

Environmental Product Declaration



Compliant with ISO 14025 and UNE-EN 15804:2012+A2:2019

HDPE DRAINS - DANODREN H15, H25, H15 PLUS, H25 PLUS and JARDIN

Danosa, Derivados Asfálticos Normalizados, S.A.

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An EPD should contain current information and be updated if conditions change. Therefore, the stated validity is subject to continued registration and publication at www.environdec.com.





General information

Program information

Program:	The International EPD® System
Direction:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Web site:	www.environdec.com
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CEN EN 15804 serves as the basis for the Product Category Rules (PCR).
Product Category Rule (PCR): Construction Products, PCR 2019:14. Version 1.11.
The PCR review was Performed by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel can be contacted via www.environdec.com/contact
Independent verification of the declaration and information, according to ISO 14025:2010 ☐ EPD process certification ☒ EPD verification
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The data tracking procedure during the validity of the EPD involves a third party verifier: ☒ Yes ☐ No

Construction product EPDs may not be comparable if they do not comply with EN 15804.

Environmental claims for products within the same product category from different programs may not be comparable.

The verifier and the operator of the program have no responsibility for the legality of the product.



Company information

Owner of the EPD: DANOSA, Derivados Asfálticos Normalizados, S.A

Contact: DANOSA SPAIN - +34 949 888 210 - info@danosa.com

DANOSA is a manufacturing company, specialized in integral solutions for sustainable construction. It has been in continuous activity since its foundation in 1964, having evolved through new products and systems, addressing and expanding geographies and supplied markets, with a distribution of sales between national and international markets of 50% respectively. It is considered as one of the reference companies in the Spanish and European market, with a global presence in more than 100 countries.

Thanks to this, DANOSA meets the needs of Building and Civil Engineering: asphalt waterproofing, synthetic waterproofing, liquid waterproofing, acoustic insulation, thermal insulation, mortars, drainage, geotextiles and skylights. In recent years it has been fully involved in the development of innovation and sustainability projects, adapting its solutions to comply with sustainable construction standards, maximizing the energy efficiency of buildings. In addition, it has ISO 9001 and ISO 14001 quality and environmental certifications, respectively.

Many of its products have Environmental Product Declarations (EPD) and are also integrated in the materials platform of the Green Building Council Spain, which allows them to score in projects with GREEN, LEED and BREEAM certification.

The company has also strengthened its business line dedicated to the recovery of materials and its commitment to the circular economy, which allows it to introduce recycled materials into production processes, making it possible for these wastes to become useful raw materials for the manufacture of new products.

This document will be used for B2B communication and may be considered global in scope.

Location of the production center: Polígono Industrial Sector 9, 19290 Fontanar (Guadalajara) Spain.

Product information

Product name: The DANODREN® product includes five types of HDPE drains for the construction sector: H15, H25, H15 PLUS, H25 PLUS and JARDIN.

Product description: Nodular anti-capillary high density polyethylene (HDPE) sheets for wall and floor drainage and waterproofing protection. For the correct fastening of the sheets to the wall, specific auxiliary fasteners for DANODREN are used.

DANODREN H15

It is a brown colored nodular anticapillary high density polyethylene (HDPE) sheet for protection and eventual drainage.

DANODREN H25

It is a brown colored nodular anticapillary high density polyethylene (HDPE) sheet for protection and eventual drainage. It provides greater resistance than DANODREN H15.



DANODREN H15 – H 25

This product is used as:



- Drainage on walkable inverted roofs with continuous pavements, placed between the thermal insulation and the pavement.
- Drainage and protection of the imper Drainage and protection of buried walls in buildings and civil works, such as false tunnels and underpasses.
- Drainage and protection of above-ground screeds, when there is no hydrostatic pressure, or the screed is above the water table.
- Rehabilitation of basements and subway constructions affected by humidity.

Drainage of buried structures: Nodular sheets of high density polyethylene (HDPE) with incorporated polypropylene geotextile for drainage of buried structures. DANODREN fasteners and profiles are used for the correct fastening of the sheets to the wall.

DANODREN H15 PLUS

It is a geocomposite of high density polyethylene (HDPE) nodular sheet with calendered polypropylene (PP) geotextile for drainage of buried structures.

DANODREN H25 PLUS

It is a geocomposite of high density polyethylene (HDPE) nodular sheet with calendered polypropylene (PP) geotextile for drainage of buried structures. It offers greater resistance than DANODREN H 15 PLUS.



DANODREN H15 PLUS – H 25 PLUS

This product is used as:

- Drainage in trafficable inverted roofs with continuous pavements, placed between the thermal insulation and the pavement.
- Drainage and protection of the waterproofing of buried walls in buildings and civil works, such as false tunnels and underpasses.
- Drainage and protection of above-ground screeds, when there is no hydrostatic pressure, or the screed is above the water table.

Roof drainage: High density polyethylene sheets (HDPE) used for drainage and waterproofing protection on roofs.

DANODREN JARDIN

It is a geocomposite formed by high density polyethylene (HDPE) nodular sheet of green color and polypropylene (PP) geotextile for drainage in landscaped roofs.



DANODREN JARDIN



This product is used as drainage, filtration and waterproofing protection in intensive landscaped roofs in all types of buildings.

Technical data

Concept	Value	Standard
Longitudinal elongation (%)	>30	EN 12311-2
Transverse elongation (%)	≥ 20	EN 12311-2
Durability of the tightness against chemical agents (10 kPa)	Pasa	EN 1847 / EN 1928
Durability of the tightness against artificial aging (10 kPa)	Pasa	EN 1296 / EN 1928
Watertightness in liquid state (10 kPa)	Pasa	EN 1928
Reaction to fire	F	EN 13501-1
Shear strength (N / 50mm)	170 ± 30	-
Compression strength (kPa)	180 ±20%	UNE-EN-ISO 604
Longitudinal tensile strength (N / 5cm)	>= 300	-
Transverse tensile strength (N / 5cm)	>= 175	-
Resistance to a static load (kg)	>=20	UNE EN 12730
Resistance to tearing (nail shank) (N)	300 ± 100	EN 12310-1
Peel strength (N / 50mm)	NPD	UNE-EN 12317-2
Temperature resistance max. (°C)	80	-
Min temperature resistance (°C)	-30	-
Hazardous substances	NPDPND	-

Technical data of DANODREN H15



Concept	Value	Standard
Longitudinal elongation (%)	>35	EN 12311-2
Transverse elongation (%)	≥ 20	EN 12311-2
Durability of the tightness against chemical agents (10 kPa)	Pasa	EN 1847 / EN 1928
Durability of the tightness against artificial aging (10 kPa)	Pasa	EN 1296 / EN 1928
Watertightness in liquid state (10 kPa)	Pasa	EN 1928
Reaction to fire	E	EN 13501-1
Shear strength (N / 50mm)	170 ± 30	-
Compression strength (kPa)	300 ±20%	UNE-EN-ISO 604
Longitudinal tensile strength (N / 5cm)	>= 400	-
Transverse tensile strength (N / 5cm)	>= 300	-
Resistance to a static load (kg)	>=20	UNE EN 12730
Resistance to tearing (nail shank) (N)	500 ± 100	EN 12310-1
Peel strength (N / 50mm)	NPD	UNE-EN 12317-2
Temperature resistance max. (°C)	80	-
Min temperature resistance (°C)	-30	-
Hazardous substances	NPDPND	-

Technical data of DANODREN H25

Concept	Value	Standard
Longitudinal elongation (%)	70±15	UNE-EN ISO 10319
Transverse elongation (%)	65±15	UNE-EN ISO 10319
Water permeability perpendicular to the plane (m/s)	0,11 - 0,033	UNE EN ISO 11058
Compression strength (kPa)	180 ±20%	UNE EN ISO 604
Dynamic puncture resistance (cone drop test) (mm)	10 +5	UNE EN 13433
Tranversal tensile strength (kN/m)	11, -4	-
Temperature resistance max. (°C)	80	-
Min temperature resistance (°C)	-30	-
Hazardous substances	NPDPND	-
Characteristic aperture size (µm)	87,5 +/- 42,5	UNE EN ISO 12956

Technical data of DANODREN H15 PLUS



Concept	Value	Standard
Longitudinal elongation (%)	>22	UNE EN 12311-1
Transverse elongation (%)	70 ±20	UNE-EN ISO 10319
Water permeability perpendicular to the plane (m/s)	0,11 - 0,033	UNE EN ISO 11058
Compression strength (kPa)	350 ±20%	UNE EN ISO 604
Dynamic puncture resistance (cone drop test) (mm)	10 +5	UNE EN 13433
Tranversal tensile strength (kN/m)	15, -4	-
Temperature resistance max. (°C)	80	-
Min temperature resistance (°C)	-30	-
Hazardous substances	NPDPND	-
Characteristic aperture size (µm)	87,5 +/- 42,5	UNE EN ISO 12956

Technical data of DANODREN H25 PLUS

Concept	Value	Standard
Longitudinal elongation (%)	>40	UNE EN 12311-2
Transverse elongation (%)	60 ±20	UNE-EN ISO 10319
Water permeability perpendicular to the plane (m/s)	0,11 - 0,033	UNE EN ISO 11058
Compression strength (kPa)	250 ±20%	UNE EN ISO 604
Dynamic puncture resistance (cone drop test) (mm)	10 +5	UNE EN 13433
Tranversal tensile strength (kN/m)	15, -4	-
Temperature resistance max. (°C)	80	-
Min temperature resistance (°C)	-30	-
Hazardous substances	NPD	-
Characteristic aperture size (µm)	87,5 +/- 42,5	UNE EN ISO 12956

Technical data of DANODREN JARDIN

CPC Code: 36950 Unspecified articles of plastics for construction.



LCA information

Declared unit:

- 1 kg of high-density polyethylene (HDPE) anti-capillary nodular sheet installed with an expected service life of 50 years.

For information purposes, the conversion factor to mass per square meter is reported:

- 0.48 kg/m² DANODREN H15.
- 0.67 kg/m² DANODREN H25.
- 0.60 kg/m² DANODREN H15 Plus.
- 0.79 kg/m² DANODREN H25 Plus.
- 0.74 kg/m² DANODREN Jardin.

Reference service life: The service life of the product is considered to be the same as that of the building, since it is a product that is incorporated into the building's installations, i.e., 50 years.

Temporal representativeness: The primary data was obtained from the production center and corresponds to the year 2020.

Databases and software used: Ecoinvent v3.8 (assignment, cut by classification) and SimaPro v9.3.

Description of system boundaries: The EPD covers modules A1-A3, A4-A5, B1-B7, C1-C4 and D.

Modularity and polluter payer principles have been followed. The following processes have been excluded:

- Manufacture of equipment used in production, buildings or any other capital goods;
- The transportation of personnel to the plant;
- Transportation of personnel within the plant;
- Research and development activities;
- Long-term emissions.

95% of all mass and energy inputs and outputs of the central system, identified in the life cycle inventory included in this report, have been included. Those inputs and outputs, for which data are not available, that together represent less than 5% of the mass, such as packaging waste of auxiliary materials, have not been considered.

Whenever possible, allocation has been avoided. Where necessary (energy, waste generation) a mass allocation has been used, according to the weight in kg of the product. The consumption of the specific process was measured with specific meters.

All primary data were obtained from Danosa. Secondary data were obtained from the Ecoinvent 3.8 database.

The scenarios included are currently in use and are representative of one of the most likely alternatives.

A1. Extraction of raw materials

Extraction and processing of natural resources and manufacture of raw materials: HDPE, calcium carbonate, geotextile and dye.

This stage includes the production of the energy consumed in the manufacturing stage (A3).

100% recycled HDPE pellets are fed through two extruders, and the colorant is also added through one of them (extruder A). At the end of the extruder, the material from both extruders is fed into a common



box. This box has 3 different entrances in sandwich form, in the outermost parts arrives the material of the extruder A and therefore the one with color, on the other hand through the center arrives the material of the extruder B which does not have color. From this box with the 3 duly differentiated layers the material passes to the head; the head is in the shape of a whale tail and therefore the melted material comes out in the form of a sheet.

This still hot sheet rests on a Teflon roller that directs it towards the nipple roller. Here the nodules are formed and once the nodules are formed, the sheet passes through the cooling rollers for cooling, rolling and palletizing as required.

A2. Transport

Transport of all raw materials considered in module A1, from the extraction, production and treatment site to the factory gate.

A3. Manufacturing

This module considers all sheet manufacturing processes, including the consumption of packaging materials, as well as the treatment of the waste generated.

The sheets are distributed packaged in plastic film and on pallets.

The primary data used were obtained from the production plant itself and are representative of Danosa's sheet production.

A4. Distribution

The scenarios included are currently in use and are representative of one of the most likely alternatives.

Transportation of the product from the production plant to the installation site.

PARAMETER	VALUE (expressed in declared unit)				
Type of fuel and consumption of the vehicle or type of means of transportation used	National distribution: 16-32 ton Euro 4 truck with a diesel consumption of 0.38 liters per km.			International distribution: 16-32 ton Euro 4 truck with a diesel consumption of 0.38 liters per km and Transoceanic ship.	
Distance	National and international distribution: 599.00 km (on road)			National and international distribution: 744.26 km (by ship)	
Capacity of use (including unladen transport return)	% assumed in Ecoinvent				
Bulk density of the transported product: geotextiles	0.48 kg/m2 H15	0.67 kg/m2 H25	0.60 kg/m2 H15 PLUS	0.79 kg/m2 H25 PLUS	0.74 kg/m2 JARDIN
Volume use capacity factor	1 (default)				

A5. Installation:

This module includes the consumption of auxiliary materials (in addition to the product), as well as the management of possible waste generated during this information module. The installation of the sheets requires steel nails for fastening.



PARAMETER	VALUE (expressed in declared unit)				
Secondary materials for installation: Not applicable	0.066 kg	0.066 kg	0.066 kg	0.066 kg	0.066 kg
Consumption of other resources	None				
Quantitative description of the type of energy (regional mix) and its consumption during the installation process.	NA				
Waste of materials on site, prior to processing of waste generated during installation of the product: packaging to landfill.	0.009 m ² H15	0.009 m ² H25	0.009 m ² H15 PLUS	0.009 m ² H25 PLUS	0.009 m ² JARDIN
Direct emissions to air, land or water	The following are considered negligible				

B. Use stage

Being a passive product within a construction, the use stage (including modules B1 to B7) is considered negligible.

Demolition (C1)

It is considered a joint demolition of the building, so the contribution of the demolition in concrete of the evaluated geotextiles is considered not relevant.

Transportation (C2)

Once the product has been uninstalled, it is transported 50 km in 7.5-16 ton trucks from the construction site to the landfill.

Waste treatment for reuse, recovery or recycling (C3)

Waste from the system is considered unprocessed prior to disposal.

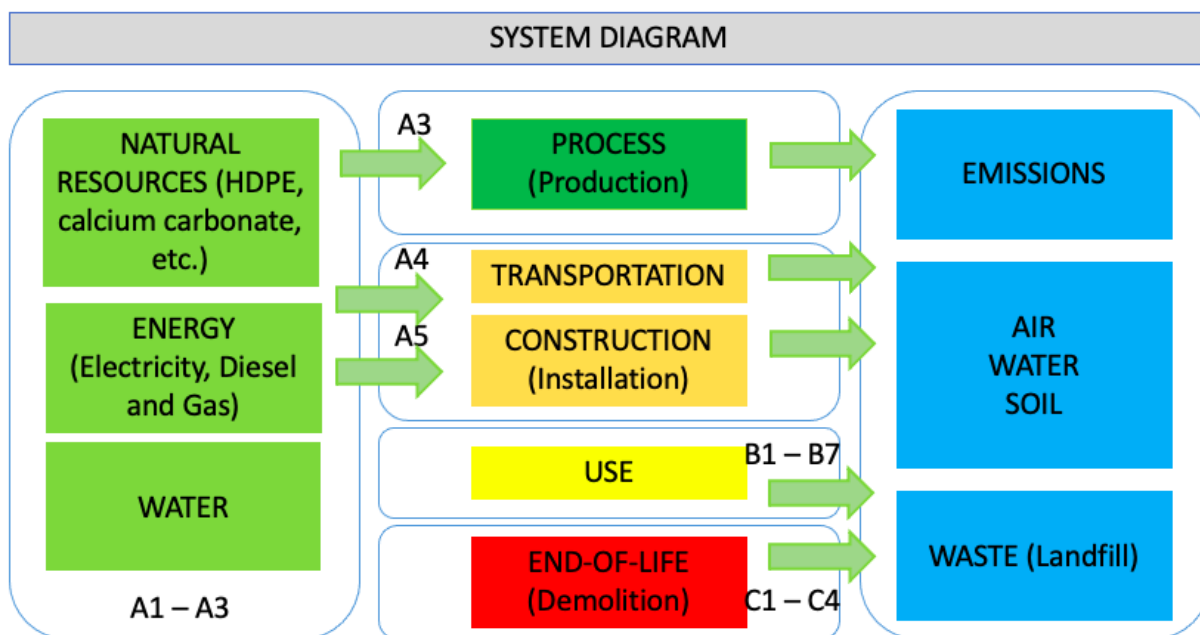
Final disposal (C4)

The entire system waste (product and auxiliary material) is deposited in a landfill.

PARAMETER	VALUE (expressed in declared unit)
Waste collection process specified by type	100% to landfill, collected and mixed with the rest of the construction waste.
Recovery system specified by type	Recovery system specified by type
Specified discharge by type	100% landfill
Assumptions for scenario development	The waste from demolition of the products is transported 50 km by 7.5-16 ton Euro 4 trucks to the final treatment or deposit site.

Benefits of recycling (module D)

Although module D has been calculated, there are no benefits from recycling as all the product is disposed of in landfill as a mixture of construction products. 100% of the weight is sent to landfill.



Additional information

- The life cycle analysis study has been carried out by DANOSA with the technical support of Marcel Gómez Consultoría Ambiental.
- The study covers a minimum of 95% of the materials and energy for each module evaluated, and at least 99% of the total use of materials and energy for each unitary process.
- More product information: www.danosa.es
- The quality of the input data has been assessed according to its technological, temporal and geographical coverage. The representativeness of the selected processes is considered to be good, resulting in a value of 3.68 out of 5.

Declared modules, geographical scope, specific data and data variation.



	Product Stage			Construct ion Stage	Stage of Use								End-of-life stage				Resource recovery stage	
	Supply of Raw Materials	Transportation	Manufacturing	Transportation	Construction - Installation	Use	Maintenance	Repair	Replacement	Rehabilitation	Operational Energy Use	Operational Water Use	Deconstruction - demolition	Transportation	Waste Treatment	Waste Disposal	Reuse Potential - Recovery - Recycling.	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		
Declared modules	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Geograph ical location	ES	ES	ES	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO		GLO
Specific data	>90% GWP-GHG					-	-	-	-	-	-	-	-	-	-	-		-
Variation - products	Variation of declared impact products <10% - for each product group.					-	-	-	-	-	-	-	-	-	-	-		-

Content information

DANODREN H15 y H25

Product components	Weight, kg	Post-consumer recycled material (%)	Renewable material (%)
HDPE	0.80 – 0.95	100.00	0.00
Calcium carbonate	0.03 – 0.06	0.00	0.00
Dye	0.01 – 0.03	0.00	0.00
Total weight by m ²	1.00	0.00	0.00
Packaging materials	Weight, kg	Weight (%regarding the product)	
Film	1.76E-03	0.18	
Adhesive quotation	1.47E-03	0.15	
Pallet	5.88E-03	0.59	



DANODREN H15 PLUS, H25 PLUS y JARDIN

Product components	Weight, kg	Post-consumer recycled material (%)	Renewable material (%)
HDPE	0.70 – 0.75	100.00	0.00
Calcium carbonate	0.04 – 0.06	0.00	0.00
Dye	0.01 – 0.03	0.00	0.00
Geotextile	0.15 – 0.22	0.00	0.00
Total weight by m²	1.00	0.00	0.00
Packaging materials	Weight, kg	Weight (%regarding the product)	
Film	1.76E-03	0.18	
Adhesive quotation	1.47E-03	0.15	
Pallet	5.88E-03	0.59	

*The composition by weight is exactly the same for the 2 products of group 1 (H15 and H25) and the 3 products of group 2 (H15 Plus, H25 Plus and Garden).

No substance in the product above 0.10% by weight is present on the "List of potentially hazardous substances (SVHC) candidates for authorization under REACH legislation.



Environmental information

The results are relative expressions and do not predict impacts on endpoint categories, exceedance of certain levels, safety margins or risks. The calculation and impact methodologies are in accordance with UNE-EN 15804:2014+A2:2019 and the PCR, described at <https://www.environdec.com/resources/indicators>.

DANODREN H15 y H25

Environmental Impacts

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction			Use							End-of-life			
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total (GWP-total)	kg CO2 eq	6.47E-01	4.82E-02	3.41E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.81E-03	0.00	5.35E-03	0.00
Climate change - fossil (GWP-fossil)	kg CO2 eq	5.84E-01	4.82E-02	3.36E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.80E-03	0.00	5.27E-03	0.00
Climate Change - biogenic (GWP-biogenic)	kg CO2 eq	5.81E-02	1.59E-05	3.85E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86E-06	0.00	7.97E-05	0.00
Climate change - land use and land use changes (GWP-luluc)	kg CO2 eq	4.68E-03	4.58E-07	3.17E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.05E-08	0.00	1.91E-06	0.00
Ozone layer depletion (ODP)	kg CFC11 eq	3.99E-08	1.17E-08	1.43E-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07E-09	0.00	9.36E-10	0.00
Acidification (AP)	mol H+ eq	2.50E-03	3.15E-04	1.82E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.96E-05	0.00	4.91E-05	0.00
Eutrophication of freshwater (EP-freshwater)	kg P eq	2.67E-05	2.59E-08	1.26E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.46E-09	0.00	6.33E-08	0.00
Eutrophication of marine water (EP-marine)	kg N eq	5.10E-04	7.05E-05	2.99E-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.31E-06	0.00	2.03E-05	0.00
Terrestrial Eutrophication (EP-terrestrial)	mol N eq	5.21E-03	7.84E-04	3.37E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03E-04	0.00	2.23E-04	0.00
Photochemical ozone formation (POCP)	kg NMVOC eq	1.45E-03	2.15E-04	1.09E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80E-05	0.00	6.16E-05	0.00
Depletion of abiotic resources - minerals and metals (ADP-minerals & metals)	kg Sb eq	3.16E-07	1.95E-09	7.31E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.79E-10	0.00	2.40E-10	0.00
Depletion of abiotic resources - fossil fuels (ADP-fossil)	MJ	8.39E+00	6.99E-01	3.69E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.24E-01	0.00	7.01E-02	0.00
Water Consumption (WDP)*	m³ depriv.	3.00E-01	-1.18E-04	1.26E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.07E-05	0.00	1.75E-04	0.00

* Disclaimer: The results of this Environmental Impact Indicator should be used with caution as the uncertainties of these results are high or experience with the indicator is limited.

* Additional environmental indicators from EN 15804:2012+A2:2019 are not stated in this EPD.



Environmental Impact - Additional Mandatory and Voluntary Indicators

Indicator	Unit	Results per declared unit														
		Manufa cturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Potential GWP-GHG ¹	kg CO2 eq	6.04E-01	4.79E-02	3.28E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.74E-03	0.00	5.20E-03	0.00

Use of resources

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renewable primary energy use excluding renewable primary energy resources used as feedstock	MJ, net calorific value	2.42E+00	1.05E-03	8.27E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89E-04	0.00	1.65E-03	0.00
Use of renewable primary energy used as raw material	MJ, net calorific value	5.41E-03	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Total renewable primary energy use (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	2.43E+00	1.05E-03	8.27E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89E-04	0.00	1.65E-03	0.00
Non-renewable primary energy use, excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	8.81E+00	7.42E-01	3.93E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31E-01	0.00	7.45E-02	0.00
Use of non-renewable primary energy used as raw material	MJ, net calorific value	9.12E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Total non-renewable primary energy use (primary energy and renewable primary energy resources used as raw material)	MJ, net calorific value	1.79E+01	7.42E-01	3.93E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31E-01	0.00	7.45E-02	0.00
Use of secondary materials	kg	9.20E-01	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Use of renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00

¹ The indicator includes all greenhouse gases included in GWP-total but excludes the uptake and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, this indicator is almost the same as the GWP indicator originally defined in EN 15804:2012+A1:2013.



Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Net use of freshwater resources	m³	7.17E-03	2.01E-06	3.32E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.39E-07	0.00	8.42E-06	0.00

Waste generation and outflows

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6.82E-06	1.66E-06	2.32E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25E-07	0.00	1.50E-07	0.00
Non-hazardous waste disposed	kg	9.43E-02	2.93E-05	3.40E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.09E-06	0.00	1.00E+00	0.00
Radioactive waste disposed	kg	5.79E-05	5.00E-06	8.37E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.84E-07	0.00	4.42E-07	0.00

Outflows

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Recycling materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Materials for energy recovery (energy recovery)	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Exported energy	MJ per vector	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00

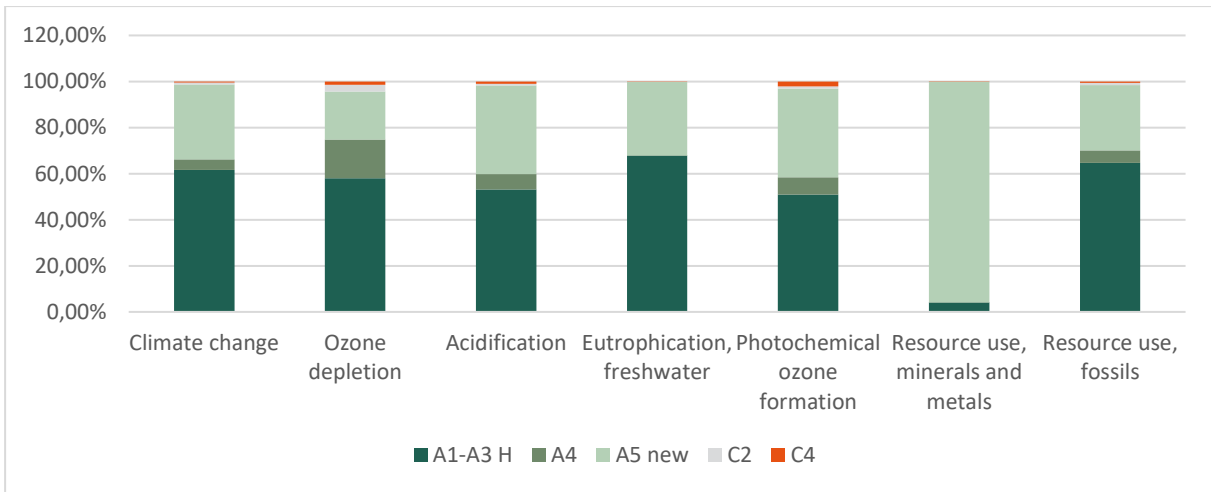
Biogenic carbon content information

Results per declared unit		
Biogenic carbon content	Unit	Quantity
Biogenic carbon content in the product	kg C	0.00E+00
Biogenic carbon content in the enclosed packaging	kg C	9.93E-03

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg CO₂.



Most of the impacts occur during the **product stage**. In fact, 61% of the impacts associated with global warming, 75% of the impacts associated with the consumption of non-renewable resources, 96% of the impacts associated with energy consumption and 70% of the impacts associated with water consumption occur during this stage.



For the rest of the HDPE drainage sheets, the impact results follow the same trend.



DANODREN H15 PLUS, H25 PLUS y JARDIN

Environmental Impacts

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total (GWP-total)	kg CO2 eq	9,78E-01	4,82E-02	3,36E-01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	8,80E-03	0,00	5,27E-03	0,00
Climate change - fossil (GWP-fossil)	kg CO2 eq	4,78E-02	1,59E-05	3,85E-03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,86E-06	0,00	7,97E-05	0,00
Climate Change - biogenic (GWP-biogenic)	kg CO2 eq	4,68E-03	4,58E-07	3,17E-04	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	7,05E-08	0,00	1,91E-06	0,00
Climate change - land use and land use changes (GWP-luluc)	kg CO2 eq	1,03E+00	4,82E-02	3,41E-01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	8,81E-03	0,00	5,35E-03	0,00
Ozone layer depletion (ODP)	kg CFC11 eq	5,54E-08	1,17E-08	1,43E-08	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,07E-09	0,00	9,36E-10	0,00
Acidification (AP)	mol H+ eq	3,72E-03	3,15E-04	1,82E-03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,96E-05	0,00	4,91E-05	0,00
Eutrophication of freshwater (EP-freshwater)	kg P eq	2,69E-05	2,59E-08	1,26E-05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,46E-09	0,00	6,33E-08	0,00
Eutrophication of marine water (EP-marine)	kg N eq	7,36E-04	7,05E-05	2,99E-04	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	9,31E-06	0,00	2,03E-05	0,00
Terrestrial Eutrophication (EP-terrestrial)	mol N eq	7,72E-03	7,84E-04	3,37E-03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,03E-04	0,00	2,23E-04	0,00
Photochemical ozone formation (POCP)	kg NMVOC eq	2,68E-03	2,15E-04	1,09E-03	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,80E-05	0,00	6,16E-05	0,00
Depletion of abiotic resources - minerals and metals (ADP-minerals & metals)	kg Sb eq	2,73E-07	1,95E-09	7,31E-06	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,79E-10	0,00	2,40E-10	0,00
Depletion of abiotic resources - fossil fuels (ADP-fossil)	MJ	2,58E+01	6,99E-01	3,69E+00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,24E-01	0,00	7,01E-02	0,00
Water Consumption (WDP)*	m3 depriv.	5,76E-01	-1,18E-04	1,26E-01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	-2,07E-05	0,00	1,75E-04	0,00

* Disclaimer: The results of this Environmental Impact Indicator should be used with caution as the uncertainties of these results are high or experience with the indicator is limited.

* Additional environmental indicators from EN 15804:2012+A2:2019 are not stated in this EPD.



Environmental Impact - Additional Mandatory and Voluntary Indicators

Results per declared unit																
Indicator	Unit	Manufa cturing	Construction		Use							End-of-life				Modu le
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Potential GWP-GHG ²	kg CO2 eq	9.71E-01	4.79E-02	3.28E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.74E-03	0.00	5.20E-03	0.00

Use of resources

Indicator	Unit	Results per declared unit														Module
		Manufacturing A1-A3	Construction		Use							End-of-life				
			A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Renewable primary energy use excluding renewable primary energy resources used as feedstock	MJ, net calorific value	2.66E+00	1.05E-03	8.27E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89E-04	0.00	1.65E-03	0.00
Use of renewable primary energy used as raw material	MJ, net calorific value	5.41E-03	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Total renewable primary energy use (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	2.66E+00	1.05E-03	8.27E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89E-04	0.00	1.65E-03	0.00
Non-renewable primary energy use, excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	2.73E+01	7.42E-01	3.93E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31E-01	0.00	7.45E-02	0.00
Use of non-renewable primary energy used as raw material	MJ, net calorific value	9.12E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Total non-renewable primary energy use (primary energy and renewable primary energy resources used as raw material)	MJ, net calorific value	3.64E+01	7.42E-01	3.93E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31E-01	0.00	7.45E-02	0.00
Use of secondary materials	kg	9.20E-01	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Use of renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00

² The indicator includes all greenhouse gases included in GWP-total but excludes the uptake and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, this indicator is almost the same as the GWP indicator originally defined in EN 15804:2012+A1:2013.



Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Use of non-renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Net use of freshwater resources	m³	1.14E-02	2.01E-06	3.32E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.39E-07	0.00	8.42E-06	0.00

Waste generation and outflows

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	8.78E-06	1.66E-06	2.32E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25E-07	0.00	1.50E-07	0.00
Non-hazardous waste disposed	kg	9.10E-02	2.93E-05	3.40E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.09E-06	0.00	1.00E+00	0.00
Radioactive waste disposed	kg	1.06E-04	5.00E-06	8.37E-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.84E-07	0.00	4.42E-07	0.00

Outflows

Indicator	Unit	Results per declared unit														
		Manufacturing	Construction		Use							End-of-life				Module
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Recycling materials	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Materials for energy recovery (energy recovery)	kg	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00
Exported energy	MJ per vector	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0.00E+00	0.00

Biogenic carbon content information

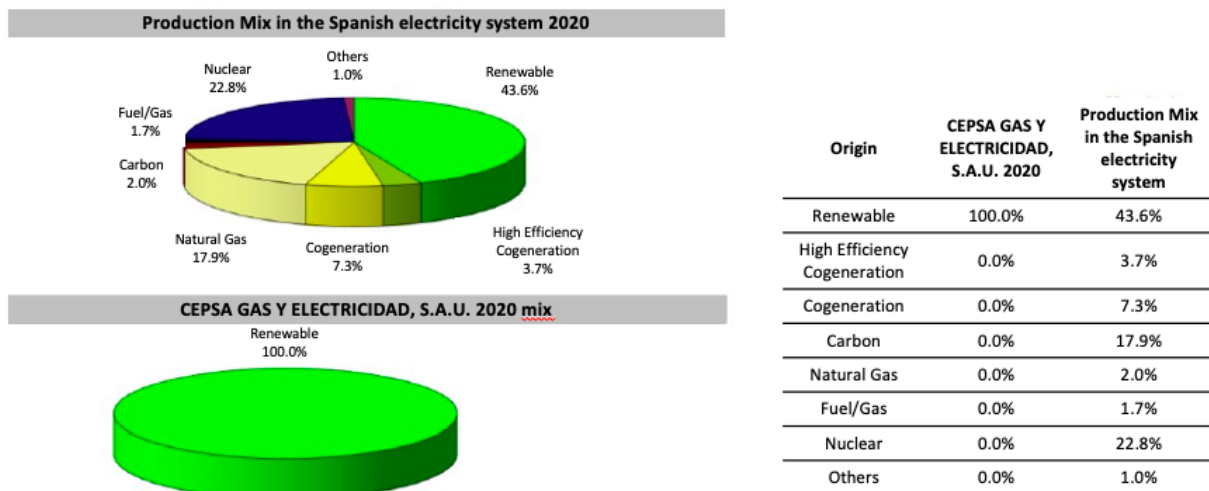
Results per declared unit		
Biogenic carbon content	Unit	Quantity
Biogenic carbon content in the product	kg C	0.00E+00
Biogenic carbon content in the enclosed packaging	kg C	9.93E-03

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg CO₂.



Additional environmental information

The electricity mix used for the characterization of electricity has been a combination of 61% of renewable energies and 39% of the Spanish mix for the year 2020.



Information related to the sectoral EPD

This EPD® is not sector specific.

Differences with previous versions

First version of EPD®.

References

- General Instructions of the International EPD® System Program. Version 3.01.
- PCR 2019: 14 Construction products (EN 15804:A2) version 1.11.
- UNE-EN 15804:2012+A2:2020. Sustainability in construction. Environmental product declarations.
- Basic product category rules for building products.
- ISO 14020: 2000 Environmental labels and declarations - General principles.
- ISO 14025: 2010 Environmental labels and declarations - Environmental declarations Type III - 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.
- LCA DANOSA DANODREN 2022.

tecnalia
certification



VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD00420

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:

DERIVADOS ASFALTICOS NORMALIZADOS, S.A. (DANOSA)
Pol. Ind. Sector, 9
19290 - FONTANAR (Guadalajara) SPAIN

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

HDPE DRAINS - DANODREN H15, H25, H15 PLUS, H25 PLUS and JARDIN.
DRENAJES de PEAD - DANODREN H15, H25, H15 PLUS, H25 PLUS y JARDIN.

with registration number **S-P-01896** in the International EPD® System (www.environdec.com).
*con número de registro **S-P-01896** en el Sistema Internacional EPD® (www.environdec.com).*

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD® System v.3.01.**
- **PCR 2019:14 Construction products (EN 15804:A2) v.1.11.**
- **CPC 36950 Unspecified articles of plastics for construction.**



Carlos Nazabal Alsua
Manager

Issued date / Fecha de emisión:	21/03/2023
Update date / Fecha de actualización:	21/03/2023
Valid until / Válido hasta:	20/03/2028
Serial Nº / Nº Serie:	EPD0042000-E

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