ENVIRONMENTAL PRODUCT DECLARATION

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

PARSOL®- Flat Glass

From 3 mm to 10 mm
Body tinted glass

Version 2
Date of issue: 2021-12-17
Validity: 5 years
Valid until: 2026-09-29

Scope of the EPD®: Europe

Version 1
Date of issue: 2016-09-15

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.

EPD® THE INTERNATIONAL EPD® SYSTEM

Registration number
The International EPD® System:
S-P-00884

ECO PLATFORM EPD VERIFIED

SAINT-GOBAIN

Table of content

General information

Manufacturer : Saint-Gobain Glass FRANCE, 12 place de l'Iris, 92096 La Défense
Program used: The International EPD® System. More information at www.environdec.com
EPD registration/declaration number: S-P-00882
PCR identification: PCR 2019:14 Construction products (EN 15804:2012: A2) version 1.1 and its c-PCR-009 Flat glass products used in buildings and other construction works (EN17074:2019)
UN CPC code: 371
Product name and manufacturer represented: PARSOL® produced by SAINT-GOBAIN GLASS INDUSTRY
Owner of the declaration: Saint-Gobain Glass Industry, Europe
EPD® prepared by: Yves Coquelet (Saint-Gobain) and Marie-Charlotte Harquet (Saint-Gobain)
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Date of issue: 2021-12-17 Valid: 2026-09-29

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.1	
EPD program operator	The International EPD® System. Operated by EPD® International AB. Box 210 60 SE-100 31 Stockholm Sweden **www.environdec.com**.
PCR review conducted by	The Technical Committee of the International EPD® System Chair: Claudia A. Peña. Contact via info@environdec.com"
LCA and EPD performed by Saint-Gobain LCA central team	
Independent verification of the environmental declaration and data according to standard EN ISO 14025:2010 Internal ☐ External ☒	
Verifier ELYS CONSEIL Yannick LE GUERN Email : yannick.leguern@elys-conseil.com	
Accredited or approved by: The International EPD® System	
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No	

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. For further information about comparability, see EN 15804 and ISO 14025.

Disclaimer: EPD of construction products may not be comparable if they do not comply with EN 15804

Product description

Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m² of extra clear glass PARSOL® to 3 mm to 10 mm with a light transmittance of maximum 79%*, for an expected average service life of 30 years.

*Check table 1, below, with all the performance data according to the thickness

This EPD is represented of one site in Europe (France). There is only one site producing the flat glass PARSOL®.

PARSOL® is a body-tinted produced using the float procedure. There are 5 colors in the PARSOL range: green, bronze, grey, ultra grey, sapphire blue. PARSOL products are available in a range of thicknesses, from 3 mm to 10 mm, depending on the color. This glass is in conformity with the European Standard EN 572-2.

PARSOL® can be incorporated into a building, furniture or industrial application. The impacts of installation are not taken into account

Performance data

All the performance data are given according to the EN 410-2011 standard.

PARSOL Green

Thickness (mm)	3	4	5	6	8	10
Visible parameters						
Light transmittance (LT) %		78.6	7.6	72.8	67.5	62.7
External light reflection (RLE) (%)		7.2	7.0	6.8	6.5	6.2
Energetic parameters						
Energy transmittance (ET) %		53.2	47.8	43.3	36.3	31.1
Energy absorbance (EA) %		40.9	46.6	51.3	58.5	63.9
Solar factor g		0.63	0.59	0.55	0.50	0.46

PARSOL Bronze

Thickness (mm)	3	4	5	6	8	10
Visible parameters						
Light transmittance (LT) %	67.1	60.4	54.5	49.1	40.0	32.6
External light reflection (RLE) (%)	6.4	6.0	5.7	5.5	5.1	4.8
Energetic parameters						
Energy transmittance (ET) %	66.7	60.4	54.5	49.1	40.0	32.6
Energy absorbance (EA) %	27.0	33.9	40.0	45.5	54.7	62.2
Solar factor g	0.73	0.68	0.64	0.60	0.53	0.48

PARSOL Grey

Thickness (mm)	3	4	5	6	8	10
Visible parameters						
Light transmittance (LT) %	62.9	55.5	48.9	43.2	33.7	26.2
External light reflection (RLE) (%)	6.2	5.8	5.5	5.2	4.9	4.7
Energetic parameters						
Energy transmittance (ET) %	64.0	57.1	50.9	45.5	36.4	29.2
Energy absorbance (EA) %	29.8	37.1	43.6	49.2	58.7	66.1
Solar factor g	0.71	0.66	0.61	0.57	0.50	0.45

PARSOL Ultra Grey

Thickness (mm)	3	4	5	6	8	10
Visible parameters						
Light transmittance (LT) %		9.6		3.2	1.0	0.3
External light reflection (RLE) (%)		4.4		4.3	4.3	4.3
Energetic parameters						
Energy transmittance (ET) %		7.9		2.6	0.9	0.3
Energy absorbance (EA) %		87.8		93.1	94.8	95.4
Solar factor g		0.29		0.26	0.23	0.23

PARSOL Sapphire Blue

Thickness (mm)	3	4	5	6	8	10
Visible parameters						
Light transmittance (LT) %		66.3		56.6		
External light reflection (RLE) (%)		6.4		5.9		
Energetic parameters						
Energy transmittance (ET) %		53.3		42.1		
Energy absorbance (EA) %		41.0		52.6		
Solar factor g		0.63		0.55		

Declaration of the main product components and/or materials

The product is 100% glass CAS number 65997-17-3, EINECS number 266-046-0.

Description of the main components and/or materials for 1 m² of extra clear glass PARSOL® to 2 mm to 10 mm with a light transmittance of maximum 79%.

Thickness (mm)	3	4	5	6	8	10
Quantity of glass for 1 m² of product (kg)	7,5	10	12,5	15	20	25

There is no "Substance of Very High Concern" (SVHC) in concentration above 0.1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

Packaging and product used : None

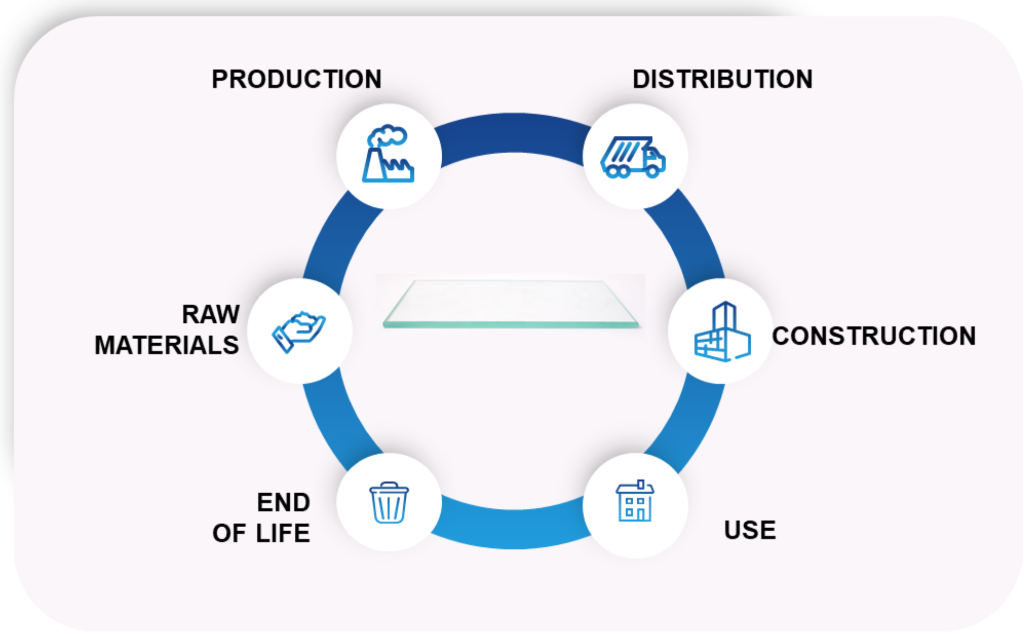
LCA calculation information

FUNCTIONAL UNIT / DECLARED UNIT	1 m² of extra clear glass PARSOL® to 3 mm to 10 mm with a light transmittance of maximum 79%*, for an expected average service life of 30 years.
SYSTEM BOUNDARIES	Cradle to grave and module D Mandatory Stages = A1-A3 ; B1-B7 ; C1-C4 and D
REFERENCE SERVICE LIFE (RSL)	According to PCR EN 17074:2019, the reference service life is 30 years
CUT-OFF RULES	All significant parameters shall be included. According to EN 15804, mass flows under 1% of the total mass input; and/or energy flows representing less than 1% of the total primary energy usage of the associated unit process may be omitted. However, the total amount of energy and mass omitted must not exceed 5% per module. The energy used for the installation of 1m² of glass and the transport glass racks are included in the cut-off-rules
ALLOCATIONS	Allocations are done on mass basis (kg)
GEOGRAPHICAL COVERAGE AND TIME PERIOD	The information was established over the year 2019. The information collected comes from the European sites producing PARSOL® (SAINT-GOBAIN GLASS INDUSTRY)
BACKGROUND DATA SOURCE	GaBi data were used to evaluate the environmental impacts. The data are representative of the years 2015-2019.
SOFTWARE	Gabi 9.2.0 - GaBi envision

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.

Life cycle stages

Flow diagram of the Life Cycle



Product stage, A1-A3

For flat glass A1 to A3 represents the production of glass in the float from cradle to gate.

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

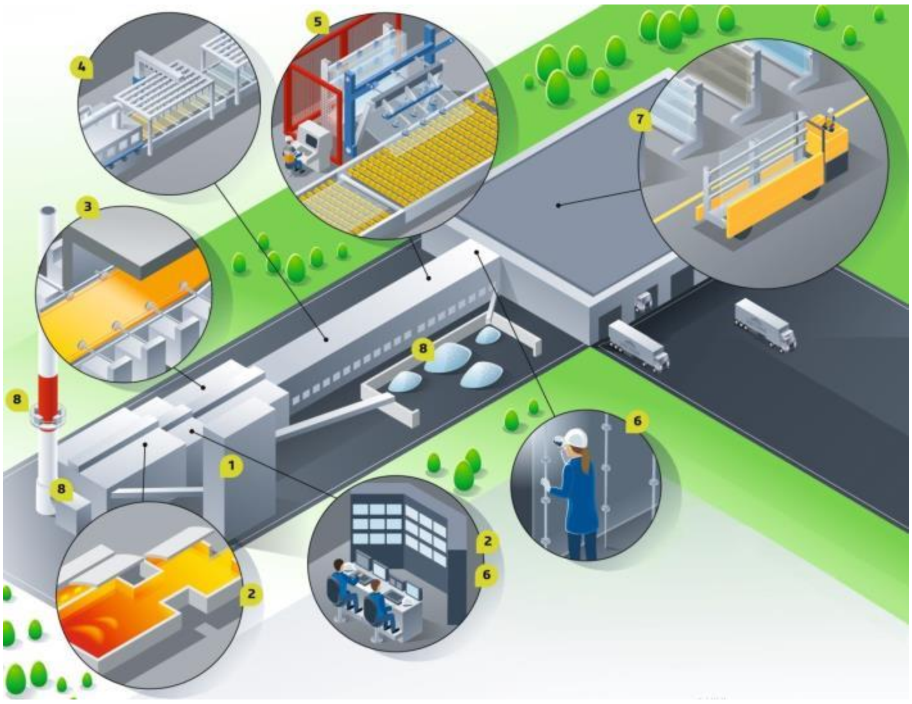
A1, raw material supply.
This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

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.

The product stage includes the extraction and processing of raw materials and energies, transport to the manufacturer, manufacturing and processing of flat glass.

Manufacturing process flow diagram



1. **BATCH MIXER:** Mix of raw materials (silica, soda ash, lime, feldspar and dolomite) to which is added recycled glass (cullet) and other compounds depending on the desired color and properties.
2. **FUSION FURNACE:** Raw materials are melted at 1,550°C in a furnace.
3. **FLOAT:** The molten glass is fed into a bath of molten tin. The glass floats on this flat surface and is drawn off in a ribbon. Serrated wheels, or top rolls, pull and push the glass sideways depending on the desired thickness (from 3 to 10 millimeters).
4. **ANNEALING LEHR:** The glass is lifted onto conveyor rollers and passes through a controlled cooling tunnel measuring more than 100 meters in length. Approximately 600°C at the start of this step, the glass exits the lehr at room temperature.
5. **CUTTING AND STACKING:** The glass is automatically cut lengthwise and crosswise. The sheets of glass are raised by vacuum frames that then place them on glass stillages.
6. **QUALITY:** Automatic inspections and regular samples are taken to check the quality of the glass at each step in the glassmaking process.
7. **STORAGE AND TRANSPORTATION:** The stillages are placed on storage racks in the warehouse.
8. **ENVIRONMENT:** Use of recycled cullet, installation of pollution abatement systems and closed circuit management of water: every measure is taken to limit the consumption of energy, extraction of natural resources, production of waste and emissions into the atmosphere.

The flat glass is transported on dedicated racks, used many times. This racks are not included in the life cycle of the product.

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/DESCRIPTION
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	2000 km
Capacity utilisation (including empty returns)	100% of the capacity in volume 30 % of empty returns in mass
Bulk density of transported products*	2500 kg/m3
Volume capacity utilisation factor	< 1

A5, Installation in 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
Ancillary materials for installation (specified by materials)	According to PCR NF EN 17074, none ancillary materials considered
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	According to EN 15804+A1, the energy needed during the installation is less than 0,1% of the total life cycle energy. It's include in the cut-off-rules.
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	According to PCR EN 17074, no waste is considered.
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)	None
Direct emissions to ambient air, soil and water	None

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

The product has a reference service life of 30 years. This assumes that the product will last in situ with no requirements for repair, replacement or refurbishment throughout this period. Therefore, it has no impact at this stage, except for maintenance.

According to PCR EN 17074, only the maintenance by cleaning glass with water and cleaning agent is included in this study.

Maintenance parameters, B2 :

PARAMETER	VALUE (expressed per functional/declared unit)
Maintenance process	Water and cleaning agent
Maintenance cycle	Annual average
Ancillary materials for maintenance (e.g. cleaning agent, specify materials)	cleaning agent : 0,001 kg/m² of glass/year
Wastage material during maintenance (specify materials)	0 kg
Net fresh water consumption during maintenance	0,2 kg/m² of glass/year
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

End of Life Stage, C1-C4

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

C1: Deconstruction, demolition
C2: Transport to waste processing
C3: Waste processing for reuse, recovery and/or recycling
C4: Disposal

End of life scenario used in this study is:

- 100% of glass is landfilled and the distance to the landfill site considered is 50 km.

Description of the scenarios and additional technical information:

End of life:

Thickness (mm)	2	3	4	5	6	8	10	12	15	19
Collection process specified by type	**5**	**7,5**	**10**	**12,5**	**15**	**20**	**25**	**30**	**37,5**	**47,5**
Recovery system specified by type	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Disposal specified by type	**5**	**7,5**	**10**	**12,5**	**15**	**20**	**25**	**30**	**37,5**	**47,5**

Assumptions for scenario development (e.g. transportation): 50 km transport to landfill

Reuse/recovery/recycling potential, D

Description of the stage: An end of life recycling 0% (100% of glass wastes are landfilled) has been assumed using local demolition waste data and adjusted considering the recyclability of the product.

LCA results

Product Environmental Footprint (PEF) method has been used as the impact model. Specific data has been supplied by the plant, and generic data come from GABI and Ecoinvent databases.

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

Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant (Production data according 2019)

All result tables refer to a functional unit of 1 m² of flat glass and an expected average service life of 30 years.

	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
Module declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU-27																
Specific data used	<90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL IMPACTS 3 mm

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	
Climate Change [kg CO2 eq.]	7,17E+00	7,32E-01	0	0	0,095	0	0	0	0	0	0	1,83E-02	0	1,05E-01	0
Climate Change (fossil) [kg CO2 eq.]	6,81E+00	7,27E-01	0	0	0,081	0	0	0	0	0	0	1,82E-02	0	1,14E-01	0
Climate Change (biogenic) [kg CO2 eq.]	3,57E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO2 eq.]	2,69E-03	5,96E-03	0	0	0,073	0	0	0	0	0	0	1,49E-04	0	3,27E-04	0
Ozone depletion [kg CFC-11 eq.]	7,65E-10	8,84E-17	0	0	4E-09	0	0	0	0	0	0	2,21E-18	0	4,22E-16	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	2,76E-02	3,12E-03	0	0	5E-04	0	0	0	0	0	0	7,81E-05	0	8,16E-04	0
Eutrophication freshwater [kg P eq.]	1,22E-05	2,24E-06	0	0	3E-05	0	0	0	0	0	0	5,59E-08	0	1,95E-07	0
Eutrophication marine [kg N eq.]	5,37E-03	1,47E-03	0	0	5E-04	0	0	0	0	0	0	3,66E-05	0	2,10E-04	0
Eutrophication terrestrial [Mole of N eq.]	7,44E-02	1,63E-02	0	0	0,001	0	0	0	0	0	0	4,07E-04	0	2,31E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	1,35E-02	3,94E-03	0	0	3E-04	0	0	0	0	0	0	9,85E-05	0	6,36E-04	0
Resource use, mineral and metals [kg Sb eq.]	5,67E-07	5,27E-08	0	0	3E-06	0	0	0	0	0	0	1,32E-09	0	1,02E-08	0
Resource use, energy carriers [MJ]	1,12E+02	9,79E+00	0	0	1,38	0	0	0	0	0	0	2,45E-01	0	1,49E+00	0
Water scarcity [m³ world equiv.]	4,50E-01	6,57E-03	0	0	0,327	0	0	0	0	0	0	1,64E-04	0	1,19E-02	0

RESOURCE USE 3 mm

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 (PERE) [MJ]	3,58E+00	5,50E-01	0	0	0,769	0	0	0	0	0	0	1,38E-02	0	1,95E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	3,58E+00	5,50E-01	0	0	0,769	0	0	0	0	0	0	1,38E-02	0	1,95E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	1,12E+02	9,80E+00	0	0	1,38	0	0	0	0	0	0	2,45E-01	0	1,49E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	1,12E+02	9,80E+00	0	0	1,48	0	0	0	0	0	0	2,45E-01	0	1,49E+00	0
Input of secondary material (SM) [kg]	1,19E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	1,58E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	1,85E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	1,52E-02	6,37E-04	0	0	0,008	0	0	0	0	0	0	1,59E-05	0	3,76E-04	0

WASTE CATEGORIES 3 mm

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 (HWD) [kg]	1,85E-07	4,56E-07	0	0	8E-11	0	0	0	0	0	0	1,14E-08	0	2,28E-08	0
Non-hazardous waste disposed (NHWD) [kg]	4,30E-01	1,50E-03	0	0	0,006	0	0	0	0	0	0	3,75E-05	0	7,51E+00	0
Radioactive waste disposed (RWD) [kg]	6,20E-03	1,21E-05	0	0	3E-06	0	0	0	0	0	0	3,03E-07	0	1,70E-05	0

OUTPUT FLOWS 3 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS 4 mm

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				
	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.]	9,56E+00	9,76E-01	0	0	0,095	0	0	0	0	0	0	2,44E-02	0	1,40E-01	0
Climate Change (fossil) [kg CO2 eq.]	9,08E+00	9,70E-01	0	0	0,081	0	0	0	0	0	0	2,42E-02	0	1,52E-01	0
Climate Change (biogenic) [kg CO2 eq.]	4,76E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO2 eq.]	3,58E-03	7,94E-03	0	0	0,073	0	0	0	0	0	0	1,99E-04	0	4,37E-04	0
Ozone depletion [kg CFC-11 eq.]	1,02E-09	1,18E-16	0	0	4E-09	0	0	0	0	0	0	2,95E-18	0	5,62E-16	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	3,68E-02	4,16E-03	0	0	5E-04	0	0	0	0	0	0	1,04E-04	0	1,09E-03	0
Eutrophication freshwater [kg P eq.]	1,62E-05	2,98E-06	0	0	3E-05	0	0	0	0	0	0	7,45E-08	0	2,60E-07	0
Eutrophication marine [kg N eq.]	7,16E-03	1,95E-03	0	0	5E-04	0	0	0	0	0	0	4,88E-05	0	2,80E-04	0
Eutrophication terrestrial [Mole of N eq.]	9,92E-02	2,17E-02	0	0	0,001	0	0	0	0	0	0	5,43E-04	0	3,08E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	1,80E-02	5,25E-03	0	0	3E-04	0	0	0	0	0	0	1,31E-04	0	8,48E-04	0
Resource use, mineral and metals [kg Sb eq.]	7,56E-07	7,03E-08	0	0	3E-06	0	0	0	0	0	0	1,76E-09	0	1,36E-08	0
Resource use, energy carriers [MJ]	1,50E+02	1,31E+01	0	0	1,38	0	0	0	0	0	0	3,26E-01	0	1,99E+00	0
Water scarcity [m³ world equiv.]	6,00E-01	8,77E-03	0	0	0,327	0	0	0	0	0	0	2,19E-04	0	1,59E-02	0

RESOURCE USE 4 mm

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 (PERE) [MJ]	4,78E+00	7,34E-01	0	0	0,769	0	0	0	0	0	0	1,83E-02	0	2,61E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	4,78E+00	7,34E-01	0	0	0,769	0	0	0	0	0	0	1,83E-02	0	2,61E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	1,50E+02	1,31E+01	0	0	1,38	0	0	0	0	0	0	3,27E-01	0	1,99E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	1,50E+02	1,31E+01	0	0	1,48	0	0	0	0	0	0	3,27E-01	0	1,99E+00	0
Input of secondary material (SM) [kg]	1,59E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	2,1E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	2,47E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	2,03E-02	8,50E-04	0	0	0,008	0	0	0	0	0	0	2,12E-05	0	5,02E-04	0

WASTE CATEGORIES 4 mm

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 (HWD) [kg]	2,47E-07	6,08E-07	0	0	8E-11	0	0	0	0	0	0	1,52E-08	0	3,03E-08	0
Non-hazardous waste disposed (NHWD) [kg]	5,73E-01	2,00E-03	0	0	0,006	0	0	0	0	0	0	5,00E-05	0	1,00E+01	0
Radioactive waste disposed (RWD) [kg]	8,26E-03	1,62E-05	0	0	3E-06	0	0	0	0	0	0	4,04E-07	0	2,26E-05	0

OUTPUT FLOWS 4 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS 5 mm															
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	
Climate Change [kg CO2 eq.]	1,19E+01	1,22E+00	0	0	0,095	0	0	0	0	0	0	3,05E-02	0	1,75E-01	0
Climate Change (fossil) [kg CO2 eq.]	1,13E+01	1,21E+00	0	0	0,081	0	0	0	0	0	0	3,03E-02	0	1,90E-01	0
Climate Change (biogenic) [kg CO2 eq.]	5,96E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO2 eq.]	4,48E-03	9,93E-03	0	0	0,073	0	0	0	0	0	0	2,48E-04	0	5,46E-04	0
Ozone depletion [kg CFC-11 eq.]	1,27E-09	1,47E-16	0	0	4E-09	0	0	0	0	0	0	3,68E-18	0	7,03E-16	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	4,60E-02	5,20E-03	0	0	5E-04	0	0	0	0	0	0	1,30E-04	0	1,36E-03	0
Eutrophication freshwater [kg P eq.]	2,03E-05	3,73E-06	0	0	3E-05	0	0	0	0	0	0	9,32E-08	0	3,26E-07	0
Eutrophication marine [kg N eq.]	8,95E-03	2,44E-03	0	0	5E-04	0	0	0	0	0	0	6,10E-05	0	3,50E-04	0
Eutrophication terrestrial [Mole of N eq.]	1,24E-01	2,71E-02	0	0	0,001	0	0	0	0	0	0	6,78E-04	0	3,85E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	2,25E-02	6,56E-03	0	0	3E-04	0	0	0	0	0	0	1,64E-04	0	1,06E-03	0
Resource use, mineral and metals [kg Sb eq.]	9,44E-07	8,79E-08	0	0	3E-06	0	0	0	0	0	0	2,20E-09	0	1,70E-08	0
Resource use, energy carriers [MJ]	1,87E+02	1,63E+01	0	0	1,38	0	0	0	0	0	0	4,08E-01	0	2,49E+00	0
Water scarcity [m³ world equiv.]	7,50E-01	1,10E-02	0	0	0,327	0	0	0	0	0	0	2,74E-04	0	1,99E-02	0

RESOURCE USE 5 mm

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				
	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]	5,97E+00	9,17E-01	0	0	0,769	0	0	0	0	0	0	2,29E-02	0	3,26E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	5,97E+00	9,17E-01	0	0	0,769	0	0	0	0	0	0	2,29E-02	0	3,26E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	1,87E+02	1,63E+01	0	0	1,38	0	0	0	0	0	0	4,08E-01	0	2,49E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	1,87E+02	1,63E+01	0	0	1,48	0	0	0	0	0	0	4,08E-01	0	2,49E+00	0
Input of secondary material (SM) [kg]	1,99E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	2,63E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	3,09E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	2,54E-02	1,06E-03	0	0	0,008	0	0	0	0	0	0	2,66E-05	0	6,27E-04	0

WASTE CATEGORIES 5 mm

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 (HWD) [kg]	3,09E-07	7,60E-07	0	0	8E-11	0	0	0	0	0	0	1,90E-08	0	3,79E-08	0
Non-hazardous waste disposed (NHWD) [kg]	7,16E-01	2,50E-03	0	0	0,006	0	0	0	0	0	0	6,25E-05	0	1,25E+01	0
Radioactive waste disposed (RWD) [kg]	1,03E-02	2,02E-05	0	0	3E-06	0	0	0	0	0	0	5,06E-07	0	2,83E-05	0

OUTPUT FLOWS 5 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS 6 mm															
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	
Climate Change [kg CO2 eq.]	1,43E+01	1,46E+00	0	0	0,095	0	0	0	0	0	0	3,66E-02	0	2,10E-01	0
Climate Change (fossil) [kg CO2 eq.]	1,36E+01	1,45E+00	0	0	0,081	0	0	0	0	0	0	3,64E-02	0	2,28E-01	0
Climate Change (biogenic) [kg CO2 eq.]	7,15E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO2 eq.]	5,38E-03	1,19E-02	0	0	0,073	0	0	0	0	0	0	2,98E-04	0	6,55E-04	0
Ozone depletion [kg CFC-11 eq.]	1,53E-09	1,77E-16	0	0	4E-09	0	0	0	0	0	0	4,42E-18	0	8,43E-16	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	5,52E-02	6,24E-03	0	0	5E-04	0	0	0	0	0	0	1,56E-04	0	1,63E-03	0
Eutrophication freshwater [kg P eq.]	2,43E-05	4,47E-06	0	0	3E-05	0	0	0	0	0	0	1,12E-07	0	3,91E-07	0
Eutrophication marine [kg N eq.]	1,07E-02	2,93E-03	0	0	5E-04	0	0	0	0	0	0	7,33E-05	0	4,20E-04	0
Eutrophication terrestrial [Mole of N eq.]	1,49E-01	3,26E-02	0	0	0,001	0	0	0	0	0	0	8,14E-04	0	4,62E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	2,70E-02	7,88E-03	0	0	3E-04	0	0	0	0	0	0	1,97E-04	0	1,27E-03	0
Resource use, mineral and metals [kg Sb eq.]	1,13E-06	1,05E-07	0	0	3E-06	0	0	0	0	0	0	2,64E-09	0	2,04E-08	0
Resource use, energy carriers [MJ]	2,25E+02	1,96E+01	0	0	1,38	0	0	0	0	0	0	4,90E-01	0	2,98E+00	0
Water scarcity [m³ world equiv.]	9,00E-01	1,31E-02	0	0	0,327	0	0	0	0	0	0	3,29E-04	0	2,38E-02	0

RESOURCE USE 6 mm															
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 (PERE) [MJ]	7,17E+00	1,10E+00	0	0	0,769	0	0	0	0	0	0	2,75E-02	0	3,91E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	7,17E+00	1,10E+00	0	0	0,769	0	0	0	0	0	0	2,75E-02	0	3,91E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	2,25E+02	1,96E+01	0	0	1,38	0	0	0	0	0	0	4,90E-01	0	2,99E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	2,25E+02	1,96E+01	0	0	1,48	0	0	0	0	0	0	4,90E-01	0	2,99E+00	0
Input of secondary material (SM) [kg]	2,39E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	3,16E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	3,71E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	3,04E-02	1,27E-03	0	0	0,008	0	0	0	0	0	0	3,19E-05	0	7,53E-04	0

WASTE CATEGORIES 6 mm

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 (HWD) [kg]	3,71E-07	9,12E-07	0	0	8E-11	0	0	0	0	0	0	2,28E-08	0	4,55E-08	0
Non-hazardous waste disposed (NHWD) [kg]	8,60E-01	3,00E-03	0	0	0,006	0	0	0	0	0	0	7,50E-05	0	1,50E+01	0
Radioactive waste disposed (RWD) [kg]	1,24E-02	2,43E-05	0	0	3E-06	0	0	0	0	0	0	6,07E-07	0	3,39E-05	0

OUTPUT FLOWS 6 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS 8 mm

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				
	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.]	1,91E+01	1,95E+00	0	0	0,095	0	0	0	0	0	0	4,88E-02	0	2,80E-01	0
Climate Change (fossil) [kg CO2 eq.]	1,82E+01	1,94E+00	0	0	0,081	0	0	0	0	0	0	4,85E-02	0	3,03E-01	0
Climate Change (biogenic) [kg CO2 eq.]	9,53E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO2 eq.]	7,17E-03	1,59E-02	0	0	0,073	0	0	0	0	0	0	3,97E-04	0	8,73E-04	0
Ozone depletion [kg CFC-11 eq.]	2,04E-09	2,36E-16	0	0	4E-09	0	0	0	0	0	0	5,89E-18	0	1,12E-15	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	7,35E-02	8,33E-03	0	0	5E-04	0	0	0	0	0	0	2,08E-04	0	2,18E-03	0
Eutrophication freshwater [kg P eq.]	3,23E-05	5,96E-06	0	0	3E-05	0	0	0	0	0	0	1,49E-07	0	5,21E-07	0
Eutrophication marine [kg N eq.]	1,43E-02	3,91E-03	0	0	5E-04	0	0	0	0	0	0	9,77E-05	0	5,60E-04	0
Eutrophication terrestrial [Mole of N eq.]	1,98E-01	4,34E-02	0	0	0,001	0	0	0	0	0	0	1,09E-03	0	6,16E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	3,60E-02	1,05E-02	0	0	3E-04	0	0	0	0	0	0	2,63E-04	0	1,70E-03	0
Resource use, mineral and metals [kg Sb eq.]	1,51E-06	1,41E-07	0	0	3E-06	0	0	0	0	0	0	3,52E-09	0	2,72E-08	0
Resource use, energy carriers [MJ]	2,99E+02	2,61E+01	0	0	1,38	0	0	0	0	0	0	6,53E-01	0	3,98E+00	0
Water scarcity [m³ world equiv.]	1,20E+00	1,75E-02	0	0	0,327	0	0	0	0	0	0	4,38E-04	0	3,18E-02	0

RESOURCE USE 8 mm

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 (PERE) [MJ]	9,56E+00	1,47E+00	0	0	0,769	0	0	0	0	0	0	3,67E-02	0	5,21E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	9,56E+00	1,47E+00	0	0	0,769	0	0	0	0	0	0	3,67E-02	0	5,21E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	2,99E+02	2,61E+01	0	0	1,38	0	0	0	0	0	0	6,54E-01	0	3,98E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	2,99E+02	2,61E+01	0	0	1,48	0	0	0	0	0	0	6,54E-01	0	3,98E+00	0
Input of secondary material (SM) [kg]	3,19E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	4,21E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	4,94E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	4,06E-02	1,70E-03	0	0	0,008	0	0	0	0	0	0	4,25E-05	0	1,00E-03	0

WASTE CATEGORIES 8 mm

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 (HWD) [kg]	4,94E-07	1,22E-06	0	0	8E-11	0	0	0	0	0	0	3,04E-08	0	6,07E-08	0
Non-hazardous waste disposed (NHWD) [kg]	1,15E+00	4,00E-03	0	0	0,006	0	0	0	0	0	0	1,00E-04	0	2,00E+01	0
Radioactive waste disposed (RWD) [kg]	1,65E-02	3,24E-05	0	0	3E-06	0	0	0	0	0	0	8,09E-07	0	4,52E-05	0

OUTPUT FLOWS 8 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ENVIRONMENTAL IMPACTS 10 mm															
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	
Climate Change [kg CO_2 eq.]	2,39E+01	2,44E+00	0	0	0,095	0	0	0	0	0	0	6,10E-02	0	3,50E-01	0
Climate Change (fossil) [kg CO_2 eq.]	2,27E+01	2,42E+00	0	0	0,081	0	0	0	0	0	0	6,06E-02	0	3,79E-01	0
Climate Change (biogenic) [kg CO_2 eq.]	1,19E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Climate Change (land use change) [kg CO_2 eq.]	8,96E-03	1,99E-02	0	0	0,073	0	0	0	0	0	0	4,96E-04	0	1,09E-03	0
Ozone depletion [kg CFC-11 eq.]	2,55E-09	2,95E-16	0	0	4E-09	0	0	0	0	0	0	7,37E-18	0	1,41E-15	0
Acidification terrestrial and freshwater [Mole of H+ eq.]	9,19E-02	1,04E-02	0	0	5E-04	0	0	0	0	0	0	2,60E-04	0	2,72E-03	0
Eutrophication freshwater [kg P eq.]	4,04E-05	7,45E-06	0	0	3E-05	0	0	0	0	0	0	1,86E-07	0	6,51E-07	0
Eutrophication marine [kg N eq.]	1,79E-02	4,88E-03	0	0	5E-04	0	0	0	0	0	0	1,22E-04	0	7,00E-04	0
Eutrophication terrestrial [Mole of N eq.]	2,48E-01	5,43E-02	0	0	0,001	0	0	0	0	0	0	1,36E-03	0	7,69E-03	0
Photochemical ozone formation - human health [kg NMVOC eq.]	4,50E-02	1,31E-02	0	0	3E-04	0	0	0	0	0	0	3,28E-04	0	2,12E-03	0
Resource use, mineral and metals [kg Sb eq.]	1,89E-06	1,76E-07	0	0	3E-06	0	0	0	0	0	0	4,39E-09	0	3,40E-08	0
Resource use, energy carriers [MJ]	3,74E+02	3,26E+01	0	0	1,38	0	0	0	0	0	0	8,16E-01	0	4,97E+00	0
Water scarcity [m^3 world equiv.]	1,50E+00	2,19E-02	0	0	0,327	0	0	0	0	0	0	5,48E-04	0	3,97E-02	0

RESOURCE USE 10 mm

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 (PERE) [MJ]	1,19E+01	1,83E+00	0	0	0,769	0	0	0	0	0	0	4,59E-02	0	6,51E-01	0
Primary energy resources used as raw materials (PERM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	1,19E+01	1,83E+00	0	0	0,769	0	0	0	0	0	0	4,59E-02	0	6,51E-01	0
Use of non-renewable primary energy (PENRE) [MJ]	3,74E+02	3,27E+01	0	0	1,38	0	0	0	0	0	0	8,17E-01	0	4,98E+00	0
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (PENRT) [MJ]	3,74E+02	3,27E+01	0	0	1,48	0	0	0	0	0	0	8,17E-01	0	4,98E+00	0
Input of secondary material (SM) [kg]	3,98E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	5,26E-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF) [MJ]	6,18E-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water (FW) [m3]	5,07E-02	2,12E-03	0	0	0,008	0	0	0	0	0	0	5,31E-05	0	1,25E-03	0

WASTE CATEGORIES 10 mm

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 (HWD) [kg]	6,18E-07	1,52E-06	0	0	8E-11	0	0	0	0	0	0	3,80E-08	0	7,59E-08	0
Non-hazardous waste disposed (NHWD) [kg]	1,43E+00	5,00E-03	0	0	0,006	0	0	0	0	0	0	1,25E-04	0	2,50E+01	0
Radioactive waste disposed (RWD) [kg]	2,07E-02	4,04E-05	0	0	3E-06	0	0	0	0	0	0	1,01E-06	0	5,65E-05	0

OUTPUT FLOWS 10 mm

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 (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

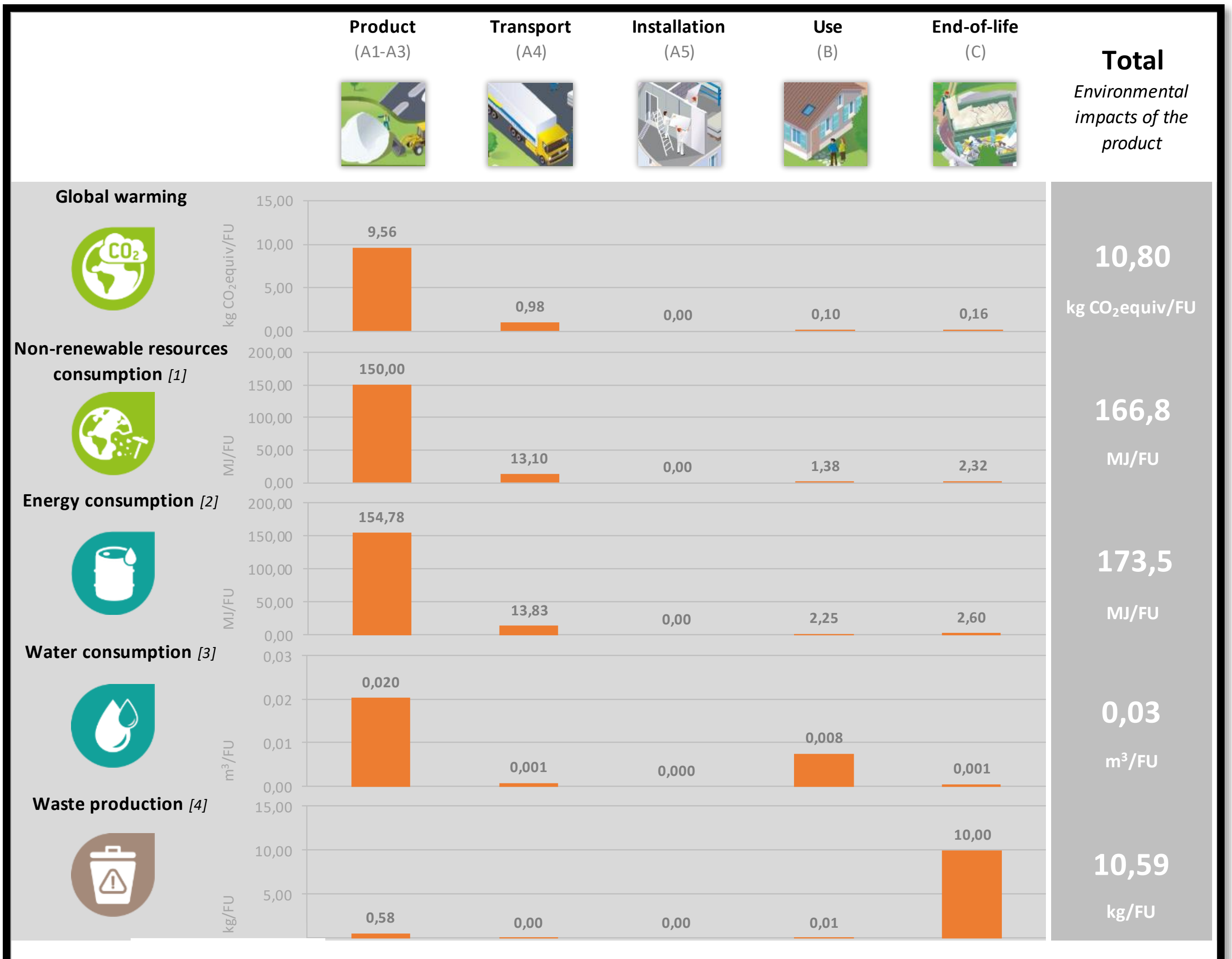
Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0

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

There is no biogenic carbon in glass product. Every thickness considered in this EPD have the same value to biogenic carbon 0 kg C. Moreover, there is no packaging considered for glass products.

LCA results interpretation for PARSOL® 4 mm

The following figure refers to a functional unit 1 m² of flat glass product.



[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. CO_2 is generated upstream from the production of electricity and is also released on site by the combustion of natural gas. Production of one of raw material will generate the second highest percentage of greenhouse gas emissions. We can see that other sections of the life cycle also contribute to the GWP; however, the production modules contribute to over 90% of the contribution.

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. 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 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, 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. We also use water during the use phase to cleaning the product.

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 100% of the product is sent to landfill. However, there is still an impact associated with the production module since we do generate waste on site.

Health characteristics

Concerning the indoor air quality, clear flat glass is an inert material that doesn't release any inorganic & organic compounds, in particular no VOC (volatile organic compounds).

Additional Environmental Information

Saint-Gobain's environmental policy

Saint-Gobain's environmental vision is to ensure the sustainable development of its Activities, while preserving the environment from the impacts of its processes and services throughout their life cycle. The Group thus seeks to ensure the preservation of resources, meet the expectations of its relevant stakeholders, and offer its customers the highest added value with the lowest environmental impact.

The Group has set two long-term objectives: zero environmental accidents and a minimum impact of its activities on the environment. Short and medium-term goals are set to address these two ambitions. They concern five environmental areas identified by the Group: raw materials and waste; energy, atmospheric emissions and climate; water; biodiversity; and environmental accidents and nuisance.

Our products' contribution to Sustainable Buildings

Saint-Gobain encourages sustainable construction and develops innovative solutions for new and renovated buildings that are energy efficient, comfortable, healthy and esthetically superior, while at the same time protecting natural resources.

The following information might be of help for green building certification programs:

RECYCLED CONTENT
(Required for LEED v4 Building product disclosure and optimization - sourcing of raw materials)

Recycled content: proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content.

Post-consumer material: material generated by households or commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. In practice, in the case of flat glass, all material coming from glass recycling collection schemes falls under this category, i.e. glass waste from end-of-life vehicles, construction and demolition waste, etc.

Pre-consumer material: material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

In the case of flat glass, this waste originates from the processing or re-processing of glass that takes place before the final product reaches the consumer market. Pre-consumer waste flat glass is made of cut-offs, losses during laminating, bending and other processing, including the manufacture of insulating glass units or automotive windscreens.

Cullet generated in the furnace plant and which is reintroduced into the furnace cannot be considered as pre-consumer recycled content, since there was never an intent to discard it and therefore it would never have entered the solid waste stream.

Pre-consumer cullet	~13%
Post-consumer cullet	< 1%

In the future, Saint-Gobain Glass intends to continue the increase of recycled material in its products, especially when recycling building post-consumer cullet glass dismantling and recycling networks will be available in every country.

RESPONSIBLE SOURCING
(Required for BREEAM International new construction 2013 – MAT 03 Responsible sourcing)

All Saint-Gobain Glass Industry sites with a glassmaking furnace, are ISO 14001 certified.
The Saint-Gobain Glass Industry site from the UK (Eggborough) has a BES 6001 certification, with a Very Good score.

All internal Saint-Gobain Glass quarries are certified ISO 14001 like, for example, SAINT-GOBAIN SAMIN (sand) in France. Many Saint-Gobain Glass raw material suppliers are certified ISO 14001. Our policy consists in encouraging the sourcing of raw materials extracted or made in sites certified ISO 14001 (or the equivalent).

For any other question / document / certification, please contact our local sales teams.

Annex 1: Environmental impacts according to EN 15804:2012 + A1

The following tables presents results of flat glass from 2 mm to 19 mm according to EN 15804 +A1.

ENVIRONMENTAL IMPACTS 3 mm

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 CO_2 equiv/FU*	6,84E+00	7,17E-01	0,00E+00	0	7,92E-02	0	0	0	0	0	0	1,79E-02	0	1,12E-01	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*	6,82E-10	1,18E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	2,95E-18	0	5,62E-16	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 SO_2 equiv/FU*	2,11E-02	2,17E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	5,42E-05	0	6,55E-04	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 $(PO_4)^{3-}$ equiv/FU*	2,81E-03	5,27E-04	0,00E+00	0	6,51E-04	0	0	0	0	0	0	1,32E-05	0	7,38E-05	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) *kg Ethene equiv/FU*	1,33E-03	7,98E-05	0,00E+00	0	2,59E-05	0	0	0	0	0	0	1,99E-06	0	5,28E-05	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 resources (ADP-elements) - *kg Sb equiv/FU*	5,19E-05	5,96E-08	0,00E+00	0	2,56E-06	0	0	0	0	0	0	1,49E-09	0	3,94E-08	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	9,66E+01	9,77E+00	0,00E+00	0	1,29E+00	0	0	0	0	0	0	2,44E-01	0	1,45E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

ENVIRONMENTAL IMPACTS 4 mm

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 CO_2 equiv/FU*	9,12E+00	9,56E-01	0,00E+00	0	7,92E-02	0	0	0	0	0	0	2,39E-02	0	1,49E-01	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*	9,09E-10	1,57E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	3,93E-18	0	7,49E-16	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 SO_2 equiv/FU*	2,81E-02	2,89E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	7,22E-05	0	8,74E-04	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 $(PO_4)^{3-}$ equiv/FU*	3,74E-03	7,03E-04	0,00E+00	0	6,51E-04	0	0	0	0	0	0	1,76E-05	0	9,84E-05	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) *kg Ethene equiv/FU*	1,77E-03	1,06E-04	0,00E+00	0	2,59E-05	0	0	0	0	0	0	2,66E-06	0	7,04E-05	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 resources (ADP-elements) - *kg Sb equiv/FU*	6,93E-05	7,95E-08	0,00E+00	0	2,56E-06	0	0	0	0	0	0	1,99E-09	0	5,25E-08	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	1,29E+02	1,30E+01	0,00E+00	0	1,29E+00	0	0	0	0	0	0	3,26E-01	0	1,93E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

ENVIRONMENTAL IMPACTS 5 mm

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 CO_2 equiv/FU*	1,14E+01	1,20E+00	0,00E+00	0	7,92E-02	0	0	0	0	0	0	2,99E-02	0	1,86E-01	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*	1,14E-09	1,96E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	4,91E-18	0	9,37E-16	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 SO_2 equiv/FU*	3,51E-02	3,61E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	9,03E-05	0	1,09E-03	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 $(PO_4)^{3-}$ equiv/FU*	4,68E-03	8,79E-04	0,00E+00	0	6,51E-04	0	0	0	0	0	0	2,20E-05	0	1,23E-04	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) *kg Ethene equiv/FU*	2,21E-03	1,33E-04	0,00E+00	0	2,59E-05	0	0	0	0	0	0	3,32E-06	0	8,80E-05	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 resources (ADP-elements) - *kg Sb equiv/FU*	8,66E-05	9,94E-08	0,00E+00	0	2,56E-06	0	0	0	0	0	0	2,48E-09	0	6,57E-08	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	1,61E+02	1,63E+01	0,00E+00	0	1,29E+00	0	0	0	0	0	0	4,07E-01	0	2,42E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

ENVIRONMENTAL IMPACTS 6 mm

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 CO_2 equiv/FU***	1,37E+01	1,43E+00	0,00E+00	0	7,92E-02	0	0	0	0	0	0	3,59E-02	0	2,23E-01	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***	1,36E-09	2,36E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	5,89E-18	0	1,12E-15	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 SO_2 equiv/FU***	4,21E-02	4,33E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	1,08E-04	0	1,31E-03	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 $(PO_4)^{3-}$ equiv/FU***	5,62E-03	1,05E-03	0,00E+00	0	6,51E-04	0	0	0	0	0	0	2,64E-05	0	1,48E-04	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) ***kg Ethene equiv/FU***	2,65E-03	1,60E-04	0,00E+00	0	2,59E-05	0	0	0	0	0	0	3,99E-06	0	1,06E-04	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 resources (ADP-elements) - ***kg Sb equiv/FU***	1,04E-04	1,19E-07	0,00E+00	0	2,56E-06	0	0	0	0	0	0	2,98E-09	0	7,88E-08	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - ***MJ/FU***	1,93E+02	1,95E+01	0,00E+00	0	1,29E+00	0	0	0	0	0	0	4,89E-01	0	2,90E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

ENVIRONMENTAL IMPACTS 8 mm

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 CO_2 equiv/FU*	1,82E+01	1,91E+00	0,00E+00	0	7,92E-02	0	0	0	0	0	0	4,78E-02	0	2,98E-01	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*	1,82E-09	3,14E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	7,86E-18	0	1,50E-15	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 SO_2 equiv/FU*	5,61E-02	5,78E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	1,44E-04	0	1,75E-03	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 $(PO_4)^{3-}$ equiv/FU*	7,49E-03	1,41E-03	0,00E+00	0	6,51E-04	0	0	0	0	0	0	3,52E-05	0	1,97E-04	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) *kg Ethene equiv/FU*	3,54E-03	2,13E-04	0,00E+00	0	2,59E-05	0	0	0	0	0	0	5,32E-06	0	1,41E-04	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 resources (ADP-elements) - *kg Sb equiv/FU*	1,39E-04	1,59E-07	0,00E+00	0	2,56E-06	0	0	0	0	0	0	3,97E-09	0	1,05E-07	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	2,57E+02	2,61E+01	0,00E+00	0	1,29E+00	0	0	0	0	0	0	6,51E-01	0	3,87E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

ENVIRONMENTAL IMPACTS 10 mm

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 CO_2 equiv/FU*	2,28E+01	2,39E+00	0,00E+00	0	7,92E-02	0	0	0	0	0	0	5,98E-02	0	3,72E-01	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*	2,27E-09	3,93E-16	0,00E+00	0	3,94E-09	0	0	0	0	0	0	9,82E-18	0	1,87E-15	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 SO_2 equiv/FU*	7,02E-02	7,22E-03	0,00E+00	0	3,82E-04	0	0	0	0	0	0	1,81E-04	0	2,18E-03	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 $(PO_4)^{3-}$ equiv/FU*	9,36E-03	1,76E-03	0,00E+00	0	6,51E-04	0	0	0	0	0	0	4,39E-05	0	2,46E-04	0
	Excessive enrichment of waters and continental surfaces with nutrients, and the associated adverse biological effects														
Photochemical ozone creation potentiel (POCP) *kg Ethene equiv/FU*	4,42E-03	2,66E-04	0,00E+00	0	2,59E-05	0	0	0	0	0	0	6,65E-06	0	1,76E-04	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 resources (ADP-elements) - *kg Sb equiv/FU*	1,73E-04	1,99E-07	0,00E+00	0	2,56E-06	0	0	0	0	0	0	4,97E-09	0	1,31E-07	0
Abiotic depletion potential for fossil resources (ADP-fossil fuels) - *MJ/FU*	3,22E+02	3,26E+01	0,00E+00	0	1,29E+00	0	0	0	0	0	0	8,14E-01	0	4,83E+00	0
	Consumption of non-renewable resources, thereby lowering their availability for future generations.														

Bibliography

- EN 15804:2012+A1:2013: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EN 15804:2019+A2 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
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- General Program Instruction of the International EPD® System, version 2.5
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- European Chemical Agency, Candidate List of substances of very high concern for Authorization. http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
- LCA report, Information for the Environmental Product Declaration of insulation products.

Differences versus previous versions

Global update from EN 15804+A1 to EN 15804+A2 including all new requirement, environmental impact indicator, with a more recent data collection and based on a full cycle compare to cage to gate before.