

# Environmental Product Declaration



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

## **PRESTRESSED CONCRETE PIPE**

*CPC 3755 – “Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone”*

From **Prefabricados Delta, S.A.U.**



Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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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](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
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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 (EN 15804:A2) Version 1.11 Complementary product category rules (C-PCR) to PCR 2019:14 concrete and concrete elements (EN 16757:2017) Version: 2019-12-20
PCR review was conducted by: The Technical Committee of the International EPD®System. See <a href="http://www.environdec.com/TC">www.environdec.com/TC</a> for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a> .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input checked="" type="checkbox"/> External <input type="checkbox"/> Internal Covering <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier:  Tecnalia R&I Certificacion, SL Auditor: Maria Feced <a href="mailto:info@tecnaliacertificacion.com">info@tecnaliacertificacion.com</a> Accredited by: ENAC nº125/C-PR283 accreditation
Procedure for follow-up of data during EPD validity involves third party verifier:  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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

EPDs within the same product category but from different programmes 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: PREFABRICADOS DELTA S.A.

Description of the organisation:

Our company has more than 50 years of experience in the sector. When we installed our first pipes in 1968, which measured a significant diameter of 1,800 mm and 19 atm, our identity, reliability and guarantee of continuity were already being established. Those pipes, and thousands of miles more since then, continue to provide a service without end users being aware of their presence. This is down to their reliability.

When we manufactured those first pipes, the employees of Prefabricados Delta showed the teamwork, technical accuracy and ingenuity to develop innovative products of the highest quality. It is thanks to the clear ideas the company had back then, that we are still here today and approaching the future with optimism.

We are constantly providing our clients with new products and services, but we still hold on to the values that have brought us here. We also extending their application to the challenges that arise along the way, recently this has included prioritising the environment in all our business activity.

The future that awaits us brings many uncertainties, but also many opportunities. Reliable materials that provide a service for decades to come will certainly be required though. The Prefabricados Delta team will continue to apply all of these values in their work, to ensure that our clients continue to receive the materials they need. Prefabricados Delta, a company at the forefront of its sector, considers the Quality of its products, protection of the Environment and the Prevention of Risks at Work to be its main priorities. Proof of this can be seen in the implementation of a Quality System and an Environmental Management System, certified and based on the UNE-EN-ISO 9001 and UNE-EN-ISO 14001 standards, as well as in the implementation of an Occupational health and safety management System, certified and based on the ISO 45001 specification.

With regard to its products, it has a product certification for GRP pipes under the UNE-EN 1796 and UNE-EN 14364 standards, and with requirements established in the new CEDEX Guide for GRRP pipes. It also has a product certification for steel-jacketed concrete pipes under the DIT N° 445 (European Technical Approvals), issued by the Eduardo Torroja Institute for Construction Science.



*Figure1.ISO 9001, ISO 14001, ISO 45001 Certifications.*

Name and location of production site(s):

PREFABRICADOS DELTA S.A.U.

Polígono Industrial San Pancraccio - C/. La Alianza, s/n 14500, Puente Genil, Córdoba (Spain)

Contact:

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More information: [www.prefabricadosdelta.com](http://www.prefabricadosdelta.com)

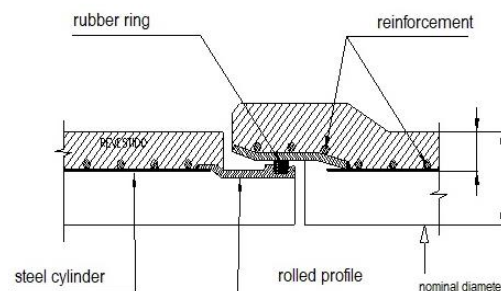
## Product information

Product name: Prestressed concrete piping with steel cylinder

Product description: This EPD covers the life-cycle analysis carried out on a range diameters and pressures of prestressed concrete piping with steel cylinder manufactured by PREFABRICADOS DELTA:

Diameter	Pressure	Kg/ml
1000mm	5MPa	844
1000mm	10MPa	848
1400mm	5MPa	1.462
1400mm	10MPa	1.470
1800mm	5MPa	2.244
1800mm	10MPa	2.261

The reinforced concrete tube with a sheet metal jacket is formed by a wall of concrete that contains a cylindrical sheet metal jacket that gives it tightness, normally located more close to the external facing, and a transverse reinforcement, arranged in one layer.



**Figure2. Pipeline scheme.**

The applications of the pipe are water supply, sanitation or irrigation. They comply with all the requirements of the UNE-EN 639, 641, 642 and Instruction of the Eduardo Torroja Institute for reinforced or prestressed concrete pipes.

Advantages of concrete pipe with sheet metal jacket.

- Manufacture in series on demand of the client.
- High resistance to impact effects.
- Great durability.
- They do not need conservation or maintenance.
- Decrease in pressure drop over time.
- They are not polluting.
- Protection by permanent passivation of the metallic parts against corrosion.
- They do not modify the organoleptic characteristics of the water.
- These tubes are not sensitive to the fatigue effects produced by the pressure variations.
- Sheet-jacketed concrete pipe is not affected by the corrosion caused by eddy currents (stray).
- The behaviour of concrete pipes with sheet metal jacket facing ovalizing efforts is much better than for other materials, since which has a lot of transverse stiffness.

UN CPC code: 3755 – “Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone”.

## LCA information

Declared unit: The declared unit is the baseline reference for which all information is collected. In this study, the declared business unit is “**1 useful ml of prestressed concrete piping with steel cylinder**”.

Reference service life: Not relevant for this EPD.

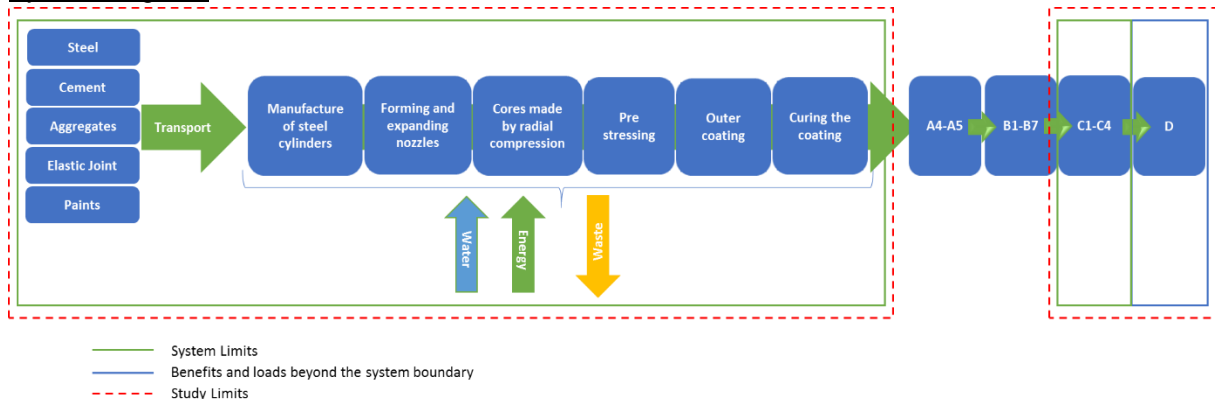
Geographical scope: Despite the geographical scope of this EPD is Europe, the data presented in this document can be used at international level.

Time representativeness: The data collection from factory (primary data) are from 2018/01/01 to 2020/12/31. In this study, no datasets older than 10 years were used.

Database(s) and LCA software used: All the data used to model the process and obtain the Life Cycle Inventory are specific data and have been obtained by measurements made during the period from 2018/01/01 to 2020/12/31. They are representative of the different processes implemented during the manufacturing process. The data has been measured directly at the company's own premises. In addition, the most complete and highest quality European life cycle inventory database, Ecoinvent 3.6, has been used, as this database contains the most extensive and updated information and its scope coincides with the geographical, technological and temporal area of the project. The LCA was modelled with Simapro 9.1.1.1.

Description of system boundaries: According to the standard EN 15804:2012+A2:2019 and PCR 2019:14 CONSTRUCTION PRODUCTS (version 1.11) the system boundary is cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The life cycle stages A4-A5, B1-B7 were excluded from the LCA study.

### System diagram:



### Manufacturing process:

For this type of pipe, the manufacturing process consists of the following stages:

- Manufacture of cylinders:** Cylinders are made up of a cylinder of steel plate lap welded in a spiral by an automatic machine from coils of metal steel and with a width equal to or greater than one meter. The corresponding ‘male’ or ‘female’ ends are welded to these cores, allowing for proper dimensional tolerances. Once the cylinders have been formed, they are placed on turning gear and nozzle pieces coupled to the ends. These nozzle ends are pre-tested by cross-welding with penetrating fluids and clamped around the outside of the cylinder. Inspection of their dimensions is mandatory. Once the cross welding of the joint between heads has been made, each cylinder is subjected to hydraulic internal pressure testing in a horizontal press.

- **Forming and expanding nozzles:** The ends of steel cylinders are fitted with nozzle pieces, made up of:
  - A rolled profile for the rubber seal at one end
  - A flat steel plate at the opposite endBoth elements, of suitable size to form the nozzles, are curved and the ends welded together. Then they are expanded in a purpose-built hydraulic press, thus achieving perfect dimensional control. If the heads are to be fitted with an elastic joint, the material for the joint is first shot-peened and once formed geometrically, it is given a coat of primer and is fitted onto the pipe. Then it is coated until a thickness of 150 micron using epoxy resin to guarantee its durability against any aggressive agent.
- **Radially compressed cores:** Once the absolute tightness of the steel cylinder has been tested, it is stood vertically on a machined baseplate that forms the female nozzle. A strong metal mould is fitted on the outside to absorb the stress on the steel cylinder during the radial compression. The moulded unit is stood on the rotating bottom platform of the machine, which places it on the axis.

The upper part of the mould is clamped by a platform, which centres it on the machine axis, while a hydraulic cylinder lowers over it. This hydraulic cylinder has a rotary piston at the bottom end of the same diameter as the inner diameter of the concrete pipe. This cylinder descends to the position of the nozzle at the bottom end of the steel cylinder.

The combination of the piston's rotational speed and its upward speed causes the concrete poured in the top to be compressed against the steel cylinder, where it is compacted to form a smooth surface over the entire length of the cylinder. Once the upper platform mould is released, and the bottom mould loosened by turning it, the pipe is within reach of the bridge crane that transfers it into the indoor storage area, where the outer mould is removed for subsequent use on another steel cylinder.

The inner concreted steel cylinder remains into the storage area until the concrete attains high strength to be transported to the storage yard, where it is watered until it obtains the necessary strength to withstand the pre-stressing process.
- **Prestressing:** When the concrete of the core reaches the required strength to withstand the compression induced by pre-stressing, hooping takes place. Transversal pre-stressing is realised performed a strapper that wraps tensioned wire in a spiral around the core placed in a suitable position. For this purpose, specially smoothed wire with a breaking strength of 18,000 Kg/cm<sup>2</sup> and low relaxation is used. Wire diameters range between 5-7 mm. The machine is fitted with a tension log to display wire tension at all times.
- **Outer coating:** Once the core has been pre-stressed, the steel is then protected by applying a 30 mm thick coating of concrete. A vibrating screed machine is used to do this. The process involves turning the pipe horizontally while a layer of concrete is poured onto its top surface, which flows as a result of the high frequency vibration. Adhesion is achieved due to the combined action of vibration and the compression produced when the concrete is forced to flow in the gap between the machine wall and the pipe.
- **Curing the coating:** When the pipe comes out of the screed machine and until it is time to start watering it, the pipes stay under cover. Once enough time has elapsed to ensure the concrete cannot be damaged, it is subjected to intense water sprinklers so that the concrete is completely wet until it is shipped to the work site.

Author of the Life Cycle Assessment:

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Data quality

The environmental impact of the **prestressed concrete pipings** has been calculated. It is based on the international standards established for the development of environmental product declarations, such as ISO 14025 for the preparation of the environmental product declaration, ISO 14040 and ISO 14044 for the preparation of the life cycle analysis, EN 15804:2012+A2:2019 and the Product Category Rules PCR - "2019:14 Construction products " (Version 1.11) of the CPC 3755.

Data for raw material supply, transport to fabrication plant and production (A1-A3) is based on specific consumption data for the factory at Puente Genil. SimaPro v9.1.1.1. software was used to prepare the life cycle analysis together with the Ecoinvent 3.6 database. Characterization factors from EN15804: 2012 + A2:2019.

Technological coverage is typical or average.

Assumptions

The modularity principle, as well as the polluter-payer principle have been followed. The following assumptions have been made in this EPD:

- ✓ It does not include the manufacturing processes of the capital goods or spare parts and/or maintenance with a life of more than three years.
- ✓ The environmental impact of infrastructure for general management, office, and headquarters operations is not included.
- ✓ The impact caused by people (common activities, travel for work...) will not be considered.
- ✓ The processes associated with fuel production are intrinsically included in the indicators in ECOINVENT's database used in carrying out the LCA.
- ✓ The environmental impact of external transport has been calculated using lorries from the ECOINVENT 3.6 database, EURO 5. These lorries have been selected to reflect the most realistic scenario possible.

Cut-off rules

The standard ISO 14025 and the PCR -"2019:14 CONSTRUCTION PRODUCTS" indicate that the life cycle inventory data should include a minimum of 95% of the total inputs (materials and energy) for each stage. This cut-off rule does not apply for hazardous materials and substances. In the present study, cut-off criteria have been applied to the burlap, the penetrating liquid, the strips and the hydraulic machine oils. This exclusion meets the requirements of cut-off criteria (less than 5%).

Allocation

Where necessary, such as waste generation and energy consumption, an allocation based in kg per lineal meter has been used.

Greenhous gas emission from the use of electricity in the manufacturing phase

Supplier specific electricity mix, medium voltage (direct emissions and losses in grid) electricity is considered for the manufacturing process.

Electricity mix	Amount	Units
Supplier specific electricity mix (year 2020)	0,25	Kg CO2-eqv/kWh

## LCA Scenarios and additional technical information

### Dismantling/demolition (modules C1-C4):

Pipes are typically designed for a service life of 50 years. Thanks to the high quality of the tubes, their technical and mechanical characteristics, this service life is considerably extended. When the pipe is out of use, the most common is to leave the pipes in the ground, since the danger to the environment is minimal. Therefore, in-place disposal was presumed at the end of pipeline service life.

This EPD has declared one end-of-life scenario for module C4 to comply with current scheme requirements. The declared end-of-life scenario is that the pipeline is abandoned underground.

### Recyclability potentials (module D):

Since in-place disposal is considered, no recycling or reuse benefits are taken in to account in this module.

### 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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	EU	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO
Specific data	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	No applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	No applicable			-	-	-	-	-	-	-	-	-	-	-	-	-	-

**ND: Module not declared**



## Content information

Product components	D 1000mm & 5bar			D 1000mm & 10bar			D 1400mm & 5bar		
	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Steels	6,62E+01	75,0%	0,00%	7,24E+01	75,00%	0,00%	1,01E+02	75,00%	0,00%
Cement	1,36E+02	0,00%	0,00%	1,36E+02	0,00%	0,00%	2,33E+02	0,00%	0,00%
Aggregates	5,92E+02	0,00%	0,00%	5,92E+02	0,00%	0,00%	1,04E+03	0,00%	0,00%
EPDM	1,70E-01	0,00%	0,00%	1,70E-01	0,00%	0,00%	2,40E-01	0,00%	0,00%
Paints and putties	3,30E-01	0,00%	0,00%	3,30E-01	0,00%	0,00%	4,34E-01	0,00%	0,00%
Water	4,85E+01	0,00%	0,00%	4,64E+01	0,00%	0,00%	8,28E+01	0,00%	0,00%
TOTAL	8,44E+02	5,89%	0,00%	8,48E+02	6,40%	0,00%	1,46E+03	5,19%	0,00%

Product components	D 1400mm & 10bar			D 1800mm & 5bar			D 1800mm & 10bar		
	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Steels	1,14E+02	75,00%	0,00%	1,50E+02	75,00%	0,00%	1,75E+02	75,00%	0,00%
Cement	2,33E+02	0,00%	0,00%	3,55E+02	0,00%	0,00%	3,55E+02	0,00%	0,00%
Aggregates	1,04E+03	0,00%	0,00%	1,62E+03	0,00%	0,00%	1,62E+03	0,00%	0,00%
EPDM	2,40E-01	0,00%	0,00%	9,10E-01	0,00%	0,00%	9,10E-01	0,00%	0,00%
Paints and putties	4,34E-01	0,00%	0,00%	6,80E-01	0,00%	0,00%	6,80E-01	0,00%	0,00%
Water	7,83E+01	0,00%	0,00%	1,20E+02	0,00%	0,00%	1,13E+02	0,00%	0,00%
TOTAL	1,47E+03	5,80%	0,00%	2,24E+03	5,03%	0,00%	2,26E+03	5,79%	0,00%

Packaging: products are not packed for delivery.

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in the prestressed concrete pipes manufactured by DELTA, either above the threshold for registration with the European Chemicals Agency or above 0,1% (wt/wt).

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804:

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
<b>Diameter 1000mm and 5 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	2,39E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	2,27E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	1,73E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	2,42E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	1,59E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	1,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	2,52E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	8,19E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-marine	kg N eq.	2,09E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	2,42E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	8,01E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,03E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	2,11E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	1,13E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1000mm and 10 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	2,53E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	2,25E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	1,79E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	2,55E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	1,68E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	1,11E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	2,71E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	8,83E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-marine	kg N eq.	2,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	2,56E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	8,67E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,04E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	2,26E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	1,17E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 5 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	3,96E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	3,78E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,67E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	4,00E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	2,57E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	1,67E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	3,95E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	1,29E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-marine	kg N eq.	3,43E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	3,97E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	1,31E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	3,40E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	1,86E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 10 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	4,24E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	3,75E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,79E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	4,28E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	2,75E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	1,80E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	4,35E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	1,42E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

EP-marine	kg N eq.	3,69E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	4,25E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	1,44E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,41E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	3,71E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	1,95E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 5 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	6,09E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	5,66E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	4,26E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	6,15E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	4,01E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	2,54E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	5,98E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	1,95E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-marine	kg N eq.	5,27E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	6,09E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	2,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	2,36E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	5,25E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	2,83E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 10 bar</b>							
GWP-fossil	kg CO <sub>2</sub> eq.	6,59E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	5,62E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	4,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-total	kg CO <sub>2</sub> eq.	6,65E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ODP	kg CFC 11 eq.	4,36E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
AP	mol H <sup>+</sup> eq.	2,79E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	6,75E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-freshwater	kg P eq.	2,20E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-marine	kg N eq.	5,75E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EP-terrestrial	mol N eq.	6,62E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
POCP	kg NMVOC eq.	2,26E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-minerals&metals*	kg Sb eq.	2,41E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ADP-fossil*	MJ	5,82E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WDP	m <sup>3</sup> deprive	2,99E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+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						

\* 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

Indicator	Results per declared unit					
	A1-A3	C1	C2	C3	C4	D
<b>Diameter 1000mm and 5 bar</b>						
GWP-GHG <sup>1</sup>	2,35E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1000mm and 10 bar</b>						
GWP-GHG <sup>1</sup>	2,48E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 5 bar</b>						
GWP-GHG <sup>1</sup>	3,90E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 10 bar</b>						
GWP-GHG <sup>1</sup>	4,16E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

<sup>1</sup> 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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Diameter 1800mm and 5 bar						
GWP-GHG <sup>1</sup>	5,99E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Diameter 1800mm and 10 bar						
GWP-GHG <sup>1</sup>	6,47E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

## Use of resources

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Diameter 1000mm and 5 bar							
PERE	MJ	1,76E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,76E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	1,58E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ.	5,33E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,11E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	4,97E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	3,17E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Diameter 1000mm and 10 bar							
PERE	MJ	1,85E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,85E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	1,73E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ.	5,33E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,26E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	5,43E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	3,29E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Diameter 1400mm and 5 bar							
PERE	MJ	2,82E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,82E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	2,47E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ.	9,31E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,40E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	7,58E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	5,21E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Diameter 1400mm and 10 bar							
PERE	MJ	2,98E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,98E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	2,78E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ.	9,31E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,71E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	8,52E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	5,45E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Diameter 1800mm and 5 bar							
PERE	MJ	4,26E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,26E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	3,79E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ	1,46E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,25E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	1,13E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	7,92E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 10 bar</b>							
PERE	MJ	4,60E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,60E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRE	MJ	4,36E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	MJ	1,46E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,82E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
SM	kg	1,31E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	8,38E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
<b>Diameter 1000mm and 5 bar</b>							
Hazardous waste disposed	kg	7,55E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	3,94E+01	0,00E+00	0,00E+00	0,00E+00	8,43E+02	0,00E+00
Radioactive waste disposed	kg	9,43E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1000mm and 10 bar</b>							
Hazardous waste disposed	kg	8,48E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	4,33E+01	0,00E+00	0,00E+00	0,00E+00	8,47E+02	0,00E+00
Radioactive waste disposed	kg	9,81E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 5 bar</b>							
Hazardous waste disposed	kg	1,20E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	6,34E+01	0,00E+00	0,00E+00	0,00E+00	1,46E+03	0,00E+00
Radioactive waste disposed	kg	1,51E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 10 bar</b>							
Hazardous waste disposed	kg	1,39E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	7,13E+01	0,00E+00	0,00E+00	0,00E+00	1,47E+03	0,00E+00
Radioactive waste disposed	kg	1,59E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 5 bar</b>							
Hazardous waste disposed	kg	1,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	9,96E+01	0,00E+00	0,00E+00	0,00E+00	2,24E+03	0,00E+00
Radioactive waste disposed	kg	2,33E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 10 bar</b>							

Hazardous waste disposed	kg	2,24E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	1,14E+02	0,00E+00	0,00E+00	0,00E+00	2,26E+03	0,00E+00
Radioactive waste disposed	kg	2,49E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

### Output flows

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
<b>Diameter 1000mm and 5 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1000mm and 10 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 5 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	2,25E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1400mm and 10 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	2,26E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 5 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,45E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>Diameter 1800mm and 10 bar</b>							
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,47E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

### Information on biogenic carbon content

Results per declared unit				
BIOGENIC CARBON CONTENT	Unit	QUANTITY		
		Diameter 1000mm and 5 bar	Diameter 1000mm and 10 bar	Diameter 1400mm and 5 bar
Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00

Results per declared unit				
BIOGENIC CARBON CONTENT	Unit	QUANTITY		
		Diameter 1400mm and 10 bar	Diameter 1800mm and 5 bar	Diameter 1800mm and 10 bar
Biogenic carbon content in product	kg C	0,00E+00	0,00E+00	0,00E+00

*Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.*

## Additional information

For more information regarding this and other products of the company, visit the following website:

<https://www.prefabricadosdelta.com/en/descargas>

## Information related to Sector EPD

This is an individual EPD®

## Differences versus previous versions

This is the first version of the EPD®.



## References

- General Programme Instruction of the International EPD®System. Version 3.01.
- ISO 14020:2000 Environmental labels and declarations-General principles.
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
- ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- PCR 2019:14 Construction products (EN 15804: A2) version 1.11
- EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products
- Complementary product category rules (C-PCR) to PCR 2019:14 concrete and concrete elements (EN 16757:2017) Version: 2019-12-20

## VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD05701

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

**PREFABRICADOS DELTA S.A.U.**  
**Polígono Industrial San Pancracio, C/ Alianza, s/n, AC Nº 27**  
**14500 PUENTE GENIL (Córdoba) SPAIN**

for the following product(s):  
para el siguiente(s) producto(s):

**PRESTRESSED CONCRETE PIPE WITH STEEL CYLINDER**  
**TUBERÍAS DE HORMIGÓN PRETENSADO CON CAMISA DE CHAPAS**

with registration number **S-P-04309** in the International EPD® System ([www.environdec.com](http://www.environdec.com))  
con número de registro **S-P-04309** en el Sistema Internacional EPD® ([www.environdec.com](http://www.environdec.com))

it's in conformity with:  
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.**
- **General Programme Instructions for the International EPD® System v.3.01.**
- **PCR 2019:14 Construction products v1.11.**
- **PCR 2019:14-c-PCR-003 Concrete and concrete elements (EN 16757:2017) version 2019-12-21.**
- **UN CPC Code: 3755 Prefabricated structural components for building or civil engineering, of cement, concrete or artificial Stone.**

Issued date / Fecha de emisión: 02/08/2021  
Update date / Fecha de actualización: 02/08/2021  
Valid until / Válido hasta: 27/07/2026  
Serial Nº / Nº Serie: EPD0570100-E

  
  
Carlos Nazabal Alsua  
Manager

This certificate is not valid without its related EPD.  
Este certificado no es válido sin su correspondiente EPD.

El presente certificado está sujeto a modificaciones, suspensiones temporales y retiradas por TECNALIA R&I CERTIFICACION.  
This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

El estado de vigencia del certificado puede confirmarse mediante consulta en [www.tecnaliacertificacion.com](http://www.tecnaliacertificacion.com).  
The validity of this certificate can be checked through consultation in [www.tecnaliacertificacion.com](http://www.tecnaliacertificacion.com).

  
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CERTIFICACION  
Nº 125/C-PR283

