Environmental Product Declaration

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

DANOPOL PVC WATERPROOFING SHEET

from

DANOSA

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
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ISO standard – ISO 21930 and CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Construction Products, PCR 2019:14. Version 1.11.
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: TECNALIA R&I Certificación S.L. Auditor: Cristina Gazulla Santos Accredited by: ENAC. Accreditation no.125/C-PR283
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: DANOSA

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

Description of the organisation: DANOSA has an experience of more than four decades of work, during which DANOSA has developed a constant activity of improvement and diversification of their activity. Thanks to it, DANOSA satisfy the needs of the Building and Civil Engineering: Waterproofing, Acoustic Insulation, Drainages and Geotextiles and skylights. It also has quality and environmental certificates ISO 9001 and ISO 14001 respectively.

DANOSA considers that personal and business honesty is a core value of its internal relations with its suppliers, its customers and the environment, so it is committed to complying with the laws, rules a regulation that concern both the quality and the environment, and the other internal commitments made by the company itself. DANOSA manufactures its products always respecting the declares specifications and minimizing the environmental impacts associated with their activities, reducing, where possible, the amount of waste sent to sewage. DANOSA especially consider suppliers and subcontractors to achieve its objectives of Quality and environment, encouraging them to develop the bets practices creating a relationship of mutual collaboration.

DANOSA is committed to continuously improving the productivity of its facilities through the rational use of natural resources and energy, reducing, where possible, the waste generated by all operations and facilitating its recycling.

Name and location of production site: the declared section Danopol PVC Waterproofing Sheet are produced by DANOSA. The production plant is in:

- Poligono Industrial Sector 9 19290 FONTANAR (Guadalajara) Spain.

Product information

Product name: Danopol PVC Waterproofing Sheet of 1,2 mm, 1,5 mm, 1,8 mm of thickness.

Product description: Single ply plasticized PVC membrane, reinforced with different kind of carriers. Designed for flat roofs, tunnels, dams, reservoirs and buried structures waterproofing.

Danopol PVC Waterproofing Sheet are produced in different format:

1. DANOPOL 1.2 MM
   - DANOPOL HS 1.2 LIGHT GREY
   - DANOPOL + HS 1.2 DARK GREY ANTHRACITE
   - DANOPOL HS 1.2 COOL ROOFING
   - DANOPOL FV 1.2 LIGHT GREY

2. DANOPOL 1.5 MM
   - DANOPOL HS 1.5 LIGHT GREY
   - DANOPOL + HS 1.5 DARK GREY ANTHRACITE
   - DANOPOL HS 1.5 COOL ROOFING
   - DANOPOL FV 1.5 LIGHT GREY

- DANOPOL + FV 1.5 DARK GREY ANTHRACITE.
- DANOPOL HSF 1.5 LIGHT GREY
- DANOPOL + HSF 1.5 DARK GREY ANTHRACITE

3. DANOPOL 1.8 MM
   - DANOPOL HS 1.8 LIGHT GREY
   - DANOPOL + HS 1.8 DARK GREY ANTHRACITE
   - DANOPOL HS 1.8 COOL ROOFING
   - DANOPOL FV 1.8 LIGHT GREY
   - DANOPOL + HSF 1.8 DARK GREY ANTHRACITE

The characteristics and differences of the references are described below:

- DANOPOL HS LIGHT GREY is a synthetic PVC plasticized membrane, reinforced with polyester net carrier. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL+ HS DARK GREY ANTHRACITE is a synthetic PVC plasticized membrane Dark grey, reinforced with polyester net carrier. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL HS COOL ROOFING is a synthetic PVC plasticized membrane white sheet, reinforced with polyester net carrier. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL FV LIGHT GREY is a synthetic PVC plasticized membrane, reinforced with fiberglass veil. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL+ FV DARK GREY ANTHRACITE is a synthetic PVC plasticized membrane Dark grey, reinforced with fiberglass veil. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL HSF LIGHT GREY is a synthetic PVC plasticized membrane, reinforced with polyester net carrier, and a 300gr geotextile fleece backing. It has an overlap without geotextile of 6 cm, on the right longitudinal zone, allowing overlaying and welding to the adjacent sheet. Designed for flat roof waterproofing, U.V. resistant.

- DANOPOL+ HSF DARK GREY ANTHRACITE is a synthetic PVC plasticized membrane, reinforced with polyester net carrier, and a 300gr geotextile fleece backing. It has an overlap without geotextile of 6 cm, on the right longitudinal zone, allowing overlaying and welding to the adjacent sheet. Designed for flat roof waterproofing, U.V. resistant.

More information about the product is available at: www.danosa.com

UN CPC code: 547 Building completion and finishing services

LCA information

Declared unit: 1 m2 of PVC DANOPOL waterproofing sheet with a weight per reference as shown in the table below

Referencias	Kg/m2
DANOPOL HS 1.2 LIGHT GREY	1,58
DANOPOL + HS 1.2 DARK GREY ANTHRACITE	1,58
DANOPOL HS 1.2 COOL ROOFING	1,66
DANOPOL FV 1.2 LIGHT GREY	1,55

DANOPOL HS 1.5 LIGHT GREY	1,97
DANOPOL + HS 1.5 DARK GREY ANTHRACITE	1,98
DANOPOL HS 1.5COOL ROOFING	2,08
DANOPOL FV 1.5 LIGHT GREY	1,94
DANOPOL + FV 1.5 DARK GREY ANTHRACITE	1,95
DANOPOL HSF 1.5 LIGHT GREY	2,13
DANOPOL + HSF 1.5 DARK GREY ANTHRACITE	2,13
DANOPOL HS 1.8 LIGHT GREY	2,35
DANOPOL + HS 1.8 DARK GREY ANTHRACITE	2,36
DANOPOL HS 1.8 COOL ROOFING	2,48
DANOPOL FV 1.8 LIGHT GREY	2,33
DANOPOL + HSF 1.8 DARK GREY ANTHRACITE	2,51

Reference service life: 35 years – According to British Board of Agrément (BBA) – Approval Inspection Testing Certification.

Time representativeness: primary data from manufacturing site refer to year 2019, and residual electricity mix from Spain in 2018[1]

Database(s) and LCA software used: Ecoinvent v3.5 (allocation, cut-off by classification) database and SimaPro 9.1 software have been used for the LCA calculations. LCA methods used are EN 15804:A2 compliant.

Description of system boundaries:
Cradle to grave and module D(A+B+C+D). The modularity and the polluter payer principles have been followed. The next processes have been excluded:

- Flows related to human activities such as employee transport
- The construction of plants, production of machines and transportation systems, as well as maintenance activities.

A1. Raw Material Supply

- Extraction and processing of raw materials (glass veil, polyester mesh, polymer, plasticizer and additives)
- Generation of electricity and heat from primary energy resources
- Processing up to the end-of-waste state or disposal of final residues including any packaging not leaving the factory gate with the product.

DANOPOL's manufacturing process is based on the continuous production of PVC sheets and consists of several stages, such as raw material supply, PVC grouser drying, line supply, PVC extrusion, product forming, cooling, thickness control, shaping and marking, accumulation area, coiler, palletizing and storage.

A2. Transportation

- External transportation to the core processes and internal transport.

[1] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2018/AIB_2018_Residual_Mix_Results_v1_1.pdf

A3. Manufacturing

- Manufacturing of the construction product and co-products. Synthetic film based on plasticized PVC, manufactured by calendering and supported with different types of reinforcement.
- Production of ancillary materials or pre-products.
- Treatment of waste generated from the manufacturing processes. Processing up to the end-of-waste state or disposal of final residues including any packaging not leaving the factory gate with the product.

A4. Transport

- Transportation from the production gate to the construction site

SCENARIO INFORMATION	VALUE/DESCRIPTION
Vehicle type used for transport	Long distance truck Transoceanic cargo ship
Vehicle load capacity	Truck: 32 tones
Fuel type and consumption	Truck:31,1L/100 km Cargo ship:0,0014L/100 TnKm
Distance to construction site	Truck: 1168 km Cargo ship: 292km
Capacity utilisation (including empty returns)	>95%
Bulk density of transported products	2,04 Kg/m2 (including packaging)
Volume capacity utilisation factor	1

A5. Construction Installation:

The product is directly transferred from the truck to the construction site.

SCENARIO INFORMATION	VALUE/DESCRIPTION
Ancillary materials for installation	Not required
Water use	Not used
Other resource use	Not required
Quantitative description of the energy type and consumption during the preparation and installation process	Not used
Direct emissions to ambient air, soil and water	No generation
Waste materials on the building site, generated by the product's installation	Product losses: 5%
Output materials as result of waste processing at the construction site	Scraps of product: 100% landfill Packaging: 50% landfill and 50% incineration

B1 – B7. During the stage of use of the products under study (35 years), no material use or energy consumption is required.

C1. Deconstruction/demolition

- The demolition was considered to be without material separation. The impact of the demolition of Danopol PVC Waterproofing Sheet is considered negligible compared to the impact of the demolition of the building as a whole. Therefore, the impact is considered 0.

C2. Transport

- Transportation of the discarded product accounts for part of the waste processing, e.g. to a recycling site and transportation of waste.

C3. Waste processing for reuse, recovery and/or recycling

- It is considered that there is no recycling or reuse at the end of the product's life, because during the demolition of buildings there is no selective separation of materials in the vast majority of cases. Consequently, the impact is considered 0.

C4. Disposal

- Waste disposal including physical pre-treatment and management of the disposal site. Emissions from waste disposal are considered part of the product system under study and therefore part of this module, according to the “polluter pays principle”.

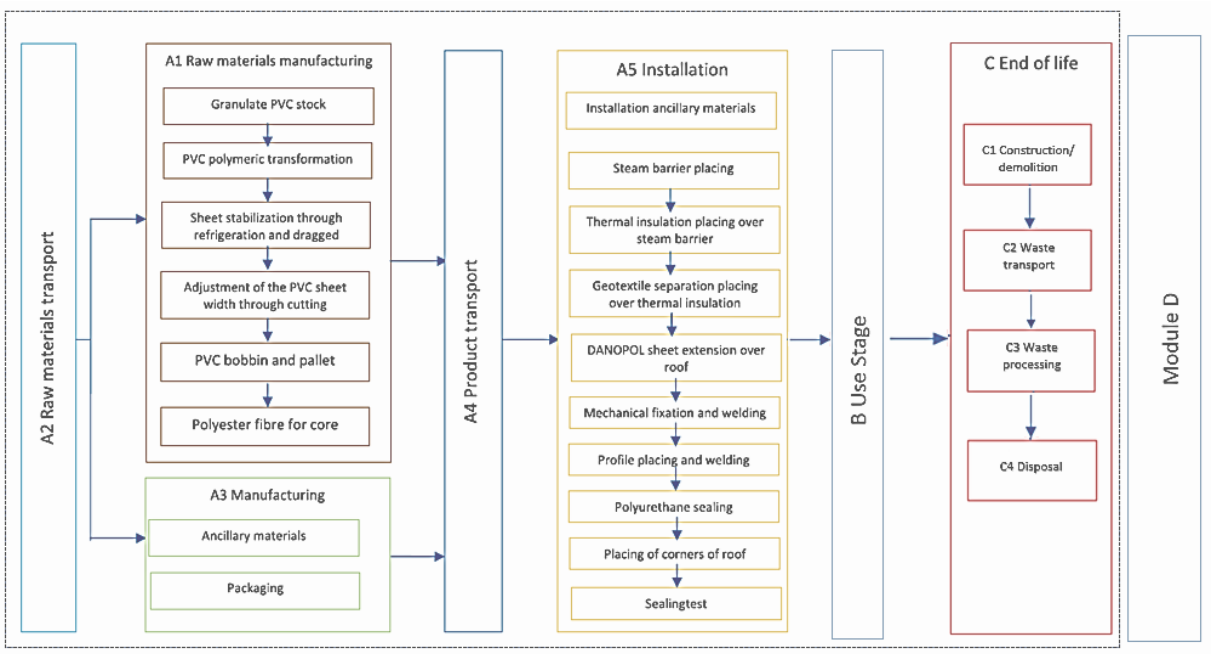
SCENARIO INFORMATION	VALUE/DESCRIPTION
Collection process specified by type	0 Kg collected individually 2,18kg collected with mixed construction waste
Recovery system specified by type	0 Kg intended for reuse 0 Kg intended for recycling 0 Kg intended for energy recovery
Disposal specified by type	2,18 Kg to authotized landfill
Assumptions for scenario development (e.g. transport)	Lorry of the size class 16-32 metric tons gross and Euro VI emissions class Average load: 5,79 tones Diesel Fuel consumption: 25,5 l/100 Km Distance: 50 km

Scenarios included in A4-A5 and C1-C4 are currently in use and are representative for one of the most probable alternatives.

D. Reuse-recovery-recycling potential

This product has not considerable benefits due to recycling or/and reuse.

System diagram:



More information:

- The underlying LCA study has been carried out by Marcel Gomez Consultoría Ambiental
- The study covers at least 95% of the materials and energy per module and at least 99% of the total use of materials and energy of each unit process.
- More information about the product is available at: www.danosa.es

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	X	X	X	X	X	X	X	X	X	X	X	X
Geography	ES	ES	ES	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Specific data	>90% GWP-GHG					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Variation of the impact products declared< 10% - for each product group					-	-	-	-	-	-	-	-	-	-	-	-

Content information declared unit

DANOPOL HS 1.2 LIGHT GREY and DANOPOL + HS 1.2 DARK GREY ANTHRACITE.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0, 500- 0,800	0	0
Plasticizer	0,300-0,600	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000277	<12%	
Film PE	0,003		
Foam base	0,0014		

HS 1.2 COOL ROOFING

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0, 500- 0,800	0	0
Plasticizer	0,300-0,600	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000277	<10%	
Film PE	0,003		
Foam base	0,0014		

DANOPOL FV 1.2 LIGHT GREY

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0,020 – 0,050	20%	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0, 500- 0,800	0	0
Plasticizer	0,300-0,600	0	0

Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000277	<6%	
Film PE	0,003		
Foam base	0,0014		

DANOPOL HS 1.5 LIGHT GREY and DANOPOL + HS 1.5 DARK GREY ANTHRACITE

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1	0	0
Plasticizer	0,500 - 0,700	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000366	<12%	
Film PE	0,004		
Foam base	0,0019		

DANOPOL HS 1.5 COOL ROOFING

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1	0	0
Plasticizer	0,500 - 0,700	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000366	<12%	
Film PE	0,004		
Foam base	0,0019		

DANOPOL FV 1.5 LIGHT GREY and DANOPOL + FV 1.5 DARK GREY ANTHRACITE.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0,020 – 0,050	20%	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1	0	0
Plasticizer	0,500 - 0,700	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000366	<6%	
Film PE	0,004		
Foam base	0,0019		

DANOPOL HSF 1.5 LIGHT GREY and DANOPOL + HSF 1.5 DARK GREY ANTHRACITE

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Geotextile	0,1-0,2	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1	0	0
Plasticizer	0,500 - 0,700	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,0000053	<12%	
Film PE	0,006		
Roll protector	0,051		

DANOPOL HS 1.8 LIGHT GREY and DANOPOL + HS 1.8 DARK GREY ANTHRACITE

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1,2	0	0

Plasticizer	0,500 - 0,800	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,000004245	<12%	
Film PE	0,005		
Foam base	0,0021		

DANOPOL HS 1.8 COOL ROOFING

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1,2	0	0
Plasticizer	0,500 - 0,800	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,000004245	<12%	
Film PE	0,005		
Foam base	0,0021		

DANOPOL FV 1.8 LIGHT GREY

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0,020 – 0,050	20%	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	0,800- 1,2	0	0
Plasticizer	0,500 - 0,800	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,000004245	<6%	
Film PE	0,005		
Foam base	0,0021		

DANOPOL + HSF 1.8 DARK GREY ANTHRACITE

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Glass veil	0	0	0
Geotextile	0,15-0,20	0	0
Polyester mesh	0,05 – 0,1	0	0
Polymer	1,4 - 1,6	0	0
Plasticizer	0,800- 1	0	0
Additives	0,300-0,600	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wooden pallets	0,00000609	<12%	
Film PE	0,006		
Roll protector	0,059		

During the life cycle of the products no hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has been used in a percentage higher than 0.1% of the weight of the product.

Environmental Information

Since the difference in environmental impact is less than 10% for DANOPOL HS 1.2 LIGHT GREY and DANOPOL + HS 1.2 DARK GREY ANTHRACITE and HS 1.2 Cool Roofing the following information is valid for the EPD results.

DANOPOL HS 1.2 LIGHT GREY and DANOPOL + HS 1.2 DARK GREY ANTHRACITE - HS 1.2 COOL ROOFING

Potential environmental impact – mandatory indicators according to EN 15804

** 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.*

Results per declared unit																
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4,38E+00	2,10E-01	1,38E-01	0	0	0	0	0	0	0	0	5,74 E-03	0	9,11 E-03	0
GWP-biogenic	kg CO_2 eq.	6,32E-03	7,18E-05	1,94E-04	0	0	0	0	0	0	0	0	1,91 E-06	0	7,75 E-06	0
GWP-luluc	kg CO_2 eq.	1,69E-03	5,45E-05	7,95E-05	0	0	0	0	0	0	0	0	1,44 E-06	0	1,48 E-06	0
GWP-total	kg CO_2 eq.	4,39E+00	2,10E-01	1,38E-01	0	0	0	0	0	0	0	0	5,74 E-03	0	9,11 E-03	0
ODP	kg CFC 11 eq.	2,24E-07	4,99E-08	9,17E-09	0	0	0	0	0	0	0	0	1,37 E-09	0	4,52 E-09	0
AP	mol H^+ eq.	2,51E-02	1,02E-03	8,35E-04	0	0	0	0	0	0	0	0	2,42 E-05	0	8,97 E-05	0
EP-freshwater	kg PO4eq	2,87E-04	8,45E-06	1,79E-05	0	0	0	0	0	0	0	0	2,29 E-07	0	3,63 E-07	0
	kg P eq	9,36E-05	2,75E-06	5,82E-06	0	0	0	0	0	0	0	0	7,46 E-08	0	1,18 E-07	0
EP-marine	kg N eq.	3,63E-03	2,82E-04	1,37E-04	0	0	0	0	0	0	0	0	7,05 E-06	0	3,26 E-05	0
EP-terrestrial	mol N eq.	4,38E-02	3,15E-03	1,67E-03	0	0	0	0	0	0	0	0	7,88 E-05	0	3,63 E-04	0
POCP	kg NMVOC eq.	2,77E-02	9,86E-04	6,60E-04	0	0	0	0	0	0	0	0	2,51 E-05	0	1,03 E-04	0
ADP-minerals&metals*	kg Sb eq.	5,35E-06	3,80E-07	2,38E-06	0	0	0	0	0	0	0	0	1,07 E-08	0	9,73 E-09	0
ADP-fossil*	MJ	9,62E+01	3,32E+00	2,29E+00	0	0	0	0	0	0	0	0	9,10 E-02	0	3,01 E-01	0
WDP	m^3	9,00E+00	2,45E-02	1,20E-01	0	0	0	0	0	0	0	0	6,75 E-04	0	1,27 E-03	0
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															

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO_2 eq.	4,27E+00	2,08E-01	1,35E-01	0	0	0	0	0	0	0	0	5,69E-03	0	8,97E-03	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,75E+00	3,63E-02	2,80E-01	0	0	0	0	0	0	0	0	9,63E-04	0	3,95E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	4,75E+00	3,63E-02	2,80E-01	0	0	0	0	0	0	0	0	9,63E-04	0	3,95E-03	0
PENRE	MJ	9,62E+01	3,32E+00	2,29E+00	0	0	0	0	0	0	0	0	9,10E-02	0	3,01E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	9,62E+01	3,32E+00	2,29E+00	0	0	0	0	0	0	0	0	9,10E-02	0	3,01E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	5,34E+00	1,77E-01	2,35E+00	0	0	0	0	0	0	0	0	4,68E-03	0	1,75E-02	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														

[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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,21E-05	1,92E-06	2,66 E-06	0	0	0	0	0	0	0	0	5,27E-08	0	1,03E-07	0
Non-hazardous waste disposed	kg	4,48E-01	2,75E-01	1,30 E-01	0	0	0	0	0	0	0	0	7,74E-03	0	2,11E+00	0
Radioactive waste disposed	kg	9,94E-05	2,25E-05	6,41 E-06	0	0	0	0	0	0	0	0	6,18E-07	0	2,06E-06	0

Output flows

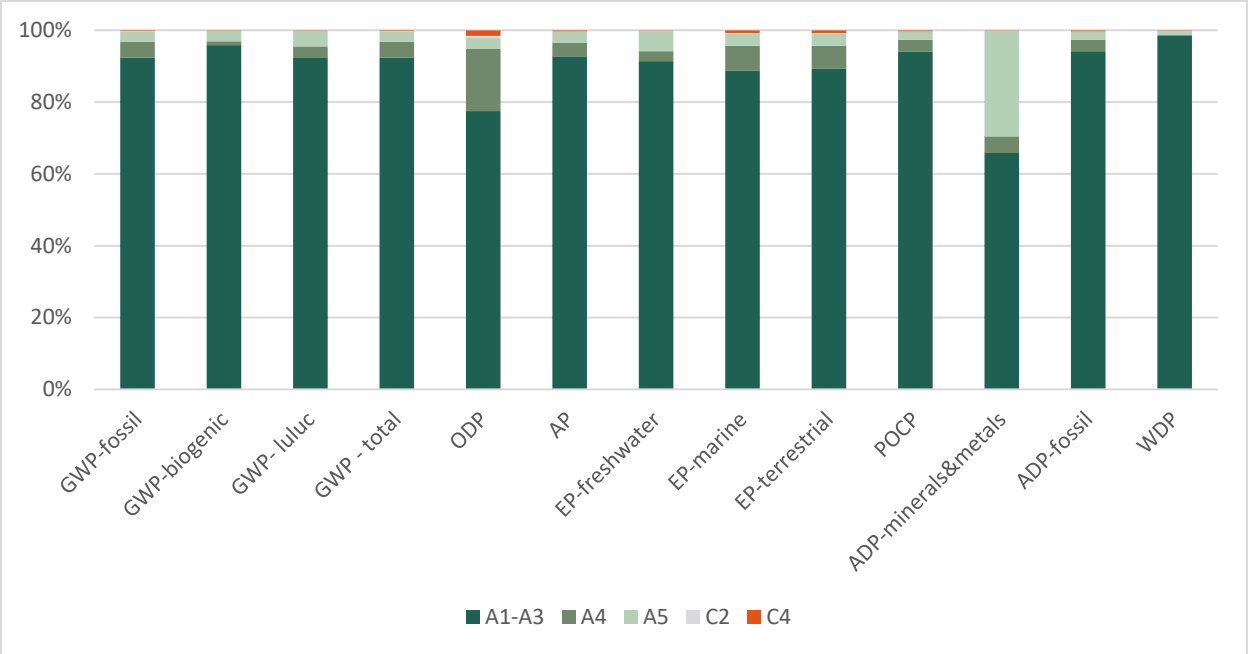
Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	2,77 E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	4,40E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	2,77E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1-A3 module has the biggest impact, representing at least 89,6%% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 4,7% and 5,1% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,1% and 0,4% respectively of the whole impact. The life cycle has an impact of 4,75 kg of CO2 equivalent.



Results on impact categories

Environmental Information

DANOPOL FV 1.2 LIGHT GREY

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B 1	B 2	B 3	B 4	B 5	B 6	B 7	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	3,97E+00	2,03E-01	1,31E-01	0	0	0	0	0	0	0	0	5,56 E-03	0	8,82E-03	0
GWP-biogenic	kg CO_2 eq.	5,80E-03	6,94E-05	1,89E-04	0	0	0	0	0	0	0	0	1,86 E-06	0	7,51E-06	0
GWP-luluc	kg CO_2 eq.	1,46E-03	5,27E-05	7,64E-05	0	0	0	0	0	0	0	0	1,40 E-06	0	1,43E-06	0
GWP-total	kg CO_2 eq.	3,97E+00	2,03E-01	1,31E-01	0	0	0	0	0	0	0	0	5,56 E-03	0	8,83E-03	0
ODP	kg CFC 11 eq.	1,66E-07	4,83E-08	8,29E-09	0	0	0	0	0	0	0	0	1,33 E-09	0	4,38E-09	0
AP	mol H^+ eq.	2,39E-02	9,86E-04	8,07E-04	0	0	0	0	0	0	0	0	2,34 E-05	0	8,69E-05	0
EP-freshwater	kg PO_4 eq.	2,20E-04	8,17E-06	1,70E-05	0	0	0	0	0	0	0	0	2,22 E-07	0	3,50E-07	0
	kg P eq	7,16E-05	2,66E-06	5,55E-06	0	0	0	0	0	0	0	0	7,23 E-08	0	1,14E-07	0
EP-marine	kg N eq.	3,47E-03	2,73E-04	1,32E-04	0	0	0	0	0	0	0	0	6,83 E-06	0	3,15E-05	0
EP-terrestrial	mol N eq.	4,18E-02	3,05E-03	1,62E-03	0	0	0	0	0	0	0	0	7,63 E-05	0	3,52E-04	0
POCP	kg NMVOC eq.	2,73E-02	9,53E-04	6,38E-04	0	0	0	0	0	0	0	0	2,44 E-05	0	1,00E-04	0
ADP-minerals&metals*	kg Sb eq.	3,92E-06	3,67E-07	2,36E-06	0	0	0	0	0	0	0	0	1,03 E-08	0	9,43E-09	0
ADP-fossil*	MJ	9,03E+01	3,21E+00	2,17E+00	0	0	0	0	0	0	0	0	8,82 E-02	0	2,92E-01	0
WDP	m^3	9,01E+00	2,37E-02	1,16E-01	0	0	0	0	0	0	0	0	6,54 E-04	0	1,23E-03	0
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															

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit																
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO_2 eq.	3,86E+00	2,01E-01	1,28E-01	0	0	0	0	0	0	0	0	5,51E-03	0	8,69E-03	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit																
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,48E+00	3,51E-02	2,76E-01	0	0	0	0	0	0	0	0	9,33E-04	0	3,82E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	4,48E+00	3,51E-02	2,76E-01	0	0	0	0	0	0	0	0	9,33E-04	0	3,82E-03	0
PENRE	MJ	9,03E+01	3,21E+00	2,17E+00	0	0	0	0	0	0	0	0	8,82E-02	0	2,92E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	9,03E+0	3,21E+00	2,17E+00	0	0	0	0	0	0	0	0	8,82E-02	0	2,92E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	4,42E+00	1,71E-01	2,33E+00	0	0	0	0	0	0	0	0	4,54E-03	0	1,70E-02	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															

[3] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,75E-06	1,86E-06	2,59E-06	0	0	0	0	0	0	0	0	5,11E-08	0	9,97E-08	0
Non-hazardous waste disposed	kg	1,88E-01	2,65E-01	1,28E-01	0	0	0	0	0	0	0	0	7,49E-03	0	2,04E+00	0
Radioactive waste disposed	kg	5,43E-05	2,18E-05	6,17E-06	0	0	0	0	0	0	0	0	5,99E-07	0	2,00E-06	0

Output flows

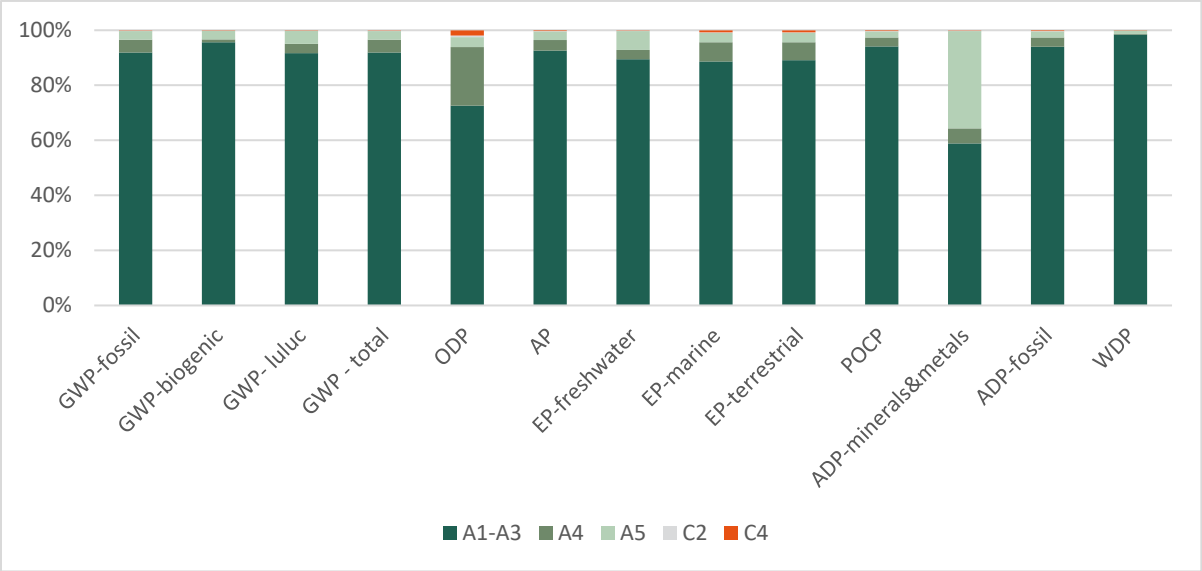
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	1,75E-01	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	7,50E-06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	2,77E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1-A3 module has the biggest impact, representing at least 88,4%% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 5,2% and 5,8% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,1% and 0,4% respectively of the whole impact. The life cycle has an impact of 4,32 kg of CO2 equivalent.



Results on impact categories

Environmental Information

Since the difference in environmental impact is less than 10% for DANOPOL HS 1.5 LIGHT GREY and DANOPOL + HS 1.5 DARK GREY ANTHRACITE - HS 1.5 COOL ROOFING the following information is valid for the EPD results

DANOPOL HS 1.5 LIGHT GREY and DANOPOL + HS 1.5 DARK GREY ANTHRACITE - HS 1.5 COOL ROOFING

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B 1**	**B 2**	**B 3**	**B 4**	**B 5**	**B 6**	**B 7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	5,37E+00	2,60E-01	1,46E-01	0	0	0	0	0	0	0	0	7,77 E-03	0	1,23E-02	0
GWP-biogenic	kg CO_2 eq.	7,75E-03	8,88E-05	2,03E-04	0	0	0	0	0	0	0	0	2,59 E-06	0	1,05E-05	0
GWP-luluc	kg CO_2 eq.	2,05E-03	6,75E-05	8,21E-05	0	0	0	0	0	0	0	0	1,95 E-06	0	2,00E-06	0
GWP-total	kg CO_2 eq.	5,38E+00	2,60E-01	1,46E-01	0	0	0	0	0	0	0	0	7,78 E-03	0	1,23E-02	0
ODP	kg CFC 11 eq.	2,64E-07	6,18E-08	9,59E-09	0	0	0	0	0	0	0	0	1,86 E-09	0	6,12E-09	0
AP	mol H^+ eq.	3,10E-02	1,26E-03	8,74E-04	0	0	0	0	0	0	0	0	3,28 E-05	0	1,21E-04	0
EP-freshwater	kg PO4 eq.	3,40E-04	1,05E-05	1,81E-05	0	0	0	0	0	0	0	0	3,10 E-07	0	4,91E-07	0
	kg P eq	1,11E-04	3,41E-06	5,90E-06	0	0	0	0	0	0	0	0	1,01 E-07	0	1,60E-07	0
EP-marine	kg N eq.	4,49E-03	3,49E-04	1,44E-04	0	0	0	0	0	0	0	0	9,55 E-06	0	4,41E-05	0
EP-terrestrial	mol N eq.	5,40E-02	3,90E-03	1,76E-03	0	0	0	0	0	0	0	0	1,07 E-04	0	4,92E-04	0
POCP	kg NMVOC eq.	3,46E-02	1,22E-03	7,13E-04	0	0	0	0	0	0	0	0	3,40 E-05	0	1,40E-04	0
ADP-minerals&metals*	kg Sb eq.	6,26E-06	4,70E-07	2,38E-06	0	0	0	0	0	0	0	0	1,44 E-08	0	1,32E-08	0
ADP-fossil*	MJ	1,19E+02	4,11E+00	2,47E+00	0	0	0	0	0	0	0	0	1,23 E-01	0	4,08E-01	0
WDP	m^3	1,13E+01	3,04E-02	1,39E-01	0	0	0	0	0	0	0	0	9,14 E-04	0	1,72E-03	0
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														

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[4]	kg CO_2 eq.	5,22E+00	2,57E-01	1,43E-01	0	0	0	0	0	0	0	0	7,70E-03	0	1,22E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	6,07E+00	4,49E-02	2,84E-01	0	0	0	0	0	0	0	0	1,30E-03	0	5,35E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	6,07E+00	4,49E-02	2,84E-01	0	0	0	0	0	0	0	0	1,30E-03	0	5,35E-03	0
PENRE	MJ	1,19E+02	4,11E+00	2,50E+00	0	0	0	0	0	0	0	0	1,23E-01	0	4,08E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,19E+02	4,11E+00	2,50E+00	0	0	0	0	0	0	0	0	1,23E-01	0	4,08E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	6,36E+00	2,19E-01	2,35E+00	0	0	0	0	0	0	0	0	6,34E-03	0	2,37E-02	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														

[4] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,61E-05	2,38E-06	2,69E-06	0	0	0	0	0	0	0	0	7,14E-08	0	1,39E-07	0
Non-hazardous waste disposed	kg	5,49E-01	3,40E-01	1,39E-01	0	0	0	0	0	0	0	0	7,80E-06	0	1,05E-05	0
Radioactive waste disposed	kg	1,21E-04	2,79E-05	6,62E-06	0	0	0	0	0	0	0	0	8,38E-07	0	2,79E-06	0

Output flows

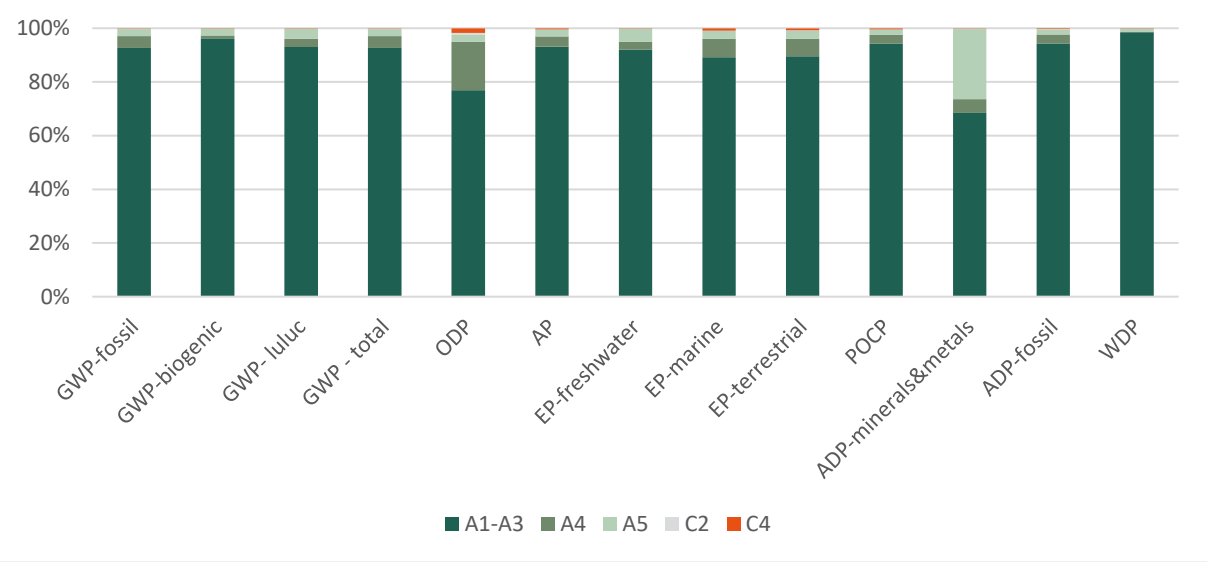
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	3,66E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	5,90E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	3,66E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1-A3 module has the biggest impact, representing at least 90,08%of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 4,86% and 4,50% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,14% and 0,42% respectively of the whole impact. The life cycle has an impact of 5,81 kg of CO2 equivalent.



Results on impact categories

Environmental Information

DANOPOL FV 1.5 LIGHT GREY and DANOPOL + FV 1.5 DARK GREY ANTHRACITE.

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit																
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4,86E+00	2,53E-01	1,31E-01	0	0	0	0	0	0	0	0	7,59E-03	0	1,20E-02	0
GWP-biogenic	kg CO_2 eq.	7,09E-03	8,64E-05	1,89E-04	0	0	0	0	0	0	0	0	2,53E-06	0	1,03E-05	0
GWP-luluc	kg CO_2 eq.	1,77E-03	6,57E-05	7,64E-05	0	0	0	0	0	0	0	0	1,91E-06	0	1,95E-06	0
GWP-total	kg CO_2 eq.	4,87E+00	2,53E-01	1,31E-01	0	0	0	0	0	0	0	0	7,60E-03	0	1,21E-02	0
ODP	kg CFC 11 eq.	1,99E-07	6,01E-08	8,28E-09	0	0	0	0	0	0	0	0	1,82E-09	0	5,98E-09	0
AP	mol H^+ eq.	2,96E-02	1,23E-03	8,07E-04	0	0	0	0	0	0	0	0	3,20E-05	0	1,19E-04	0
EP-freshwater	kg PO_4 eq.	2,56E-04	1,02E-05	1,70E-05	0	0	0	0	0	0	0	0	3,03E-07	0	4,80E-07	0
	kg P eq	8,34E-05	3,32E-06	5,55E-06	0	0	0	0	0	0	0	0	9,87E-08	0	1,56E-07	0
EP-marine	kg N eq.	4,28E-03	3,39E-04	1,32E-04	0	0	0	0	0	0	0	0	9,33E-06	0	4,31E-05	0
EP-terrestrial	mol N eq.	5,15E-02	3,80E-03	1,62E-03	0	0	0	0	0	0	0	0	1,04E-04	0	4,81E-04	0
POCP	kg NMVOC eq.	3,40E-02	1,19E-03	6,38E-04	0	0	0	0	0	0	0	0	3,33E-05	0	1,37E-04	0
ADP-minerals&metals*	kg Sb eq.	4,38E-06	4,57E-07	2,36E-06	0	0	0	0	0	0	0	0	1,41E-08	0	1,29E-08	0
ADP-fossil*	MJ	1,12E+02	4,00E+00	2,17E+00	0	0	0	0	0	0	0	0	1,20E-01	0	3,98E-01	0
WDP	m^3	1,13E+01	2,95E-02	1,16E-01	0	0	0	0	0	0	0	0	8,93E-04	0	1,68E-03	0
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															

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[5]	kg CO_2 eq.	4,74E+00	2,51E-01	1,28E-01	0	0	0	0	0	0	0	0	7,53E-03	0	1,19E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5,70E+00	4,37E-02	2,76E-01	0	0	0	0	0	0	0	0	1,27E-03	0	5,22E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	5,70E+00	4,37E-02	2,76E-01	0	0	0	0	0	0	0	0	1,27E-03	0	5,22E-03	0
PENRE	MJ	1,12E+02	4,00E+00	2,17E+00	0	0	0	0	0	0	0	0	1,20E-01	0	3,98E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,12E+02	4,00E+00	2,17E+00	0	0	0	0	0	0	0	0	1,20E-01	0	3,98E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	5,05E+00	2,13E-01	2,33E+00	0	0	0	0	0	0	0	0	6,30E-03	0	2,32E-02	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														

[5] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2,02E-05	2,32E-06	2,59E-06	0	0	0	0	0	0	0	0	6,97E-08	0	1,36E-07	0
Non-hazardous waste disposed	kg	5,22E-01	3,31E-01	1,28E-01	0	0	0	0	0	0	0	0	1,02E-02	0	2,79E+00	0
Radioactive waste disposed	kg	1,09E-04	2,71E-05	6,17E-06	0	0	0	0	0	0	0	0	8,18E-07	0	2,73E-06	0

Output flows

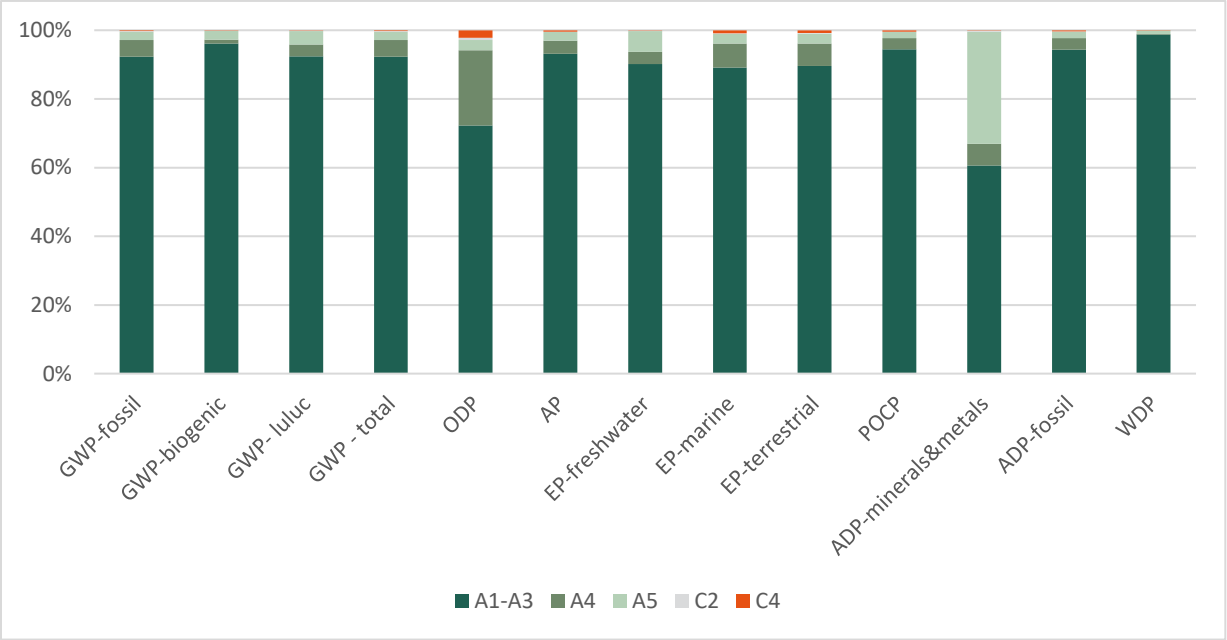
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	3,66E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	5,90E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	3,66E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1 module has the biggest impact, representing at least 88,9% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 5,4% and 5,0% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,2% and 0,5% respectively of the whole impact. The life cycle has an impact of 5,27 kg of CO2 equivalent.



Results on impact categories

Environmental Information

Since the difference in environmental impact is less than 10% for DANOPOL HSF 1.5 Light Grey - DANOPOL + HSF 1.5 DARK GREY ANTHRACITE the following information is valid for the EPD results

DANOPOL HSF 1.5 Light Grey - DANOPOL + HSF 1.5 DARK GREY ANTHRACITE

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	6,62E+00	2,60E-01	1,46E-01	0	0	0	0	0	0	0	0	7,77E-03	0	1,23E-02	0
GWP-biogenic	kg CO_2 eq.	1,05E-02	8,88E-05	2,03E-04	0	0	0	0	0	0	0	0	2,59E-06	0	1,05E-05	0
GWP-luluc	kg CO_2 eq.	2,54E-03	6,75E-05	8,21E-05	0	0	0	0	0	0	0	0	1,95E-06	0	2,00E-06	0
GWP-total	kg CO_2 eq.	6,63E+00	2,60E-01	1,46E-01	0	0	0	0	0	0	0	0	7,78E-03	0	1,23E-02	0
ODP	kg CFC 11 eq.	3,82E-07	6,18E-08	9,59E-09	0	0	0	0	0	0	0	0	1,86E-09	0	6,12E-09	0
AP	mol H^+ eq.	3,60E-02	1,26E-03	8,74E-04	0	0	0	0	0	0	0	0	3,28E-05	0	1,21E-04	0
EP-freshwater	kg PO_4 eq.	4,89E-04	1,05E-05	1,81E-05	0	0	0	0	0	0	0	0	3,10E-07	0	4,91E-07	0
	kg P eq	1,59E-04	3,41E-06	5,90E-06	0	0	0	0	0	0	0	0	1,01E-07	0	1,60E-07	0
EP-marine	kg N eq.	5,28E-03	3,49E-04	1,44E-04	0	0	0	0	0	0	0	0	9,55E-06	0	4,41E-05	0
EP-terrestrial	mol N eq.	6,33E-02	3,90E-03	1,76E-03	0	0	0	0	0	0	0	0	1,07E-04	0	4,92E-04	0
POCP	kg NMVOC eq.	3,84E-02	1,22E-03	7,13E-04	0	0	0	0	0	0	0	0	3,40E-05	0	1,40E-04	0
ADP-minerals&metals*	kg Sb eq.	9,43E-06	4,70E-07	2,38E-06	0	0	0	0	0	0	0	0	1,44E-08	0	1,32E-08	0
ADP-fossil*	MJ	1,41E+02	4,11E+00	2,47E+00	0	0	0	0	0	0	0	0	1,23E-01	0	4,08E-01	0
WDP	m^3	1,21E+01	3,04E-02	1,39E-01	0	0	0	0	0	0	0	0	9,14E-04	0	1,72E-03	0
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														

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[6]	kg CO_2 eq.	5,23E+00	2,57E-01	1,43E-01	0	0	0	0	0	0	0	0	7,70E-03	0	1,22E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,11E+00	4,49E-02	2,84E-01	0	0	0	0	0	0	0	0	1,30E-03	0	5,35E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	3,11E+00	4,49E-02	2,84E-01	0	0	0	0	0	0	0	0	1,30E-03	0	5,35E-03	0
PENRE	MJ	1,34E+02	4,11E+00	2,50E+00	0	0	0	0	0	0	0	0	1,23E-01	0	4,08E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,34E+02	4,11E+00	2,50E+00	0	0	0	0	0	0	0	0	1,23E-01	0	4,08E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	3,13E+00	2,19E-01	2,35E+00	0	0	0	0	0	0	0	0	6,34E-03	0	2,37E-02	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														

[6] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,38E-05	2,38E-06	2,69E-06	0	0	0	0	0	0	0	0	7,14E-08	0	1,39E-07	0
Non-hazardous waste disposed	kg	3,37E-03	2,59E-04	1,28E-03	0	0	0	0	0	0	0	0	7,80E-06	0	1,05E-05	0
Radioactive waste disposed	kg	9,08E-05	2,79E-05	6,64E-06	0	0	0	0	0	0	0	0	8,38E-07	0	2,79E-06	0

Output flows

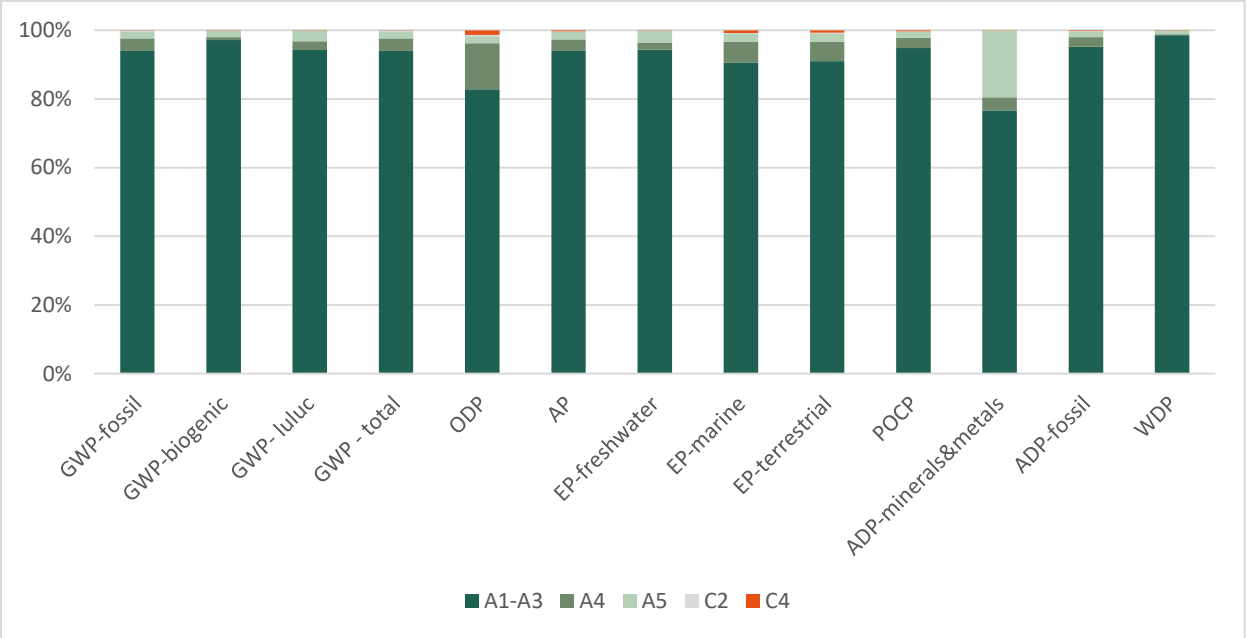
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	1,75E-01	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	7,50E-06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	5,30E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1-A3 module has the biggest impact, representing at least 92% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 3,9% and 3,5% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,1% and 0,3% respectively of the whole impact. The life cycle has an impact of 7,05 kg of CO2 equivalent.



Results on impact categories

Environmental Information

Since the difference in environmental impact is less than 10% DANOPOL HS 1.8 LIGHT GREY y DANOPOL + HS 1.8 DARK GREY ANTHRACITE- HS 1.8 Cool Roofing the following information is valid for the EPD results

DANOPOL HS 1.8 LIGHT GREY and DANOPOL + HS 1.8 DARK GREY ANTHRACITE- DANOPOL HS 1.8 COOL ROOFING

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	6,29E+00	8,54E-01	1,75E-01	0	0	0	0	0	0	0	0	1,05E-02	0	1,67E-02	0
GWP-biogenic	kg CO_2 eq.	8,60E-03	3,29E-04	2,29E-04	0	0	0	0	0	0	0	0	3,51E-06	0	1,42E-05	0
GWP-luluc	kg CO_2 eq.	1,97E-03	2,60E-04	9,03E-05	0	0	0	0	0	0	0	0	2,64E-06	0	2,71E-06	0
GWP-total	kg CO_2 eq.	6,30E+00	8,55E-01	1,76E-01	0	0	0	0	0	0	0	0	1,05E-02	0	1,67E-02	0
ODP	kg CFC 11 eq.	3,05E-07	1,97E-07	1,24E-08	0	0	0	0	0	0	0	0	2,52E-09	0	8,28E-09	0
AP	mol H^+ eq.	3,62E-02	7,04E-03	1,07E-03	0	0	0	0	0	0	0	0	4,43E-05	0	1,64E-04	0
EP-freshwater	kg PO_4 eq.	3,73E-04	3,60E-05	2,02E-05	0	0	0	0	0	0	0	0	4,20E-07	0	6,65E-07	0
	kg P eq	1,21E-04	1,17E-05	6,58E-06	0	0	0	0	0	0	0	0	1,37E-07	0	2,17E-07	0
EP-marine	kg N eq.	5,26E-03	1,66E-03	1,80E-04	0	0	0	0	0	0	0	0	1,29E-05	0	5,97E-05	0
EP-terrestrial	mol N eq.	6,28E-02	1,86E-02	2,18E-03	0	0	0	0	0	0	0	0	1,44E-04	0	6,66E-04	0
POCP	kg NMVOC eq.	4,11E-02	5,43E-03	8,98E-04	0	0	0	0	0	0	0	0	4,61E-05	0	1,89E-04	0
ADP-minerals&metals*	kg Sb eq.	7,14E-06	1,32E-06	2,63E-06	0	0	0	0	0	0	0	0	1,95E-08	0	1,78E-08	0
ADP-fossil*	MJ	1,40E+02	1,33E+01	3,03E+00	0	0	0	0	0	0	0	0	1,67E-01	0	5,52E-01	0
WDP	m^3	1,35E+01	9,65E-02	1,76E-01	0	0	0	0	0	0	0	0	1,24E-03	0	2,33E-03	0
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														

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[7]	kg CO_2 eq.	6,11E+00	8,47E-01	1,68E-01	0	0	0	0	0	0	0	0	1,04E-02	0	1,65E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	6,66E+00	1,69E-01	3,14E-01	0	0	0	0	0	0	0	0	1,77E-03	0	7,24E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	6,66E+00	1,69E-01	3,14E-01	0	0	0	0	0	0	0	0	1,77E-03	0	7,24E-03	0
PENRE	MJ	1,40E+02	1,33E+01	3,03E+00	0	0	0	0	0	0	0	0	1,67E-01	0	5,52E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,40E+02	1,33E+01	3,03E+00	0	0	0	0	0	0	0	0	1,67E-01	0	5,52E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	7,09E+00	8,47E-01	2,60E+00	0	0	0	0	0	0	0	0	8,59E-03	0	3,21E-02	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														

[7] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,83E-05	7,73E-06	3,01E-06	0	0	0	0	0	0	0	0	9,66E-08	0	1,89E-07	0
Non-hazardous waste disposed	kg	6,87E-01	9,36E-01	1,72E-01	0	0	0	0	0	0	0	0	1,42E-02	0	3,87E+00	0
Radioactive waste disposed	kg	1,38E-04	8,97E-05	8,07E-06	0	0	0	0	0	0	0	0	1,13E-06	0	3,78E-06	0

Output flows

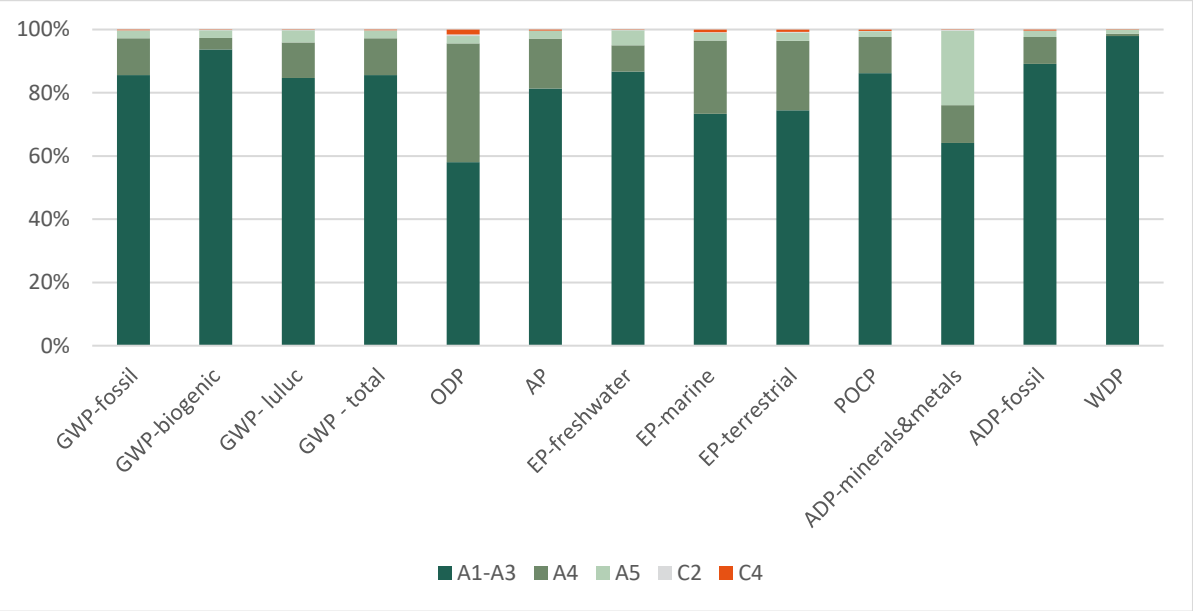
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	4,25E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	7,10E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	4,25E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1 module has the biggest impact, representing at least 81,6%% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 13,6% and 4,2% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,1% and 0,4% respectively of the whole impact. The life cycle has an impact of 7,36 kg of CO2 equivalent.



Results on impact categories

Environmental Information

DANOPOL FV 1.8 LIGHT GREY

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit

Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	5,80E+00	1,13E-01	1,58E-01	0	0	0	0	0	0	0	0	1,03E-02	0	1,64E-02	0
GWP-biogenic	kg CO_2 eq.	8,06E-03	3,86E-05	2,09E-04	0	0	0	0	0	0	0	0	3,44E-06	0	1,39E-05	0
GWP-luluc	kg CO_2 eq.	1,77E-03	2,94E-05	7,71E-05	0	0	0	0	0	0	0	0	2,59E-06	0	2,65E-06	0
GWP-total	kg CO_2 eq.	5,81E+00	1,13E-01	1,59E-01	0	0	0	0	0	0	0	0	1,03E-02	0	1,64E-02	0
ODP	kg CFC 11 eq.	2,48E-07	2,68E-08	9,18E-09	0	0	0	0	0	0	0	0	2,47E-09	0	8,12E-09	0
AP	mol H^+ eq.	3,49E-02	5,57E-04	9,48E-04	0	0	0	0	0	0	0	0	4,35E-05	0	1,61E-04	0
EP-freshwater	kg PO_4 eq.	3,07E-04	4,54E-06	1,73E-05	0	0	0	0	0	0	0	0	4,12E-07	0	6,52E-07	0
	kg P eq	1,00E-04	1,48E-06	5,64E-06	0	0	0	0	0	0	0	0	1,34E-07	0	2,12E-07	0
EP-marine	kg N eq.	5,05E-03	1,53E-04	1,56E-04	0	0	0	0	0	0	0	0	1,27E-05	0	5,85E-05	0
EP-terrestrial	mol N eq.	6,03E-02	1,71E-03	1,90E-03	0	0	0	0	0	0	0	0	1,42E-04	0	6,53E-04	0
POCP	kg NMVOC eq.	4,04E-02	5,33E-04	8,61E-04	0	0	0	0	0	0	0	0	4,52E-05	0	1,85E-04	0
ADP-minerals&metals*	kg Sb eq.	5,74E-06	2,03E-07	2,36E-06	0	0	0	0	0	0	0	0	1,92E-08	0	1,75E-08	0
ADP-fossil*	MJ	1,32E+02	1,78E+00	2,87E+00	0	0	0	0	0	0	0	0	1,64E-01	0	5,41E-01	0
WDP	m^3	1,31E+01	1,31E-02	1,90E-01	0	0	0	0	0	0	0	0	1,21E-03	0	2,28E-03	0
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															

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[8]	kg CO_2 eq.	5,65E+00	1,12E-01	1,55E-01	0	0	0	0	0	0	0	0	1,02E-02	0	1,61E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	6,39E+00	1,95E-02	2,84E-01	0	0	0	0	0	0	0	0	1,73E-03	0	7,09E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	6,39E+00	1,95E-02	2,84E-01	0	0	0	0	0	0	0	0	1,73E-03	0	7,09E-03	0
PENRE	MJ	1,32E+02	1,78E+00	2,87E+00	0	0	0	0	0	0	0	0	1,64E-01	0	5,41E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,32E+02	1,78E+00	2,87E+00	0	0	0	0	0	0	0	0	1,64E-01	0	5,41E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	6,20E+00	9,54E-02	2,34E+00	0	0	0	0	0	0	0	0	8,42E-03	0	3,15E-02	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														

[8] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,36E-05	1,03E-06	2,61E-06	0	0	0	0	0	0	0	0	9,47E-08	0	1,85E-07	0
Non-hazardous waste disposed	kg	6,64E-01	1,47E-01	1,48E-01	0	0	0	0	0	0	0	0	1,39E-02	0	3,79E+00	0
Radioactive waste disposed	kg	1,31E-04	1,21E-05	6,57E-06	0	0	0	0	0	0	0	0	1,11E-06	0	3,70E-06	0

Output flows

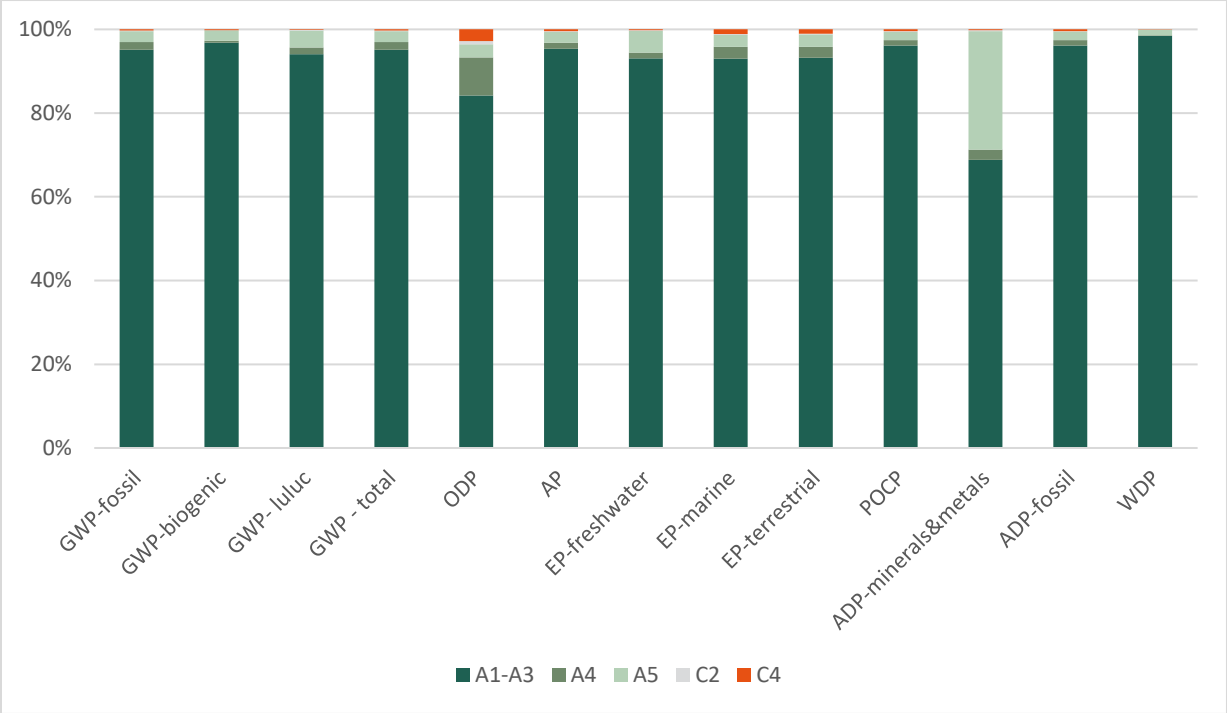
Results per functional unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0	0	4,25E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	7,10E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	4,25E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1 module has the biggest impact, representing at least 92,2%% of the whole impact, identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 2,2% and 4,8% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,2% and 0,6% respectively of the whole impact. The life cycle has an impact of 6,11 kg of CO2 equivalent.



Results on impact categories

Environmental Information

DANOPOL + HSF 1.8 DARK GREY ANTHRACITE

Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit															
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	5,12E+00	3,02E-01	1,59E-01	0	0	0	0	0	0	0	0	1,06E-02	0	1,69E-02	0
GWP-biogenic	kg CO_2 eq.	5,23E-03	1,03E-04	2,08E-04	0	0	0	0	0	0	0	0	3,55E-06	0	1,44E-05	0
GWP-luluc	kg CO_2 eq.	1,23E-03	7,83E-05	8,21E-05	0	0	0	0	0	0	0	0	2,67E-06	0	2,74E-06	0
GWP-total	kg CO_2 eq.	5,13E+00	3,02E-01	1,60E-01	0	0	0	0	0	0	0	0	1,06E-02	0	1,69E-02	0
ODP	kg CFC 11 eq.	2,01E-07	7,17E-08	1,13E-08	0	0	0	0	0	0	0	0	2,55E-09	0	8,38E-09	0
AP	mol H^+ eq.	2,60E-02	1,47E-03	9,69E-04	0	0	0	0	0	0	0	0	4,49E-05	0	1,66E-04	0
EP-freshwater	kg PO_4^{3-} eq.	1,66E-04	1,21E-05	1,84E-05	0	0	0	0	0	0	0	0	4,25E-07	0	6,72E-07	0
	kg P eq	5,42E-05	3,95E-06	5,98E-06	0	0	0	0	0	0	0	0	1,38E-07	0	2,19E-07	0
EP-marine	kg N eq.	4,35E-03	4,05E-04	1,64E-04	0	0	0	0	0	0	0	0	1,31E-05	0	6,04E-05	0
EP-terrestrial	mol N eq.	5,16E-02	4,53E-03	1,99E-03	0	0	0	0	0	0	0	0	1,46E-04	0	6,74E-04	0
POCP	kg NMVOC eq.	3,74E-02	1,42E-03	8,16E-04	0	0	0	0	0	0	0	0	4,66E-05	0	1,91E-04	0
ADP-minerals&metals*	kg Sb eq.	2,30E-06	5,45E-07	2,39E-06	0	0	0	0	0	0	0	0	1,98E-08	0	1,80E-08	0
ADP-fossil*	MJ	1,26E+02	4,77E+00	2,76E+00	0	0	0	0	0	0	0	0	1,69E-01	0	5,58E-01	0
WDP	m^3	1,27E+01	3,52E-02	1,60E-01	0	0	0	0	0	0	0	0	1,25E-03	0	2,36E-03	0
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														

Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[9]	kg CO_2 eq.	4,98E+00	2,99E-01	1,56E-01	0	0	0	0	0	0	0	0	1,05E-02	0	1,65E-02	0

Disclaimers shall be added, if required by EN 15804.

Use of resources

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,86E+00	5,21E-02	2,86 E-01	0	0	0	0	0	0	0	0	1,79E-03	0	7,32E-03	0
PERM	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	2,86E+00	5,21E-02	2,86 E-01	0	0	0	0	0	0	0	0	1,79E-03	0	7,32E-03	0
PENRE	MJ	1,26E+02	4,77E+00	2,76 E+00	0	0	0	0	0	0	0	0	1,69E-01	0	5,58E-01	0
PENRM	MJ.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	1,26E+02	4,77E+00	2,76 E+00	0	0	0	0	0	0	0	0	1,69E-01	0	5,58E-01	0
SM	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	3,03E+00	2,55E-01	2,36 E+00	0	0	0	0	0	0	0	0	8,68E-03	0	3,25E-02	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														

[9] 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.

Waste production and output flows

Waste production

Results per functional unit															
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,32E-05	2,76E-06	2,74 E-06	0	0	0	0	0	0	0	0	9,77E-08	0	1,91E-07	0
Non-hazardous waste disposed	kg	3,47E-01	3,94E-01	1,77 E-01	0	0	0	0	0	0	0	0	1,43E-02	0	3,91E+00	0
Radioactive waste disposed	kg	8,43E-05	3,24E-05	7,36 E-06	0	0	0	0	0	0	0	0	1,15E-06	0	3,82E-06	0

Output flows

Results per functional unit																
Indicator	**Unit**	**Tot.A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	6,09 E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for recycling	kg	6,50E+01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

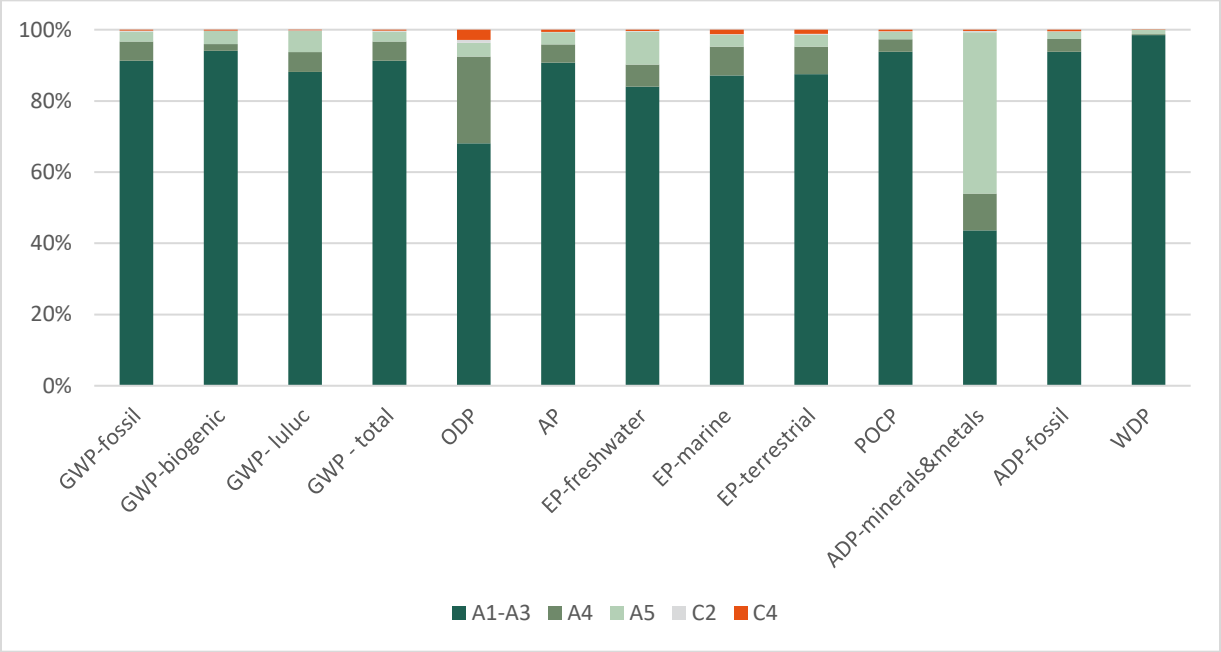
Information on biogenic carbon content

Results per declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	4,25E-06

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

In general terms, as it is shown in the table of potential environmental impact, and figure results impact categories, A1 module has the biggest impact, representing at least 86,0% of the whole impact,

identifying raw materials as the process with the greatest impact within the stage. A4 and A5 module has a low impact, representing at most 6,72% and 6,86% correspondingly of the life cycle impact. Finally, C2 and C4 module has low impact too, representing at most 0,2% and 0,7% respectively of the whole impact. The life cycle has an impact of 5,62 kg of CO2 equivalent.



Results on impact categories

Information related to Sector EPD

This is not a sector EPD.

Differences versus previous versions

- Impacts due to substitution are not considered.
- The main difference is the change of name of some references and the incorporation of new products as shown in the following table.

Thickness	Previous version	Current version
1.2 mm	DANOPOL 1.2 HS and 1.2 H.S Dark grey	DANOPOL HS 1.2 LIGHT GREY and DANOPOL + HS 1.2 DARK GREY ANTHRACITE.
		DANOPOL HS 1.2 COOL ROOFING
	DANOPOL 1.2 FV and FV NI	DANOPOL FV 1.2 LIGHT GREY.
	DANOPOL 1.2 HS Blanco	-
	DANOPOL 1.2 DW	-
1.5 mm	DANOPOL HS 1.5 FV and H.S 1.5 Dark grey	DANOPOL HS 1.5 LIGHT GREY and DANOPOL + HS 1.5 DARK GREY ANTHRACITE.
		DANOPOL HS 1.5 COOL ROOFING
	DANOPOL 1.5 FV and 1.5 FV NI	DANOPOL FV 1.5 LIGHT GREY and DANOPOL + FV 1.5 DARK GREY ANTHRACITE
		DANOPOL HSF 1.5 LIGHT GREY
		DANOPOL + HSF 1.5 DARK GREY ANTHRACITE
1.8 mm	DANOPOL 1.8 HS	DANOPOL HS 1.8 LIGHT GREY and DANOPOL + HS 1.8 DARK GREY ANTHRACITE
		DANOPOL HS 1.8 COOL ROOFING
	DANOPOL 1.8 FV	DANOPOL FV 1.8 LIGHT GREY and DANOPOL + FV 1.8 DARK GREY ANTHRACITE
		DANOPOL + HSF 1.8 DARK GREY ANTHRACITE

References

- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2019:14 Construction products - version 1.1
- CEN (2019): EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for product category of construction products.
- ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- ISO 14025:2006: Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
- ISO 14020:2000: Environmental labels and declarations — General principles.
- LCA DANOSA

VERIFICATION STATEMENT CERTIFICATE

CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD00401

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):

DANOPOL PVC WATERPROOFING SHEET:
DANOPOL HS and DANOPOL FV.
LÁMINAS IMPERMEABILIZANTES DE PVC DANOPOL:
DANOPOL HS y DANOPOL FV.

with registration number **S-P-00691** in the International EPD® System *(www.environdec.com).*
*con número de registro **S-P- 00691** en el Sistema International EPD® (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.**
- **CPC Code: 547 Building completion and finishing services.**

Issued date / *Fecha de emisión:*	18/05/2015
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Serial Nº / *Nº Serie:*	EPD0040101-E

Carlos Nazabal Alsua
Manager

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

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