides a good level of protection against corrosion. The zinc coating is lead-free and has a minimum zinc content of 99 %.

Gyproc® systems and products are primarily used for the mounting of plasterboard in the construction of interior walls, exterior walls, ceilings and floors. Products can be mounted at the building site or prefabricated as elements. The products are suitable for use in load-bearing and non-load-bearing structures such as curtain walling in apartment buildings, offices, remodeling of residential buildings with penthouses, and remodeling of residential and office buildings. Profiles that are intended to be exposed on the outside of a structure or in external walls are manufactured from galvanized steel with a coating of zinc and a layer of polyurethane to achieve the corrosion class C4. Gyproc® profiles for external walls are slotted in web life to minimize heat conduction and channels are provided with 4 mm polyethylene foam strip to optimize moisture insulation and air sealing. Products to improve sound insulation in internal walls are composed of steel channels and corner profiles with seals made of EPDM rubber.

Gyproc® steel profiles are recyclable and efficiently packaged and can be offered cut to the right lengths which reduces transportation cost and minimizes the generation of waste at the building site. Figure 1 shows a life cycle diagram for plasterboard systems including steel profiles and accessories.

Technical data/physical characteristics:

Reaction to fire	A1
Density	7850 kg/m³
Tensile Strength	270-500 N/mm²
Grade of material according to the delivery standard	DX51D + Z275 NAC non-fluting and free delivery standards from coil break

Description of the main components and/or materials for 1000 kg of product for the calculation of the EPD®:

PARAMETER	VALUE (expressed per declared unit)
Quantity for 1 metric tonne of product	1000 kg
Thickness	From 0.5 to 3 mm
Surfacing	Zinc coating hot dip deposited
Packaging for the transportation and distribution	PET strap: 0.38 kg/t Cardboard corners: 0.039 kg/t Wooden pallet: 19.28 kg/t Metal strips: 0.12 kg/t Paper label: 0.078 kg/t
Product used for the Installation	None

During the life cycle of the product no hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has 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	Cradle to grave (A1 to C4) and module D
DECLARED UNIT	1 metric tonne of Gyproc® steel profile and accessories for gypsum plasterboard. The gauge of the profiles varies between 0.5 – 2 mm. The density of Gyproc® frame profiles is 7850 kg/m3. The dimensional specifications datasheet can be referenced to calculate the weight of a linear meter of each type of profile. This can then be applied to calculate assumed environmental impacts for that profile from the LCA results.
SYSTEM BOUNDARIES	Mandatory Stages = A1 to C4 and D
REFERENCE SERVICE LIFE (RSL)	50 years By default, it corresponds to Standards building design life and value is included in Appendix III of Saint-Gobain Environmental Product Declaration Methodological Guide for Construction Products.
CUT-OFF RULES	Life Cycle Inventory data for a minimum of 99% of total inflows to the upstream and core module shall be included. 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.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope includes: Sweden. Data considered are from one production site Anderslöv, Sweden as well as the upstream steel making from Raahe-Häämenlinna route, Finland. Data collected for the year 2020. Background data: GaBi ts 2020
PRODUCT CPC CODE	42190 - Other structures (except prefabricated buildings) and parts of structures, of iron, steel or aluminium; plates, rods, angles, shapes, sections, profiles, tubes and the like, prepared for use in structures, of iron, steel or aluminium; props and similar equipment for scaffolding, shuttering or pitpropping.

According to EN 15804+A2, 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 programmes.

Life cycle stages

Figure 1: Flow diagram of the product life cycle. The process of the product life cycle is described below.

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.

Manufacturing in detail:

Gyproc® steel profiles are manufactured by Ruukki in Sweden using hot-dip galvanized steel coil produced in Finland (semi-finished hot rolled coil is produced at Ruukki’s Raahe site before being transported to the Hämeenlinna rolling mill). In Europe, hot-dip galvanized steel coils are generally manufactured via the blast furnace/basic oxygen furnace (BF/BOF) route.

The blast furnace route produces pig iron from various forms of iron ore such as sinter, pellets and lump ore with coke as a reducing agent. The pig iron is transferred to the basic oxygen furnace vessel, where it is converted to steel by reducing the carbon content. The BOF vessel is also used to regulate other chemical properties of the steel such as the alloy content. Steel scrap is used in the BOF vessel, primarily for temperature control.

Liquid steel from the BOF vessel is cast into slabs and rolled to produce hot rolled coil. To produce hot-dip galvanized steel, the hot rolled coil is cold rolled, annealed, pickled and coated in zinc. Hot-dip galvanized steel coil are forming and cutting into the specific profiles required for the building application. The products are packaged in plastic straps and loaded onto wooden bearer prior to distribution.

A manufacturing process flow diagram is displayed in Figure 2.

Figure 2: 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

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: 27 t payload capacity Euro 0 - 6 mix Fuel type: Diesel Container Ship: 43000 t payload capacity Fuel type: Heavy fuel oil
Distance	613 km by truck and 13.7 km by ship. Values based on weighted average values for 2020 of transport to customer sites in Denmark, Finland, Norway and within Sweden.
Capacity utilisation (including empty returns)	85% for truck 70% for ship
Bulk density of transported products	7850 kg/m3
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)	None
Water use	None
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	Electricity: 5.6 kWh/t
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	Gyproc® steel profile losses: 26 kg/t (2.6%) Packaging: PET strap: 0.38 kg/t Cardboard corners: 0.039 kg/t Wooden pallet: 19.28 kg/t Metal strips: 0.12 kg/t Paper label: 0.078 kg/t
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)	Metal scraps are considered 95% recycled and 5% landfilled Plastic straps are landfilled. Wooden bearers and cardboard corners are landfilled. Metal strips are landfilled.
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.

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	95% collected separately for recycling and 5% collected with mixed deconstruction and demolition waste to landfill.
Recovery system specified by type	950 kg recycled.
Disposal specified by type	50 kg disposed in landfill.
Assumptions for scenario development (e.g. transportation)	Steel profile waste is transported 50 km by truck from deconstruction/demolition sites to treatment plant.

Reuse/recovery/recycling potential, D

An end of life recycling of 95% (5% of wastes are landfilled) has been assumed using local demolition waste data and adjusted considering the recyclability of the product. This is in line with the suggested R2 ratio proposed for building steel sheet in Annex C in the application of the Circular Footprint Formula when performing a PEF or OEF study.

Credits are given for the net scrap that is produced at the end of a final product's life. This net scrap is determined as follows:
Net scrap = Amount of steel recycled at end-of-life – Scrap input from previous product life cycle

No further losses are expected between the End-of-Waste status and the point of substitution as no process or pre-treatment are required for steel scrap to be used in a recycling process. Then, Y factor is equal to 1 in this formula: $M_{MR\ out} - Y \cdot M_{MR\ in}$

The steel scrap that is generated during production is reused directly in a cycle ("loop"). This internally recycled process scrap is not used to calculate the credit that is reported in Module D. After the collection stage, the demand for scrap input to the production is saturated by the amount of steel recycled at end-of-life (see equation *Net Scrap*).

$Q_{R\ Out}/Q_{Sub}$ is equal to 1. As a consequence, the value of scrap can be calculated in accordance with the methodology developed by the World Steel Association "worldsteel" and is calculated based on the difference between a theoretical 100 % primary steel (BF/BOF route) and 100 % secondary steel (EAF route). Note that for ozone depletion potential (ODP), renewable primary energy demand (PERE/PERT) and radioactive waste disposed (RWD), module D shows an environmental burden rather than a benefit. This is a result of the EAF route being powered by grid electricity while the BF/BOF route uses hard coal as its main fuel source. This means that the EAF route uses significantly more nuclear power than the BF/BOF route, which accounts for the higher impact for radioactive waste and ozone depleting CFCs which are emitted in the uranium enrichment process. Renewable primary energy demand is higher for the EAF route due to the presence of renewable electricity sources (e.g. wind, solar, hydro, biomass, biogas) in the power grid.

LCA results

As specified in EN 15804+A2, the environmental impacts are declared and reported using the baseline characterization factors are from the ILCD.
Specific data has been supplied by the plant, and generic data come from GABI database. All emissions to air, water, and soil, and all materials and energy used have been included.

LCA data results are detailed on the following tables. They refer to a functional unit of 1 metric tonne Gyproc® steel profiles and accessories for building application.

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

	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	FI/ SE/ GLO	EU-28/ GLO	EU-28/ GLO	EU-28/ GLO	EU-28/ GLO	-	-	-	-	-	-	-	EU-28/ GLO	EU-28/ GLO	EU-28/ GLO	EU-28/ GLO	GLO
Specific data used	67%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0% as EPD refers to 1 product expressed in kg					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0% as only one route of production is in the scope					-	-	-	-	-	-	-	-	-	-	-	-

Environmental impacts															
Impacts Indicators	Product stage (Aggregated)	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 Manufacturing	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	
Climate Change [kg CO2 eq.] / FU	2.55E+03	3.11E+01	9.66E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.47E+00	4.69E-02	2.49E+00	8.59E-01	-1.67E+03
Climate Change (fossil) [kg CO2 eq.] / FU	2.58E+03	3.08E+01	6.69E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E+00	4.64E-02	2.47E+00	7.59E-01	-1.67E+03
Climate Change (biogenic) [kg CO2 eq.] / FU	-2.96E+01	-5.16E-02	2.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-03	-7.98E-05	-1.28E-03	-9.76E-02	-2.39E+00
Climate Change (land use change) [kg CO2 eq.] / FU	1.81E+00	2.50E-01	4.79E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-04	3.78E-04	1.69E-02	2.19E-03	4.76E-02
Ozone depletion [kg CFC-11 eq.] / FU	5.68E-07	3.72E-15	1.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.78E-16	5.62E-18	5.98E-15	2.84E-15	3.64E-12
Acidification terrestrial and freshwater [Mole of H+ eq.] / FU	7.35E+00	1.81E-01	1.91E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.24E-03	2.67E-04	2.42E-02	5.44E-03	-3.71E+00
Eutrophication freshwater [kg P eq.] / FU	5.28E-03	9.38E-05	1.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.57E-07	1.42E-07	7.19E-06	1.31E-06	-9.44E-04
Eutrophication marine [kg N eq.] / FU	2.38E+00	8.65E-02	6.22E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-03	1.29E-04	1.18E-02	1.40E-03	-6.78E-01
Eutrophication terrestrial [Mole of N eq.] / FU	2.06E+01	9.58E-01	5.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.64E-02	1.43E-03	1.29E-01	1.54E-02	-6.86E+00
Photochemical ozone formation - human health [kg NMVOC eq.] / FU	5.54E+00	1.64E-01	1.44E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.25E-03	2.43E-04	3.43E-02	4.24E-03	-2.80E+00
Resource use, mineral and metals [kg Sb eq.] / FU	1.76E-01	2.21E-06	4.57E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-07	3.35E-09	2.70E-06	6.85E-08	-2.71E-02
Resource use, energy carriers [MJ] / FU	3.22E+04	4.12E+02	8.83E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.88E+01	6.22E-01	4.82E+01	9.95E+00	-1.43E+04
Water scarcity [m^3 world equiv.] / FU	-3.89E+01	2.76E-01	-9.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-02	4.18E-04	4.76E-01	7.92E-02	-1.26E+02

Disclaimer: the results of Resource use, mineral and metals; Resource use, energy carriers; Water scarcity shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

Resources Use indicators														
Resources Use indicators	Product stage (Aggregated)	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 Manufacturing	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 (PERE) [MJ] / FU	3.16E+03	2.31E+01	8.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-01	3.50E-02	3.48E+00	1.31E+00	1.11E+03
Use of renewable primary energy used as raw materials (PERM) [MJ] / FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.44E+04
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT) [MJ] / FU	3.16E+03	2.31E+01	8.39E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-01	3.50E-02	3.48E+00	1.31E+00	0.00E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE) [MJ] / FU	3.22E+04	4.13E+02	8.83E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.89E+01	6.23E-01	4.83E+01	9.96E+00	-1.44E+04
Use of non-renewable primary energy used as raw materials (PENRT) [MJ] / FU	0.00E+00*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT) [MJ] / FU	3.22E+04	4.13E+02	8.83E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.89E+01	6.23E-01	4.83E+01	9.96E+00	0.00E+00
Use of secondary material (SM) [kg] / FU	2.60E+01	0.00E+00	6.76E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF) [MJ] / FU	8.50E-20	0.00E+00	2.21E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.94E+00

Use of non-renewable secondary fuels (NRSF) [MJ] / FU	9.98E-19	0.00E+00	2.59E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m^3] / FU	1.25E+00	2.67E-02	4.66E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-04	4.05E-05	1.36E-02	2.50E-03	0.00E+00

* Carbon stored in steel is not accounted for.

Waste categories															
Waste category	Product stage (Aggregated)	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 Manufacturing	**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 (HWD) [kg] / FU	4.02E-05	1.91E-05	5.09E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.81E-09	2.90E-08	1.26E-06	1.52E-07	-1.84E-03
Non-hazardous waste disposed (NHWD) [kg] / FU	2.05E+01	6.31E-02	3.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E-02	9.53E-05	1.30E-02	5.00E+01	1.71E+02
Radioactive waste disposed (RWD) [kg] / FU	8.38E-01	5.11E-04	4.04E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.46E-05	7.71E-07	6.37E-04	1.12E-04	5.10E-04

Output flows															
Output Flows	Product stage (Aggregated)	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, recycling
	A1 Raw material A2 Transport A3 Manufacturing	**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 (CRU) [kg] / FU	0.00E+00	0.00E+00	1.78E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for Recycling (MFR) [kg] / FU	0.00E+00	0.00E+00	2.47E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.21E+02
Material for Energy Recovery (MER) [kg] / FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE) [MJ] / FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET) [MJ] / FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Information on biogenic carbon content

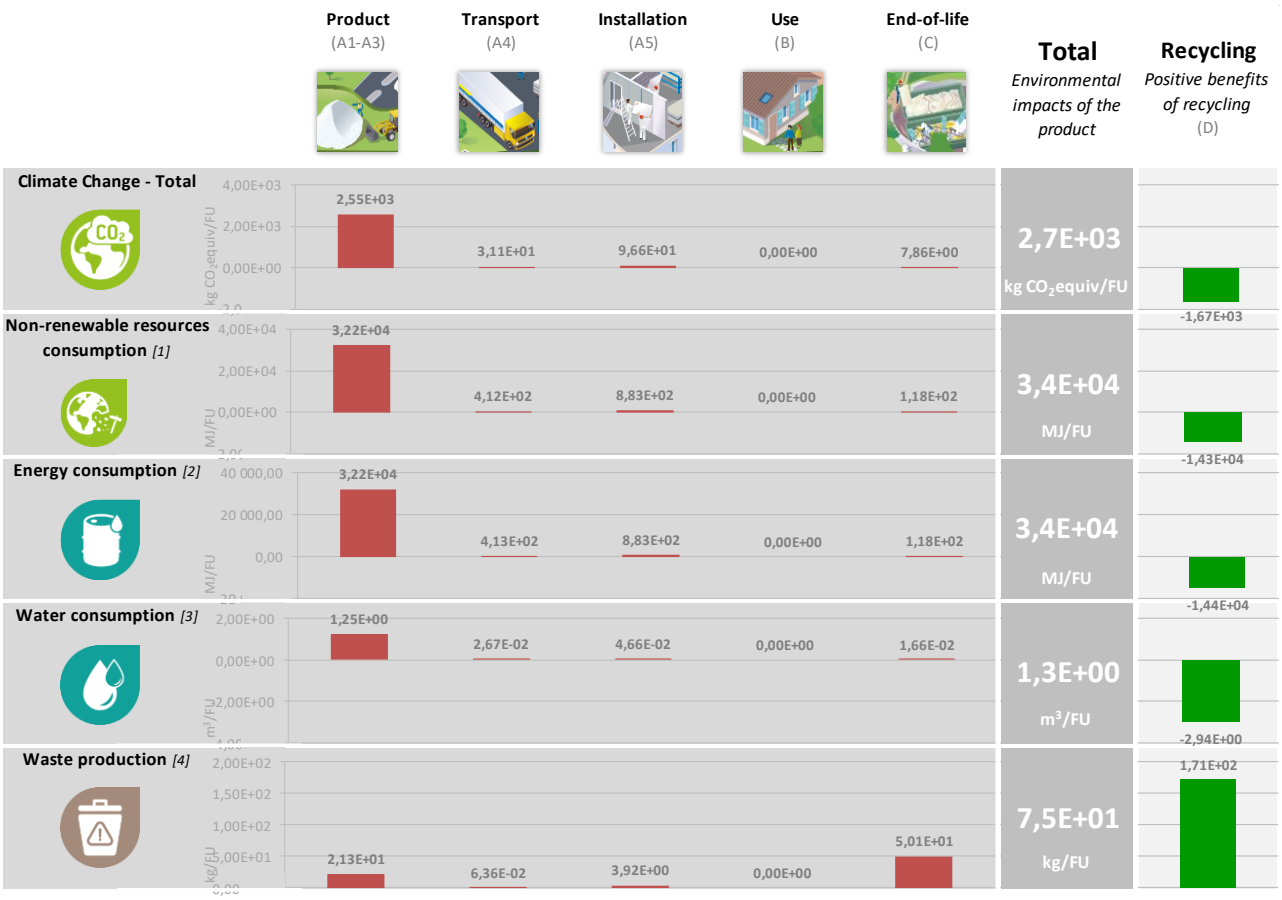
Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	8.0532

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

There is no biogenic carbon in steel product. Every steel quantity assumed thanks to this EPD has the same value of biogenic carbon equal to 0 kg C. Small carbon content is included in packaging due to cardboard and wood.

LCA results interpretation

The following figure refers to a functional unit of 1 metric tonne Gyproc® steel profiles and accessories for building application.



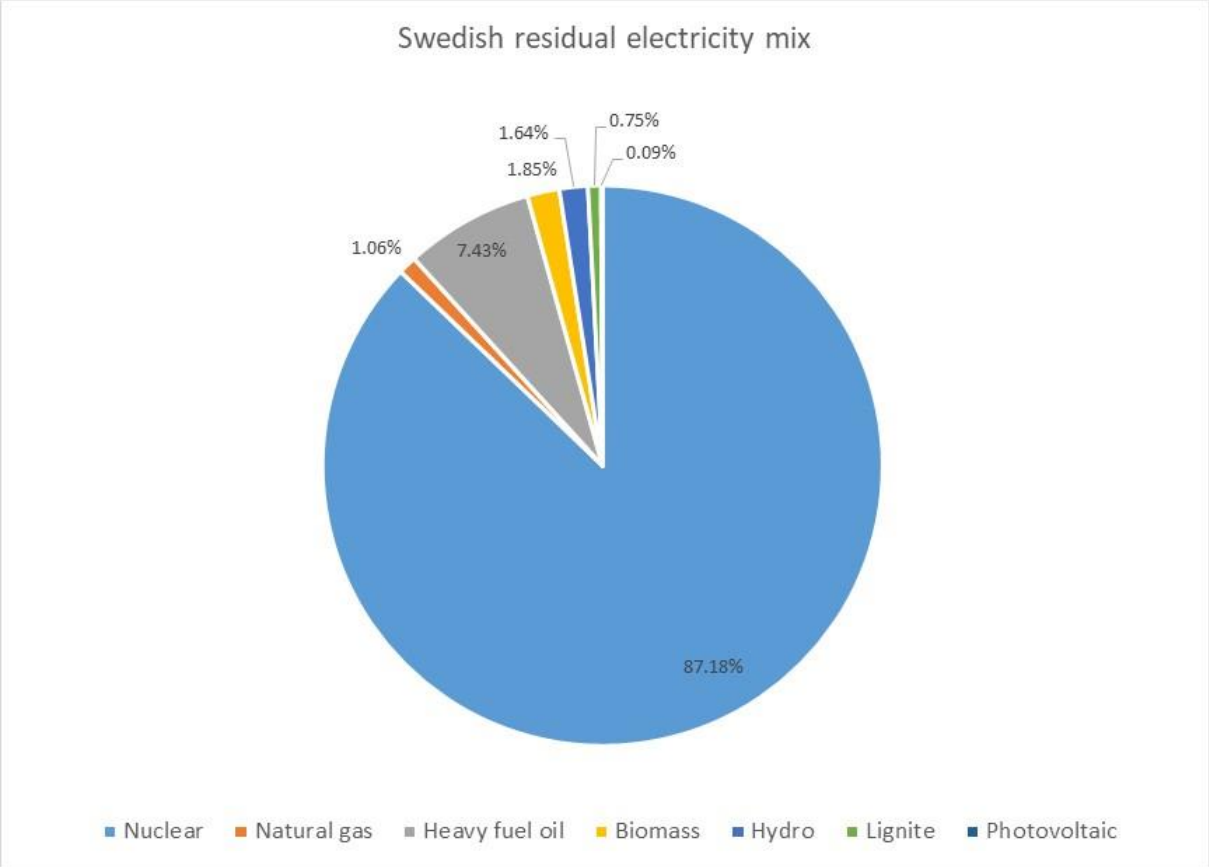
[1] This indicator corresponds to the abiotic depletion potential of fossil resources.
[2] This indicator corresponds to the total use of primary energy.
[3] This indicator corresponds to the use of net fresh water.
[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive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

The product stage (A1-A3) is responsible for over 85% of Gyproc® metal profiles and accessories in its lifetime for the following impacts: Global warming, Non-renewable resources consumption, Energy consumption and Water consumption.

The main source of impact occurs in A1 (production of raw material) due to steel production. Steel production is an intensive process requiring a lot of energy and raw materials, however increasing recycled content might help to lower it.
Some impact can be seen in stage A5, installation, as a small amount of product is lost when products are cut to size at the construction site.

Electricity description

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of residual production in Sweden after excluding certificates sold for Guarantee of Origin
Geographical representativeness description	Split of energy sources in Sweden: - Nuclear: 87.18% - Natural gas: 1.06% - Heavy fuel oil: 7.43% - Biomass: 1.85% - Hydro: 1.64% - Lignite: 0.75 - Photovoltaic: 0.09%
Reference year	2016
Type of data set	Cradle to gate
Source	GaBi database from 2020 version
Climate Change - total (kg CO2 eq./kWh)	0.061 (compared to 0.047 with national grid mix)



Differences with previous version of the EPD

The main change compared to previous version published on 2021-12-30 is related to the correction of mirror editing mistakes in the LCA results interpretation figure.

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ANNEX I

This annex provides the environmental indicators based on the EN 15804+A1 so that one might be able to aggregate this EPD at building scale with other EPDs yet not updated in the new version of the standard.

Environmental impacts															
Impacts Indicators	Product stage (Aggregated)	Construction process stage		Use stage							End-of-life stage				D Reuse, recovery, rrecycling
	A1 Raw material A2 Transport A3 Manufacturing	**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 [kg CO2 eq.] / FU	2.51E+03	3.02E+01	6.69E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.40E+00	4.55E-02	2.40E+00	6.44E-01	-1.59E+03
Ozone Depletion Potential [kg R11 eq.] / FU	5.06E-07	4.96E-15	1.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.37E-16	7.48E-18	7.98E-15	3.75E-15	4.85E-12
Acidification potential [kg SO2 eq.] / FU	5.97E+00	1.25E-01	1.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-03	1.82E-04	1.67E-02	4.33E-03	-3.11E+00
Eutrophication potential [kg Phosphate eq.] / FU	8.79E-01	3.03E-02	2.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-04	4.52E-05	4.03E-03	4.87E-04	-2.12E-01
Photochemical Ozone Creation Potential [kg Ethene eq.] / FU	4.77E-01	-5.02E-02	1.24E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-04	-7.64E-05	1.86E-03	3.29E-04	-7.45E-01
Abiotic depletion potential for non fossil resources [kg Sb eq.] / FU	1.76E-01	2.22E-06	4.57E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-07	3.35E-09	2.70E-06	6.88E-08	-2.71E-02
Abiotic depletion potential for fossil resources [MJ]/ FU	3.04E+04	4.11E+02	8.12E+02	0.00E0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.87E+01	6.21E-01	4.67E+01	9.67E+00	-1.49E+04