Environmental Product Declaration

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

E-210-170 (IEC denomination: U 210 B)

from

VERESCENCE La Granja. S.L.

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS 1.11. valid up to 2024-12-20.
PCR review was conducted by: The Technical Committee of the International EPD® System. The review panel may be contacted via info@environdec.com.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Verifier accredited by The International EPD® System Marcel Gómez Ferrer *Marcel Gómez Consultoría Ambiental* (www.marcelgomez.com) Tlf 0034 630 64 35 93 Email: info@marcelgomez.com 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.

Company information

Owner of the EPD: VERESCENCE La Granja S.L.

Contact:–
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Description of the organisation:

VERESCENCE La Granja, S.L. is an integral part of the VERESCENCE Group

Present in the insulator market for more than 85 years VERESCENCE La Granja S.L. has built its reputation for reliability, seriousness and innovation on the following bases:

- A production concentrated in a factory, La Granja Insulators, at the forefront of Quality and Technology, which has been the subject of regular investments throughout its existence.
- A constant policy of innovation: Rigid Insulators, Suspended Insulators in Tempered Glass, Insulators with RTV silicone coating (SILGLASS®).
- More than 90 years of collaboration with the main electricity grid operators around the world.
- More than 100 million insulators in service in distribution and transmission networks of electricity in medium and high voltage up to 765 kV, in more than 100 countries on all continents, in order to contribute to their industrial and human development.

Product-related or management system-related certifications:

VERESCENCE La Granja, S.L. has an Integrated Quality, Environment and Health and Safety Management System, certified according to the highest international standards: ISO 9001 Quality Management Systems, ISO 14001 Environmental Management System, ISO 45001 Occupational Health and Safety Management System. It also has the ISO 17025 accreditation certificate of the Laboratory.

Name and location of production site(s):

Owner of the EPD: VERESCENCE LA GRANJA S.L.
Paseo del Pocillo s/n – 40100 LA GRANJA – SEGOVIA – SPAIN

Product information

Product name: E-210-170 (IEC denomination: U 210 B)

The E-210-170 suspended insulator is a tempered glass standard profile insulator for high voltage electricity distribution and transmission networks.

Product identification:

Table 1 Technical data:

Class IEC-60305	E-210-170		
	Technical characteristic	**UNIT M**	**DATA**
Mechanical ratings	Minimun mechanical falling load	Kn	210
	Technical characteristic	**UNIT M**	**DATA**
Dimensional data	Spacing (S)	mm	170
	Diameter (D)	mm	280
	Creepage distance	mm	390
	Standard coupling	IEC-60120	20
	Technical characteristic	**UNIT M**	**DATA**
VALORES ELECTRICOS	Power frecuency withstand voltage		
	Dry	kV	75
	Wet	kV	45
	Dry ligthing impulse withstand voltage	kV	110
	Puncture voltage in oil	kV	130

Test and dimensional tolerances are in accordance with IEC-60383 standars

Product description:

The E-210-170 suspended insulator is a tempered glass insulator for high voltage electricity distribution and transmission networks.

The insulator can be supplied on demand with an anti-corrosion zinc sleeve or with RTV silicone coating.

SILGLASS® insulators use the most advanced HVIC technology of Si-COAT® silicone. This silicone increases hydrophobicity improving its properties in polluted environments. In addition, the loads absorb the energy of eventual electric arcs, protecting the integrity of the coating.

Table 2 Product structure:

Product composition	**IEC-60305 Class**		
	E-210-170 (U210B)	**E-210-170 (U210B) Zinc Sleeve**	**E-210-170 (U210B) SILGLASS**
Dielectric glass	X	X	X
Cement	X	X	X
Metal hardware type 1 – Cap	X	X	X
Metal hardware type 2 – Pin	X	X	X
Split Pin	X	X	X
Pin with Zinc sleeve		X	
Silicone			X

Figure 1: Dieléctric




Cap | Regular Pin | Pin with zinc sleeve | Split pin

Figure 2: Components

Tempered glass insulators thanks to the heat treatment received have a high resistance to the mechanical stresses of suspended insulators and also a great resistance to sudden changes in temperature, even when the insulator is subjected to large mechanical loads.

VERESCENCE La Granja S.L. has insulators operating in high voltage electrical transmission networks for more than 90 years.

- Suspended insulators are composed of the following elements:
- A dielectric made of toughened glass with the characteristics and shape appropriate to the environmental conditions in which it has to work.
- A hot dip galvanized nodular or ductile malleable cast iron cap. The cap is marked with LGI's brand name "ESA" and with the other engraved and inked marks required by the applicable standards to keep correct identification and individual traceability.
- One hot dip galvanized forged steel pin.
- The cap and pin are assembled on the glass piece using aluminous cement with the appropriate properties to withstand the thermomechanical efforts.
- Lastly, the insulator cap has a stainless steel (split pin) which secures the coupling between the units.

The model: E-210-170 is intended to work in normal pollution environments requiring only for its optimal operation, if it is necessary, the realization of periodic maintenance washings.

In the case of the SILGLASS® product, optimal operation of high-voltage overhead lines can be guaranteed in a extreme pollution environment, minimizing leakage currents and not being necessary to carry out periodic maintenance washings.

Figure 3_ Insulator SILGLASS®

The range of insulators of VERESCENCE La Granja S.L. complies with the main international and national standards:

- IEC (International Electrotechnical Commission Standards)
- ANSI (American National Standards Institute Standards)
- CSA (Canadian Standards Association)
- BS (British Standards)
- UNE (Spanish Standard)

The product incorporates post-consumer recycled material in the detailed percentages in the **CONTENT INFORMATION** section. This material may have its origin in different activities, and it is not possible to establish a single origin of the materials in the melting processes for steel recycling.

UN CPC code: 371

LCA information

LCA: The underlying study has been carried out by *Ingeniería Medioambiente y Sistemas de Gestion S.L.* www.imasge.es - E-mail lzaro@imasge.net

Declared unit: One piece of the model: E-210-170 (with and without zinc sleeve average value).

Table 3: References

References	Weight kg
E-210-170 (U210B)	7,27
E-210-170 (U210B) with zinc sleeve	7,31
E-210-170 (U210B) with Silicon RTV	7,47

Annex I include the Declaration of the Environmental Parameters of the LCA and the LCI corresponding to the catalog product E-210-170 (U210B) SILGLASS®.

Reference service life: 50 years. - IEEE (INSTITUTE OF ELECTRICAL AND ELECTRONICAL ENGINEERS)

Time representativeness: The product data has been obtained from the information of the production centre of VERESCENCE La Granja S.L. located in Paseo del Pocillo s/n – 40100 LA GRANJA – SEGOVIA - SPAIN during the period of 2020.

The processes and data selected at the temporal, technological and geographical level are in all cases representative for the product studied.

Whenever possible, the primary data provided by VERESCENCE La Granja S.L. have been used. In some cases, primary data are not available and external sources such as bibliography or official databases are required.

Primary data used: Consumption of raw materials incorporated into the product, losses, energy consumption and auxiliary materials, consumption of packaging materials, waste generated, distances and means of transport to suppliers and customers, including the percentages of acquisition and sales. They have also been provided by VERESCENCE La Granja S.L. data relating to the transport and final management of waste generated in the production process.

The allocation of these consumptions for the manufacture of the product subject to the EPD has been made in accordance with the % of allocation indicated by the organization supported by the systematic monitoring and analysis of data carried out through the internal indicators of the management system in accordance with ISO 9.001: 2015 and ISO 14.001: 2015 implemented in the organization and certified by an independent certifying entity.

Secondary data: The use of already published data sources has been used for upstream and downstream processes for which primary data are not available and whose contribution is considered relevant, such as, for example, the processes necessary for the generation of energy, manufacture of raw materials, manufacture of auxiliary materials and packaging.

Specifically, the databases available in the SIMAPRO 9.1.11 computer tool have been used for the processes of transport, power generation, production and treatment of water, manufacture of basic chemical products and processes of extraction and manufacture of lime, extraction and manufacture of Zinc, extraction and manufacture of primary and recycled steel, steel rolling, manufacture of granulated PE-LD, manufacture of wood for packaging, manufacture of pallets, manufacture of acrylic paint, manufacture of polyurethane and for the processes, among others of plastic extrusion, steel rolling, galvanizing and deposit of industrial waste.

The data related to the generation of electrical energy, emissions to the atmosphere and the manufacture of aluminous cement have been modeled for VERESCENCE La GranjaS.L. The data related to the generation of electrical energy have been modeled for Verescence taking into account the data provided by the marketing company and the reference of the Spanish energy mix. High-voltage transmission in the Spanish electricity grid and VERESCENCE's specific consumption mix have been included.

VERESCENCE La Granja S.L. has provided the specific data for modelling through electricity bills and reports of air emission controls carried out by Authorized Control Bodies which are periodically communicated to the administration in accordance with the provisions of the Integrated Environmental Authorization of the organization.

Database(s) and LCA software used:

All of the main data has been obtained from VERESCENCE La Granja S.L. The secondary data has been obtained using SimaPro 9.1.11 software and the Ecoinvent v.3.6 - Ecoinvent allocation, cut off by classification – unit y system - and Industry 2.0 databases. The impact model used corresponds to 15804:2012+A2:2020.

Description of system boundaries:

Cradle to gate with options stages A1-A3, A4-A5 modules C1–C4, module D.

Taking into account the additional restrictions of the PCR 2019:14 CONSTRUCTION PRODUCTS 1.11, the modules of the Use Stage cannot be included as there is no c-PCR of the product.

A1: PRODUCT STAGE

Product stage and includes information modules A1-A3: Including the supply of all materials, products and energy, as well as the treatment of waste to the end-of-waste state or the disposal of the final waste during the product stage.

1. A1: Extraction and processing of raw materials, processing of inputs that constitute secondary materials (e.g. recycling processes) and packaging.
1. A2: Transport to the manufacturer: transport of raw materials and secondary materials from the supplier to the manufacturer of the product under study.
    - A3: Fabrication: Production process carried out in VERESCENCE La Granja S.L.

The production process carried out in VERESCENCE La Granja S.L is performed according to the following sequence:

Reception of raw materials and storage in silos.

Dosage: contribution in proportions suitable for the mixture.

Mixture: homogenization of the mixture and incorporation of the cullet that comes from the internal recycling of the rejects.

Fusion: formation of the "drop of molten glass" that falls in the forming process. The factory has two regenerative continuous melting furnaces, built from refractory materials resistant to high temperatures, being in furnace II the one used for the product under study.
The furnaces are equipped with natural gas burners with heat recovery system by regeneration chambers and with electrical support for fusion. Heat from waste gases is used to preheat the air before combustion.

Forming and moulding: The molten glass is cut by scissors that are sprayed with oily water to avoid overheating, these "drops of molten glass" are conducted by gutters or deflectors to the moulds.

The flow of the glass must be kept constant in order to maintain the stability of temperature, viscosity and homogeneity of feed to the moulding process. In the production of insulators, the conformation of the glass

drop from furnace II is done by means of presses whose operation consists in the pressing of the drop by male. Once the glass drops are formed, they undergo hot treatments to improve their physical characteristics.

Annealing, tempering and thermal shocks: the glass plates that will constitute the insulators are subjected to a tempering consisting of a first stage of homogenization of temperatures throughout the thickness of the piece and the subsequent tempering process consisting of a rapid cooling of the external surface of the same which provides mechanical properties, improved thermal and electrical, in addition to guaranteeing a very high resistance to aging.

Subsequently, several thermal shocks are applied to check their resistance, first cold and then hot and finally they are subjected to a cold-water bath. In these processes, the elimination of defective parts due to inclusions, high stresses or particles is guaranteed.

Assembly: Assembly of the dielectric disc with the metal components (hood, bolt), hot curing of high strength aluminous cement and low coefficient of expansion and final placement of the pin.

Controls and tests: 100% of glass parts are subjected to severe thermal shocks and controls to avoid defects and ensure their reliability and durability at the stage of use. 100% of insulators undergo demanding quality controls carried out by automatic systems including routine mechanical testing. There is an accredited insulator laboratory following the ISO 17025 standard to be able to carry out all the type tests equipped with the following facilities:

- High Voltage Installation
- Installation of Mechanical Tests
- Thermal Installations
- Pollution Chamber

In addition, each type of insulator has type test reports and particular tests carried out by independent and internationally recognized accredited laboratories.

Insulators with RTV silicone coating:

Coating process: It is carried out by means of a robotic line of silicone application, which favors the optimization of consumption and homogeneity. The insulators are placed on a cyclic conveyor and pass through different stations along the line.

First the glass of the insulators is heated by an infrared device that tempers its surface to favor the adhesion of the silicone and then they pass to a closed and tempered station where the robots apply the silicone by means of guns in repeatable and controlled conditions.

A4: TRANSPORT OF THE PRODUCT – and its packaging – from the production center of La Granja S.L. to destination where it is used.

Table 4: Scenario A4

A4 SCENARIO INFORMATION	VALUE/DESCRIPTION
Type of transport vehicle used	Long-distance truck Transoceanic ship
Vehicle load capacity	Truck: 32 tons
Fuel type and consumption	Truck: 31.1L/100 km Ship: 0,0014L /100 Tnkm
Average distance to the construction work	Truck: 1429 km Ship: 10020 km
Capacity utilization (Including empty return journeys)	85 % capacity, in volume
Density of the products transported	1015 kg/m3 of products (including packaging)
Volumetric capacity usage factor	0,85 (default)

A5: Product Installation

The main contribution to this stage is provided by transport for the management of waste packaging used for recycling or final deposit. The rest of the contributions are not considered significant as they are the usual installation operation using manual tools and direct access of the personnel to the tower without external auxiliary means.

Table 5: Scenario A5

A5 SCENARIO INFORMATION	VALUE/DESCRIPTION
Auxiliary materials for installation	Under usual conditions are not required
Water use	Not required
Use of other resources	Not required
Quantitative description of the type and consumption of energy consumed during the preparation and installation process	No energy use is required. Usually, both the access to the tower of the technicians is direct and the installation of the insulators is manual.
Direct emissions to air, soil and water	Not generated
Residual materials generated on site due to the installation of the product	Packaging waste: 0,8-1 kg
Materials resulting from on-site waste management	Product remains: <1%. Only for losses. Packaging: 7% in landfill and 0% in incineration Recyclable packaging and product materials.

End of Life Stage C1-C4:

C1: Deconstruction/Demolition: The removal of the insulators is this final stage of useful life is expected simultaneous to the modification and / or dismantling of the power line in which they are installed. In the case of individual operations, the removal/replacement of insulators is usually carried out by manual means through direct access to the tower, so the impacts associated with this stage can be considered negligible for contribution purposes.

C2: Transport: Transport of the used product (mixed or not with the rest of the waste of the dismantled line) from the place of location of the power line to the place of waste treatment.

C3: Waste treatment: In this EPD the following hypotheses have been considered in accordance with the existing technical feasibility of recycling:

- Insulators without coating of 100% recycled silicone component of glass component (dielectric) and of metal reagents (hood, bolt and pin). Rest 100% inert waste to final landfill.
- Insulators with silicone coating 100% inert waste to final landfill considering the technical possibility and energy cost of recycling the product.

In this stage C3, the electrical consumption linked to the operation of crushing and sorting the glass waste and metal components of the E-210-170 (U210B) insulators has been considered. It has been considered an average consumption value of glass crushing machines for industrial use currently existing in the market.

C4 Waste disposal: It has been applied to the inert waste of the assembly material of the insulators E-210-170 (U210B) and to the global insulator E-210-170 (U210B) SILGLASS®.

Table 6 Scenario C1-C4

SCENARIO INFORMATION C1-C4	VALUE/DESCRIPTION
Collection process specified by type of waste	8,045- 8,125 kg collected separately 0 kg mixed collection of construction waste
Recovery system	0 kg for reuse 7,54 kg for recycling 0 Kg for energy recovery
Management considered by typology	0,45 kg deposited in a controlled landfill
Hypothesis of the escenario (transport)	16-32 metric tons truck Euro VI Class Average load: 85% Diesel consumption: 25.5 l/100 km Distance: 300 km

Module D : Avoided Impacts

The impacts avoided beyond the borders of the system have been calculated considering the % of non-recycled materials used as raw material in the process and comparing the impacts associated with them with the impacts obtained through the use of recycled materials:

- In the case of steel, it has been calculated on 2% not recycled steel in the pin and 5% in the cap.
- The zinc sleeve for 100% of the incorporated material.
- In the case of glass to the 75% manufactured from raw materials to origin, excluding the cullet provided.

CUT-OFF REGULATIONS AND CONSIDERATIONS: More than 95% of all contributions from mass and energy inputs and outputs identified in the life cycle inventory included in this report have been included. Inputs and outputs, for which no data are available, which together represent less than 5 % of the mass, and packaging waste of ancillary materials have not been considered.

Based on the limits of the system indicated in the reference standard PCR: Construction products and construction services, the following processes have not been considered:

- Manufacturing the production of capital goods with an expected lifetime above three years, buildings, and other capital goods
- The maintenance activities of the production plant
- The transport carried out by the workers in the journey home-factory-home

For the treatment of consumption, the polluter pays principle has been followed:

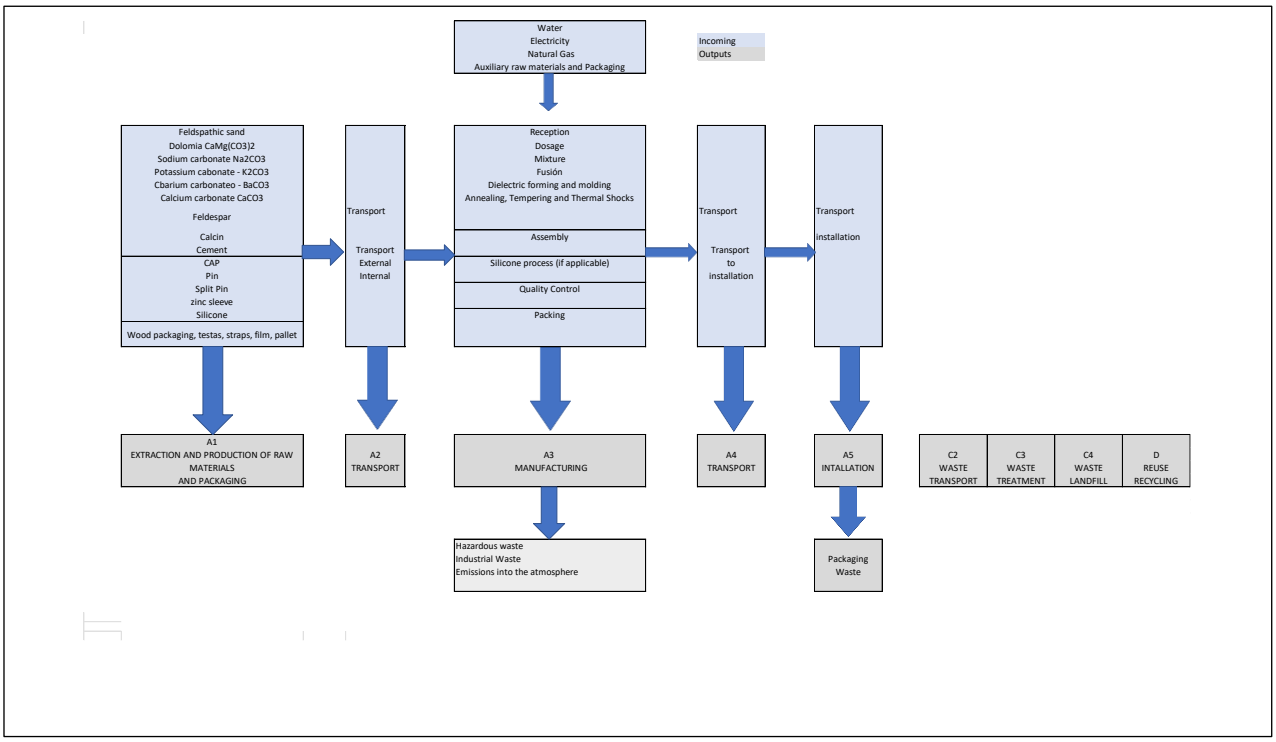
- When using recycled materials as raw materials, the impact of recycling treatment and transport to the factory is taken into account, but not the impact of raw materials.
- When a reused material is used, only transport to the factory is considered.

The quality of the input data has been evaluated according to its technological, temporal, and geographical coverage. The principle of modularity has been followed. The representativeness of the selected processes is considered good.

EPD of construction products may not be comparable if they do not comply with EN 15804. Environmental product declarations within the same product category from different programs may not be comparable.

The verifier and the programme operator do not make any claim nor have any responsibility of the legality of the product.

Systen diagram:



More information:

- Packing: Insulators are packed into short chains inside custom-made wooden cages for each model. These cages have a strap to ensure their stability and easy handling. The cages are stacked homogeneously on pallet bases and secured by properly tensioned plastic bands. In addition, each pallet is covered with a plastic sheath to protect the insulators from dust and dirt.
- Traceability: A complete traceability system is available for each of the insulators.

The stage of use is subdivided into the following modules:

- B1 Usage
- B2 Maintenance
- B3 Repair
- B4 Replacement
- B5 Rehabilitation
- B6 In-service power usage
- B7 Use of water in service

Although foreseeable impacts at the use stage have not been included in this EPD, they are limited to impacts from operations of:

- Cleaning (B2)
- Energy consumption by leakage currents (B7)
- Replacement of elements (B4)
- The rest of the stages have zero environmental impact.

Thanks to the absence of heterogeneities in the glass and the high level of demand in the quality tests of the manufacturing stage, the annual rate of spontaneous breakage of the VERESCENCE La Granja S.L. insulators in service, measured empirically by some of the main electrical operators in the world, is less than 0.01% (B4 Substitution) so the impact of this stage could be considered negligible.

Regarding stages B2 and B7, in the case of silicone product the leakage currents are reduced, and cleaning operations are eliminated. SILGLASS® insulators use the most advanced HVIC technology of Si-COAT® silicone.

This silicone increases hydrophobicity improving its properties in polluted environments. In addition, the loads absorb the energy of eventual electric arcs, protecting the integrity of the coating. For the silicone product the overall impact of the stage of use could be considered negligible

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLOBAL	GLOBAL	SPAIN	GLOBAL	GLOBAL	-	-	-	-	-	-	-	GLOBAL	GLOBAL	GLOBAL	GLOBAL	GLOBAL
Specific data used	>95%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Less than 10% for each product group					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Manufactured in one place					-	-	-	-	-	-	-	-	-	-	-	-

CONTENT INFORMATION

The results presented in this EPD correspond to the mean values of E-210-170 (U210B) with/without a cuff. The only difference between both products is the incorporation of an anti-corrosion 0, 04 kg zinc sleeve in the pin.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass	4,905- 4,953	0%	100%
Cement	0,43-0,453	0%	0%
Cap	2,077-2,098	98%	100%
Regular pin	0,51-0,515	95%	100%
Split pin	0,025-0,026	100%	100%
Zinc (sleeve)	0-0,040	0%	100%
Silicon (in SILGLASS®)	0-0,2	0%	0%
TOTAL - with shrinkage	7,947- 8,285	31,63%	93,09%
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
WOODEN CAGE	0,45-0,53	5,88%-6,52%	
PALLET wood	0,21-0,26	2,61%-3,2%	
TESTA	0,077-0,08	0,96%-0,98%	
FILM PE	0,024-0,03	0,30%-0,37%	
INTERIOR STRAP	0,004	0,05%	
OUTER STRAP	0,001	0,01%	
CAPOTA FILM PE	0,004-0,005	0,05%	
POLYURETHANE foam (in SILGLASS®)	0,538	6,67%	
TOTAL AVERAGE WEIGHT	0,77-0,98	9,57%-12,06%	

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
SVHC			<0,1%

The substances contained in the product E-210 standar-170 that are listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" do not exceed 0,1% weight of the product.

Environmental Information

Declared Unit: One piece - E-210 standard-170 - Average value with/without anti-corrosion zinc sleeve. Weight 7,27-7,31 kg - A piece of E-210 standard-170 SILGLASS® is described in ANNEX I.

It has used the methodology EN 15804 30/09/2021 V1.00 / EF 3.0 normalization and weighting set – and the Cumulative Energy Demand V1.11 methodology to calculate the use of renewable and non-renewable energy resources.

Potential environmental impact – mandatory indicators according to EN 15804

**Disclaimer: The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.*

Results per functional or declared unit																			
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1,04 E+01	9,19 E-01	7,64 E+00	1,89 E+01	1,81 E+00	4,01 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,79 E-01	6,93 E-03	2,05 E-03	-1,22 E+00
GWP-biogenic	kg CO_2 eq.	3,97 E-01	2,48 E-04	1,35 E-02	4,10 E-01	5,71 E-04	1,36 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,29 E-04	5,81 E-07	1,20 E-06	2,81 E-03
GWP-luluc	kg CO_2 eq.	3,08 E-02	4,78 E-04	2,27 E-02	5,40 E-02	8,31 E-04	1,44 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,36 E-04	2,44 E-07	5,72 E-07	-5,66 E-05
GWP-total	kg CO_2 eq.	1,08 E+01	9,20 E-01	7,67 E+00	1,94 E+01	1,81 E+00	4,01 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,80 E-01	6,93 E-03	2,06 E-03	-1,22 E+00
ODP	kg CFC 11 eq.	9,23 E-07	1,97 E-07	1,32 E-06	2,44 E-06	3,99 E-07	8,70 E-09	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	8,24 E-08	1,38 E-09	8,46 E-10	-6,15 E-10
AP	mol H^+ eq.	1,02 E-01	1,83 E-02	2,82 E-02	1,49 E-01	2,91 E-02	1,67 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,58 E-03	6,68 E-05	1,95 E-05	-3,63 E-03
EP-freshwater	kg PO_4^{3-} eq.	2,92 E-02	1,69 E-04	3,93 E-03	3,33 E-02	3,19 E-04	1,03 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	9,78 E-05	2,81 E-07	6,47 E-07	-6,91 E-05
EP-freshwater	kg P eq.	9,50 E-03	5,50 E-05	1,28 E-03	1,08 E-02	1,04 E-04	3,37 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,19 E-05	9,14 E-08	2,11 E-07	-2,25 E-05
EP-marine	kg N eq.	1,39 E-02	4,70 E-03	1,74 E-02	3,60 E-02	7,42 E-03	4,90 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,64 E-04	9,08 E-06	6,74 E-06	-6,43 E-04
EP-terrestrial	mol N eq.	1,65 E-01	5,21 E-02	8,71 E-02	3,04 E-01	8,22 E-02	5,35 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,07 E-03	9,95 E-05	7,39 E-05	-1,08 E-02
POCP	kg NMVOC eq.	4,24 E-02	1,39 E-02	5,23 E-02	1,09 E-01	2,22 E-02	1,63 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,54 E-03	2,84 E-05	2,15 E-05	-2,15 E-03
ADP-minerals& metals*	kg Sb eq.	7,15 E-03	8,88 E-06	3,93 E-05	7,20 E-03	2,35 E-05	1,05 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	9,98 E-06	6,71 E-09	1,88 E-08	-1,66 E-03
ADP-fossil*	MJ	1,26 E+02	1,28 E+01	1,83 E+02	3,21 E+02	2,60 E+01	5,91 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,59 E+00	8,48 E-02	5,74 E-02	-5,65 E+00
WDP	m^3	3,97 E+00	3,14 E-02	3,51 E+00	7,51 E+00	6,71 E-02	1,91 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,81 E-02	1,88 E-04	2,57 E-03	-4,01 E-01

Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit

Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	1,05 E+01	9,12 E-01	7,44 E+00	1,89 E+01	1,79 E+00	3,97 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,76 E-01	6,90 E-03	2,02 E-03	-1,20 E+00
Particulate matter	disease inc.	1,08 E-06	5,79 E-08	3,26 E-07	1,46 E-06	1,18 E-07	2,76 E-09	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,62 E-08	4,92 E-10	3,79 E-10	-4,80 E-08
Ionising radiation	kBq U-235 eq	8,81 E-01	5,90 E-02	1,38 E+00	2,32 E+00	1,27 E-01	2,75 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,60 E-02	3,88 E-04	2,57 E-04	3,14 E-02
Ecotoxicity, freshwater	CTUe	1,79 E+03	9,32 E+00	9,03 E+01	1,89 E+03	1,92 E+01	5,20 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,92 E+00	4,58 E-02	3,72 E-02	-3,81 E+01
Human toxicity, cancer	CTUh	6,66 E-08	4,49 E-10	2,08 E-08	8,78 E-08	7,50 E-10	1,34 E-11	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,27 E-10	2,58 E-12	8,61 E-13	-3,05 E-10
Human toxicity, non-cancer	CTUh	6,00 E-07	8,91 E-09	6,69 E-08	6,76 E-07	1,97 E-08	5,21 E-10	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,94 E-09	2,34 E-11	2,65 E-11	-2,63 E-10
Land use	Pt	6,91 E+01	7,64 E+00	2,30 E+02	3,07 E+02	2,00 E+01	3,99 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,78 E+00	1,04 E-02	1,20 E-01	1,53 E-01

•Disclaimer 1 -This impact category deals mainly with the eventual impact low ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from random and from some construction materials is also not measured by this indicator.

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[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of resources

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,34 E+02	1,36 E+01	1,82 E+02	3,30 E+02	2,76 E+01	6,27 E-01	ND	ND	ND	ND	ND	ND	ND	0	5,94 E+00	9,01 E-02	6,10 E-02	3,03 E-01
PERM	MJ	0	0	1,55 E+01	1,55 E+01	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	1,34 E+02	1,36 E+01	1,98 E+02	3,45 E+02	2,76 E+01	6,27 E-01	ND	ND	ND	ND	ND	ND	ND	0	5,94 E+00	9,01 E-02	6,10 E-02	3,03 E-01
PENRE	MJ	2,03 E+01	1,21 E-01	2,71 E+01	4,76 E+01	2,70 E-01	6,60 E-03	ND	ND	ND	ND	ND	ND	ND	0	6,24 E-02	3,39 E-04	4,64 E-04	-6,19 E+00
PENRM	MJ.	0	0	1,06 E+00	1,06 E+00	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PENRT	MJ	2,03 E+01	1,21 E-01	2,8 E+01	4,87 E+01	2,70 E-01	6,60 E-03	ND	ND	ND	ND	ND	ND	ND	0	6,24 E-02	3,39 E-04	4,64 E-04	-6,19 E+00
SM	kg	2,57 E+00	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	8,75 E-01	0	4,59 E+00
RSF	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m^3	1,50 E-01	1,09 E-03	7,87 E-02	2,30 E-01	2,36 E-03	6,53 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	6,18 E-04	1,72 E-05	6,13 E-05	-7,5E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

Waste production and output flows

Waste production

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,09 E-03	2,49 E-05	3,04 E-04	1,42 E-03	4,83 E-05	1,56 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,47 E-05	2,42 E-08	8,58 E-08	-1,97 E-04
Non-hazardous waste disposed	kg	2,85 E+00	5,20 E-01	4,65 E-01	3,84 E+00	1,44 E+00	2,79 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,64 E-01	8,89 E-05	3,90 E-01	8,62 E-02
Radioactive waste disposed	kg	4,04 E-04	8,73 E-05	4,03 E-04	8,95 E-04	1,79 E-04	3,88 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,67 E-05	6,10 E-07	3,77 E-07	3,20 E-05

Output flows

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Material for recycling	kg	0	0	6,3 E-2	6,3 E-2	0	7,7 E-1	ND	ND	ND	ND	ND	ND	ND	0	7,6 E+00	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	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	0,324

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

According to bibliography, wood carbon content 49%

Part of our wood packaging has a PEFC certificate for sustainable forest management.

Additional information

Waste management must comply with local waste regulations and the codes included in the environmental authorization of each activity.

Glass and metal elements – the main components of the insulator – are 100% recyclable.

- The glass can be managed according to EWC 17 02 02.
- Metal parts can be managed according to EWC 17 02 02.
- Cement remains can be managed according to EWC 17 01 01 / 17 01 07.

The packaging components are also recyclable and correspond to the management codes:

- Wood Pallets and Cages and side protection: EWC 150103 / 170201
- Plastic Film: EWC 150102 / 170203
- Plastic straps: EWC 200139

The basic procedure for recycling the components of an insulator can be summarized in the following sequence:

1. Chain disassembly and pin removal
2. Blowing the insulator and separating the metal components, glass and cement
3. Glass shredding prior to recycling
4. Recycling of metal components
5. Recycling of glass for the manufacture of sock or other use in the case of mixed glass

Information provided by VERESCENCE La Granja S.L.

Information related to EPD Sector

This EPD ® is individual.

Differences versus previous versions

First version

References

General Programme Instructions of the International EPD® System. Version 3.01.

1.- EN 15.804:2012+A2:2020 Sustainability in construction. Environmental product declarations. Basic product rules for construction products

2.ISO 14.025:2010 Environmental labels Environmental declarations type III. Principles and procedures.

3.ISO 14.040:2006 Environmental Management. Life Cycle Analysis. Principles and frame of reference.

4.ISO 14. 044:2006 Environmental Management. Life Cycle Analysis. Requirements and directrices.

5.- Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS 1.11. valid until 2024-12-20.

6. International EPD System CPC Division CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES, dated 2017-05-30 Version 2.2

7. 4.01 GPI "General Programme Instructions for The International EPD® System

8. Environmental Product Declaration Methodological Guide for Construction Products.

9. ISO 21.930:2017 Sustainability in building construction - Environmental declaration of building products.

10. Life Cycle Analysis Report for the EPD the products E-210-170 (U210B) and E-210-170 (U210B) SILGLASS® de VERESCENCE La Granja S.L. prepared by *Ingeniería, Medioambiente y Sistemas de Gestión, S.L.* 2021.

11. Databases of Ecoinvent 3.6 (December 2019) and Industry data 2.0.

12. Environmental impact methodologies applied with SimaPro 9.1.1.1

ANEXO I - E-210-170 SILGLASS® - weight one piece 7,47 kg
Environmental Information

Used the methodology EN 15804 30/09/2021 V1.00 / EF 3.0 normalization and weighting set – and the Cumulative Energy Demand V1.11 methodology to calculate the use of renewable and non-renewable energy resources.

Potential environmental impact – mandatory indicators according to EN 15804

**Disclaimer: The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.*

Results per functional or declared unit																			
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1,10 E+01	9,13 E-01	8,39 E+00	2,03 E+01	2,27 E+00	5,18 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,89 E-01	0,00 E+00	3,93 E-02	0,00 E+00
GWP-biogenic	kg CO_2 eq.	4,06 E-01	2,49 E-04	1,66 E-02	4,23 E-01	8,34 E-04	1,77 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,32 E-04	0,00 E+00	2,30 E-05	0,00 E+00
GWP-luluc	kg CO_2 eq.	3,12 E-02	4,85 E-04	2,34 E-02	5,51 E-02	6,63 E-04	1,86 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,40 E-04	0,00 E+00	1,10 E-05	0,00 E+00
GWP-total	kg CO_2 eq.	1,14 E+01	9,13 E-01	8,43 E+00	2,07 E+01	2,27 E+00	5,18 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,89 E-01	0,00 E+00	3,94 E-02	0,00 E+00
ODP	kg CFC 11 eq.	1,21 E-06	1,95 E-07	1,42 E-06	2,83 E-06	5,34 E-07	1,13 E-08	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	8,44 E-08	0,00 E+00	1,62 E-08	0,00 E+00
AP	mol H^+ eq.	1,05 E-01	1,84 E-02	3,29 E-02	1,56 E-01	9,55 E-03	2,17 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,62 E-03	0,00 E+00	3,73 E-04	0,00 E+00
EP-freshwater	kg PO_4^{3-} eq.	2,95 E-02	1,70 E-04	4,74 E-03	3,44 E-02	4,94 E-04	1,34 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,00 E-04	0,00 E+00	1,24 E-05	0,00 E+00
EP-freshwater	kg P eq.	9,60 E-03	5,53 E-05	1,55 E-03	1,12 E-02	1,61 E-04	4,36 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,27 E-05	0,00 E+00	4,04 E-06	0,00 E+00
EP-marine	kg N eq.	1,44 E-02	4,66 E-03	1,85 E-02	3,76 E-02	2,90 E-03	6,41 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	4,75 E-04	0,00 E+00	1,29 E-04	0,00 E+00
EP-terrestrial	mol N eq.	1,70 E-01	5,17 E-02	9,76 E-02	3,20 E-01	3,17 E-02	7,00 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,19 E-03	0,00 E+00	1,42 E-03	0,00 E+00
POCP	kg NMVOC eq.	4,42 E-02	1,37 E-02	5,64 E-02	1,14 E-01	1,02 E-02	2,13 E-04	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,58 E-03	0,00 E+00	4,11 E-04	0,00 E+00
ADP-minerals& metals*	kg Sb eq.	5,61 E-03	9,16 E-06	5,26 E-05	5,67 E-03	3,87 E-05	1,35 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,02 E-05	0,00 E+00	3,60 E-07	0,00 E+00
ADP-fossil*	MJ	1,35 E+02	1,27 E+01	1,97 E+02	3,45 E+02	3,53 E+01	7,68 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,73 E+00	0,00 E+00	1,10 E+00	0,00 E+00
WDP	m^3	4,83 E+00	3,16 E-02	4,19 E+00	9,05 E+00	1,15 E-01	2,95 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,85 E-02	0,00 E+00	4,93 E-02	0,00 E+00

Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

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Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO_2 eq.	1,11 E+01	9,06 E-01	8,15 E+00	2,01 E+01	2,25 E+00	5,13 E-02	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,85 E-01	0,00 E+00	3,86 E-02	0,00 E+00
Particulate matter	disease inc.	1,11 E-06	5,22 E-08	4,17 E-07	1,58 E-06	2,05 E-07	3,61 E-09	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,68 E-08	0,00 E+00	7,25 E-09	0,00 E+00
Ionising radiation	kBq U-235 eq	9,01 E-01	5,87 E-02	1,46 E+00	2,42 E+00	1,80 E-01	3,57 E-03	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,67 E-02	0,00 E+00	4,91 E-03	0,00 E+00
Ecotoxicity, freshwater	CTUe	1,79 E+03	9,31 E+00	1,31 E+02	1,93 E+03	2,81 E+01	6,74 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,05 E+00	0,00 E+00	7,13 E-01	0,00 E+00
Human toxicity, cancer	CTUh	6,68 E-08	4,50 E-10	2,95 E-08	9,67 E-08	6,93 E-10	1,73 E-11	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,30 E-10	0,00 E+00	1,65 E-11	0,00 E+00
Human toxicity, non-cancer	CTUh	6,00 E-07	8,93 E-09	1,24 E-07	7,33 E-07	3,20 E-08	6,73 E-10	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	5,06 E-09	0,00 E+00	5,07 E-10	0,00 E+00
Land use	Pt	7,14 E+01	7,73 E+00	2,69 E+02	3,48 E+02	4,05 E+01	5,35 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,87 E+00	0,00 E+00	2,31 E+00	0,00 E+00

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[2] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of resources

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,95 E+02	1,35 E+01	1,64 E+02	3,72 E+02	3,75 E+01	8,16 E-01	ND	ND	ND	ND	ND	ND	ND	0	6,09 E+00	0	1,17 E+00	0
PERM	MJ	0	0	1,66 E+01	1,66 E+01	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PERT	MJ	1,95 E+02	1,35 E+01	1,8 E+02	3,89 E+02	3,75 E+01	8,16 E-01	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PENRE	MJ	6,64 E+01	1,23 E-01	7,83 E+00	7,44 E+01	4,45 E-01	8,54 E-03	ND	ND	ND	ND	ND	ND	ND	0	6,40 E-02	0	8,89 E-03	0
PENRM	MJ.	0	0	3,77 E+00	3,77 E+00	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
PENRT	MJ	0	0	11,6 E+00	78,17 E+00	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
SM	kg	2,57 E+00	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
FW	m³	1,72 E-01	1,09 E-03	9,64 E-02	2,70 E-01	4,02 E-03	9,55 E-05	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	6,33 E-04	0,00 E+00	1,17 E-03	0
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water																		

Waste production and output flows

Waste production

Results per functional or declared unit																		
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	8,92 E-04	2,45 E-05	3,46 E-04	1,26 E-03	8,56 E-05	2,01 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	1,51 E-05	0,00 E+00	1,64 E-06	0,00 E+00
Non-hazardous waste disposed	kg	2,89 E+00	5,28 E-01	5,47 E-01	3,96 E+00	3,07 E+00	1,11 E-01	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	2,70 E-01	0,00 E+00	7,46 E+00	0,00 E+00
Radioactive waste disposed	kg	4,13 E-04	8,67 E-05	4,37 E-04	9,37 E-04	2,41 E-04	5,05 E-06	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	3,77 E-05	0,00 E+00	7,22 E-06	0,00 E+00

Output flows

Results per functional or declared unit																			
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Material for recycling	kg	0	0	6,3 E-2	6,3 E-2	0	7,7 E-1	ND	ND	ND	ND	ND	ND	ND	0	7,6 E+00	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	0

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