



# ENVIRONMENTAL PRODUCT DECLARATION OF DANOPOL PVC WATERPROOFING SHEET



EPD® Registration number: S-P-00691 v 1.0

Ecoplatform registration nº: 00000189

Publication date: 2015.05.18

Validity: 5 years (2020.05.18)

Scope of the EPD®: International

EPD® based in PCR Flexible sheets for waterproofing - bitumen, plastic or rubber sheets for roof waterproofing. 2014:12 version 1.0

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# ENVIRONMENTAL PRODUCT DECLARATION OF DANOPOL PVC WATERPROOFING SHEET

## 1. PROGRAMME RELATED INFORMATION

Name of the programme and programme operator	The international EPD <sup>®</sup> System, operated by EPD International AB
Reference PCR	PCR based in ISO 14025:2010. Flexible sheets for waterproofing – bitumen, plastic or rubber sheets for roof waterproofing. 2014:12 version 1.0
EPD <sup>®</sup> registration number	S-P-00691
Ecoplatform registration number	00000189
Date of publication	The 18 <sup>th</sup> of May, 2015
Validity	5 years (the 18 <sup>th</sup> of May, 2020)
Geographical scope of the EPD <sup>®</sup>	International
For more information	<a href="http://www.environdec.com">www.environdec.com</a>

## 2. PRODUCT RELATED INFORMATION

### 2.1. INFORMATION ABOUT THE MANUFACTURING COMPANY

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- Information related with the company

Company responsible of the publication of the EPD®	DANOSA ESPAÑA Polígono Industrial Sector 9 19290 FONTANAR (Guadalajara) ESPAÑA
Contact	David Espliego 34 949 888 210 info@DANOSA.com www.DANOSA.com
Company responsible of the technical support for the generation of the LCA calculations	Marcel Gómez Consultoría Ambiental www.marcelgomez.com Email: info@marcelgomez.com

- **Information about Environmental Management Systems**

As a consequence of its permanent seeking of the highest quality in their products, DANOSA has implemented and certificated ISO 9.001 Quality Management Systems since 2012 (registration number: ES044036-1) and is in the procedure to obtain the certification in ISO 14.001 Environmental Management Systems. At the same time, DANOSA has the CE Certificate for Waterproofing flexible sheets since 2014.

- **Environmental commitment of the company**

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 and regulations that concern both the quality and the environment and other internal commitments made by the company itself.

DANOSA manufactures its products always respecting the declared specifications and minimizing the environmental impacts associated with their activities, reducing, where possible, the amount of waste sent to sewage.

DANOSA especially considers suppliers and subcontractors in order to achieve its objectives of Quality and Environment, encouraging them to develop the best environmental 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, wherever possible, the waste generated by all operations and facilitating its recycling.

- **Company logotype**



## **2.2. SPECIFICATION OF THE PRODUCT**

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- **Specification of the product**

DANOPOL is a range of synthetic sheets based in plasticized PVC, manufactured by calendering and reinforced with a framework of polyester or fibreglass fibres. This film is weatherproof and UV rays, and is used mainly for waterproofing in construction.

This product is manufactured in a wide range of sizes and thicknesses. The following Environmental Product Declaration (EPD®) is referred first to DANOPOL HS 1.5 (1,80x15) of 1.5 mm thick and to DANOPOL HS 1.5 (1,80x15) Dark Grey.

DANOPOL HS 1.5 (1,80x15) range presents the next technical characteristics:

PRESENTATION	VALUE	UNIT
Type of framework	Polyester fibre membrane	-
Thickness	1.5	mm
Width	1.80	m
Length	15	m
Surface per roll	26.7	m <sup>2</sup>
Colour	Light grey	-
Code of the product	210033	-

**Table 1** Technical characteristics of the product

This EPD is referred to PVC DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey ranges. In addition of DANOPOL HS 1.5 (1,80x15), in point 8 the environmental performance of the next ranges is described:

1. DANOPOL 1.2 FV and 1.2 FV NI
2. DANOPOL 1.2 HS (25x1,06) and 1.2 HS (25x1,06) Dark Grey. Includes verde
3. DANOPOL 1.2 HS (1,80x20) and 1.2 HS (1,80x20) Dark Grey
4. DANOPOL 1.2 HS Blanco
5. DANOPOL 1.2 HS DW
6. DANOPOL 1.5 FV and 1.5 FV NI
7. DANOPOL HS 1.5 (1,06x20) and HS 1.5 (1,06x20) Dark Grey
8. DANOPOL 1.8 FV
9. DANOPOL 1.8 HS (1,80x13)

- **Quality of data and allocation**

Specific data has been taken on the quantities of materials and energy used during the life cycle of the product DANOPOL. These data have been supplied by DANOSA, referring to the year 2013 and come from actual production data representing these years.

Raw materials use has been taken directly from the m<sup>2</sup> produced by DANOSA in 2013 for these types of PVC sheets.

Energy consumption for production of the product has been introduced using specific data taken from plant production during the year 2013. Constant energy consumption is assumed per m<sup>3</sup>

produced, then it has been allocated by m<sup>2</sup> of product type depending on the thickness of each PVC sheet, to obtain a better representation of reality.

For proper modelling of transport it has been used weighted averages based on weight and distance of destinations of the sales of each type of PVC sheet produced.

The data specified in this document are valid for the EPD® until no substantial changes affecting the impact produced. Substantial modifications are considered rising above 10% the environmental impact per functional unit. It has been taken generic data on the impact per unit of matter or energy (use of aluminium, acids, electricity, etc.). These data were obtained from the internationally recognized database of Life Cycle Assessment Ecoinvent, in its version 3.0. This database has been selected as the reference database because:

- Geographical representativeness: data come from areas with the same legislative frame and electricity mix
- Technological equivalence: data come from the same physical and chemical processes, or at least the same technological coverage
- Boundaries to environment: data include all the quantitative information needed for the EPD®
- Boundaries to technical systems: the same life cycle stages are taken into account

Referring to the electricity mix used in electricity consumption in the manufacturing plant, the electricity mix production in Spain in 2013 has been introduced (explained in more depth at the point 2.5).

### **2.3. FUNCTIONAL UNIT**

Raw materials extraction, transport, manufacturing, transport to the customer and end of life of one m<sup>2</sup> of PVC DANOPOL waterproofing sheet, taking into account that the Reference Service Life of the building is 90 years.

The RSL of the product is stated in 30 years, as a consequence it will be necessary to replace two times the product to achieve the RSL stated in the corresponding PCR.

Results are presented taking into account the 90 years of RSL of the building.

## 2.4. MATERIALS CONTENT

The description of the content of materials and chemical substances of DANOPOL HS 1.5 (1.80x15) and DANOPOL HS 1.5 (1.80x15) Dark Grey is done in the next lines, as well as the auxiliary materials and processes needed throughout its life cycle.

### 2.4.1. Raw materials

The composition of the product is the next:

Material	Weight (g/m <sup>2</sup> )
PET fibres membrane	93,00
Upper PVC	761,25
Lower PVC	571,25
Recycled lower PVC	571,25
Total	1.938,75

**Table 3** Material composition of the product DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey

DANOPOL does not use Substances of Very High Concern, as stated in REACH<sup>1</sup> legislation, during the life cycle of the product.

### 2.4.2. Waste generated in the manufacturing plant

Material	Weight (g/m <sup>2</sup> )
Recycled paper	0,007
Urban Solid Waste	0,002
Recycled wood	2,4
Recycled plastics	0,04

**Table 2** Waste generated during the manufacturing of any range of DANOPOL product.

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<sup>1</sup> Legislation (EC) N° 1907/2006 of the European Parliament and Council, dated at the 18<sup>th</sup> of December 2006, referred to the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)



#### 2.4.3. PACKAGING FOR THE TRANSPORT OF THE FINISHED PRODUCT

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Material	Weight (g/m <sup>2</sup> )
Wood pallets	52,1
PE film	7,26
PE cover	5,56
Board roll	39,3

**Table 3** Packaging for the transport of any range of DANOPOL product.

#### 2.4.4. INSTALLATION MATERIALS

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Material	Weight (g/m <sup>2</sup> )
Stainless Kesternich screws	7,05
Stainless washers	11,7
Welding (linear meters)	0,62
Galvanized profile	0,01
Stainless screws	0,16
Filler	0,002

**Table 4** Ancillary materials for the installation of any range of product DANOPOL.

### 2.5. METHODOLOGY AND HYPOTHESIS

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It has been performed a Life Cycle Assessment of the product DANOPOL PVC waterproofing sheet, taking into account raw materials extraction, transport, manufacturing, transport to the customer, installation and end of life (from cradle to grave). The LCA has been performed following the PCR Flexible sheets for waterproofing - bitumen, plastic or rubber sheets 2014:12 version 1.0. CML 2001 impact model has been used.

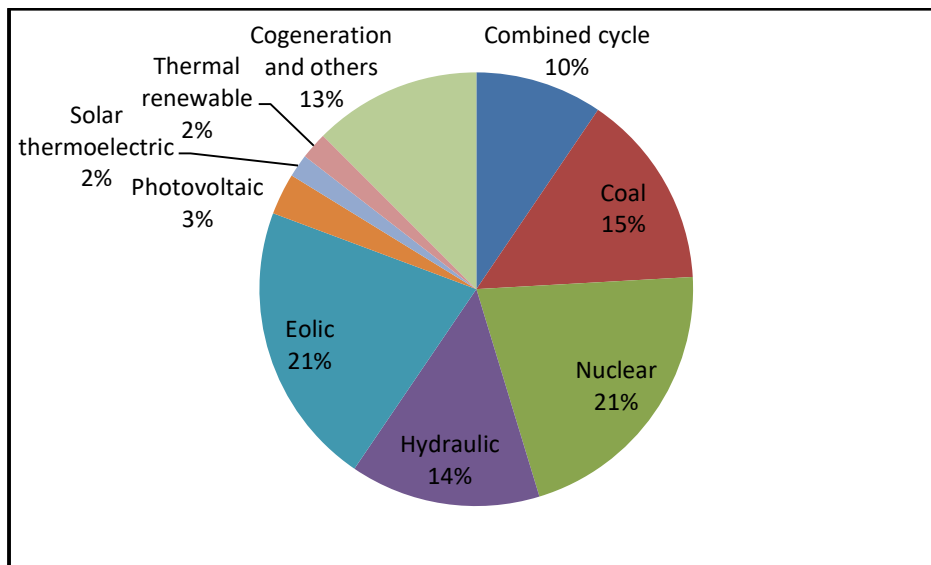
Specific data from the real process has been used for all raw and ancillary materials, energy consumption, waste production and emissions to air, soil and water. These data correspond to year 2013.

For the energy use, it has been introduced the electricity production mix in Spain in 2013<sup>2</sup> (see figure 6)

To determine the emissions inventory per Kg of material, KWh of energy or TnKm transported Ecoinvent v 3.0 LCA database has been used.

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<sup>2</sup> Source: Red Eléctrica Española



**Figure 1** Electricity production mix in Spain (2013)

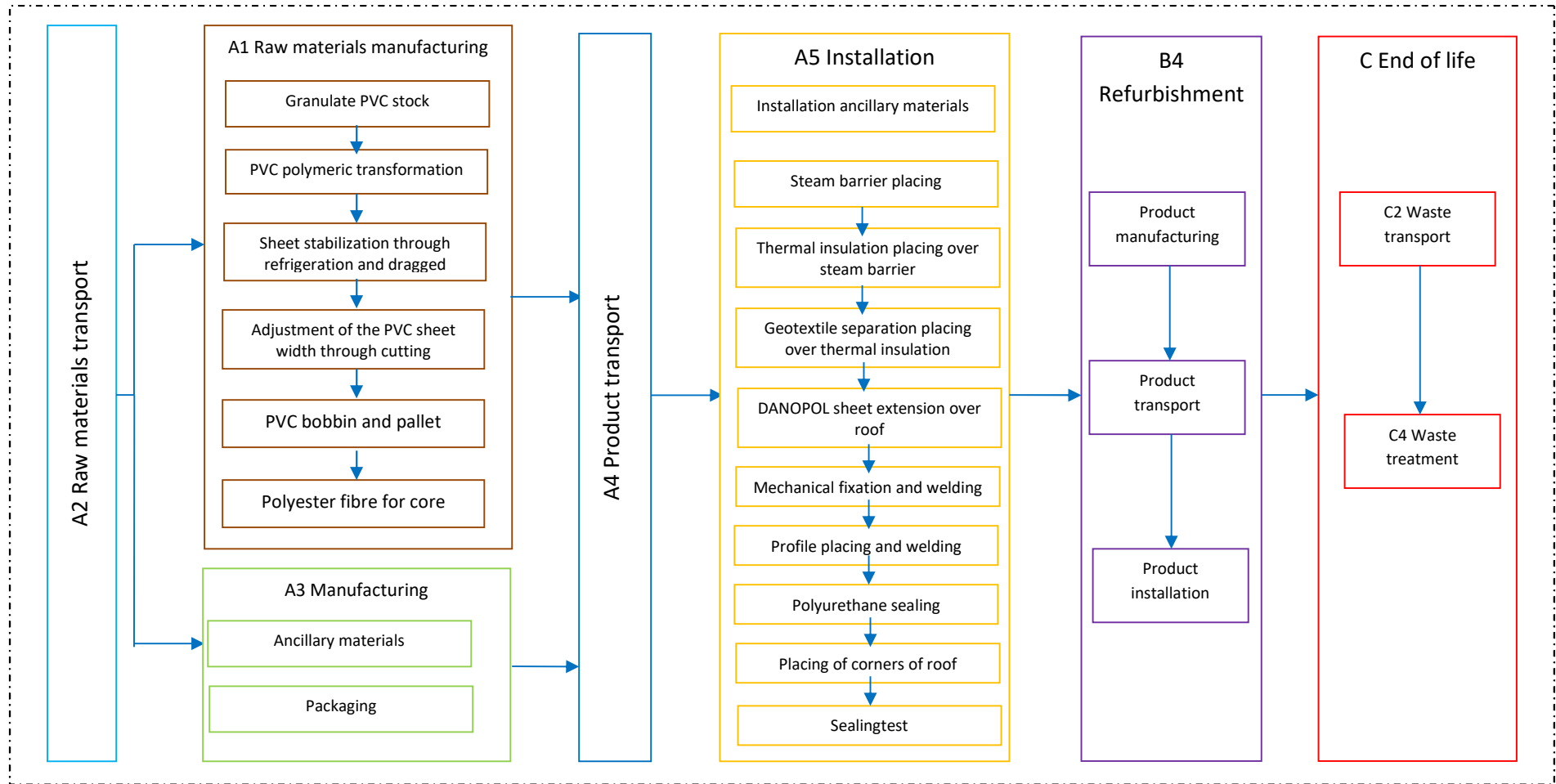
The next hypotheses have been taken:

- Transport distance of waste from the manufacturing plant to the waste management facilities: 50 Km
- Use of recycled materials: following the pollutant payer principle, only processing of the materials and transport to DANOSA facility is taken into account.
- Materials that are recycled at the end of its life cycle: only the transport to the waste management facilities is taken into account.

## **2.6. DESCRIPTION OF THE PROCESSES AND LIMITS OF THE SYSTEM**

This EPD® has its life cycle stages structured following the indications done in the PCR: *Flexible sheets for waterproofing - bitumen , plastic or rubber sheets for roof waterproofing*, based in UNE-EN 15804 standard.

## Limits of the system



**Figure 2** Limits of the System and description of the significant processes

### *2.6.1. Product stage A1-A3*

The product stage is composed by the raw materials supply (A1), raw materials transport (A2) and manufacturing (A3). As permitted by the corresponding PCR, the results of A1-A3 stages have been grouped in a single product stage (A).

#### **A1-RAW MATERIALS**

This module takes into account the extraction and processing of the raw materials, as well as the energy that is produced during its extraction and processing.

#### **A2-TRANSPORT**

This module includes the transport of raw materials from the manufacturer to DANOSA's manufacturing plant. The real distance and type of truck for every raw material has been introduced.

#### **A3-MANUFACTURING**

In this module it is included the energy consumption, additives and packaging used during the manufacturing process. At the same time, emissions in the facility not originated during the fuels combustion are assessed (no emissions from fuels occur), as well as the transport and management of waste produced in the factory.

### *2.6.2. Construction process stage A4-A5*

The construction stage is composed for the A4 Transport module and the A5 Process of Construction-Installation.

#### **A4-TRANSPORT**

Module A4 Transport includes the transport of the finished product from DANOSA's factory to the customer. The transport of ancillary materials needed during the installation has not been taken into account.

TYPE	PARAMETER	UNIT (EXPRESSED BY FUNCTIONAL UNIT)
Truck	Type and fuel consumption of the vehicle, types of vehicles used during the transport	>35 Tn truck. Fuel consumption: 31,1 L/100 Km
	Distance	1.958 Km
	Capacity use (including empty returns)	>95%
	Density of the transported products	2,04 Kg/m <sup>2</sup> (including packaging)
Boat	Type and fuel consumption of the vehicle, types of vehicles used during the transport	Transoceanic boat. Fuel consumption: 0.14 L/100 TnKm
	Distance	20 Km
	Capacity use (including empty returns)	>95%
	Density of the transported products	2,04 Kg/m <sup>2</sup> (including packaging)

**Table 5** Main characteristics of the different modes of transport used in the product DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey

#### A5-CONSTRUCTION-INSTALLATION

Module A5 Installation and construction includes all the materials and energy used during the installation. At the same time, it is taken into account the transport as well as the produced waste management.

PARAMETER	VALOUR/DESCRIPTION
Material waste in the construction site, before the waste processing, generated during the installation of the product (specified by type)	5 %
Materials out flow (specified by type) resultant from the waste processing in the construction site, for example, during the recycling, energy recovering (valorisation) or spill (specifying the route)	Product waste packaging is 100% collected and recycled.

### 2.6.3. Use phase B1-B7

#### B1-USE

It includes aspects and environmental impacts of the normal use of the product, without including water and energy consumption. The impact of the product in this phase is 0 since any material is consumed neither any emission to the environment occurs during its use phase.

#### B2-MANTENANCE

The product does not require any type of maintenance during the 90 years of service life of the building.

#### B3-REPAIR

The product does not require any type of reparation during the 90 years of service life of the building.

#### B4-REPLACEMENT

It is necessary to replace twice the product in order to achieve the RSL stated by the PCR (90 years). The new sheet is installed over the old one, so any extra material o process is necessary compared with a usual installation.

#### B5-REFURBISHMENT

The product does not require any type of refurbishment during the 90 years of service life of the building.

#### B6-OPERATIONAL ENERGY USE

The product does not consume any type of energy during the 90 years of service life of the building.

## B7-OPERATIONAL WATER USE

The product does not consume any type of water during the 90 years of service life of the building.

### 2.6.4. End of life stage C1-C4

This stage includes the transport and management of waste produced once the RSL is finished. The end of life stage is composed by the modules C1 Deconstruction, C2 Transport, C3 Waste treatment and C4 Waste disposal. Nowadays, in Spain, the main market of the product, waste generated during the building demolition is brought to an authorized disposal site.

It has been considered that the impact of the building demolition is insignificant compared with other impacts.

<b>RANGE</b>	DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey
<b>COLLECTION PROCESS SPECIFIED BY TYPE</b>	4,33 Kg (mixed with the other waste of construction)
<b>RECOVERY SYSTEM SPECIFIED BY TYPE</b>	No reuse, recycling or energy recovery
<b>DISPOSAL SPECIFIED BY TYPE</b>	4,33 Kg to authorized landfill
<b>ASSUMPTIONS FOR SCENARIO DEVELOPMENT (I. E. TRANSPORT)</b>	16-32 Tn truck with a fuel consumption of 25 l per 100 km. 50 Km of distance to the landfill site

### 2.6.5. Additional information beyond the life cycle of the building

## BENEFITS AND LOADS BEYOND THE LIMITS OF THE SYSTEM

It has not been taken into account the possible benefits due to the manufacturing plant waste recycling, neither the product packaging recycling.

Based in the limits of the system stated in the reference PCR *Flexible sheets for waterproofing - bitumen, plastic or rubber sheets for roof waterproofing* it has not been taken into account the next processes:

- The manufacturing of equipment goods with RSL bigger than 3 years, buildings and other capital goods.
- Maintenance activities in the manufacturing plant
- Transport of workers from home to the factory



**Raw materials extraction**



**Raw materials manufacturing**



**Production**



**Transport**



**Installation**



**End of life**



**Figure 4** Limits of the system

### **2.7. COMPARISON OF EPDS OF THE SAME PRODUCT CATEGORY**

In case you want to compare different EPDs® within this product category, these must be based in the PCR Flexible sheets for waterproofing - bitumen, plastic or rubber sheets for roof waterproofing.

“EPDs® within the same product category but from different programmes may not be comparable”

“Omissions of life cycle mandatory stages according to this PCR are not allowed”

### **2.8. EPD VALIDITY**

The EPD® presented here has a validity of five years from the date of publication. In the case of observing changes that represent a worsening in any of the indicators of environmental impact of the life cycle of the older product bigger than 10%, the EPD® should be updated.

## **3. ENVIRONMENTAL PERFORMANCE RELATED INFORMATION**

### **3.1. POTENTIAL IMPACT OVER THE ENVIRONMENT**

In this point it is expressed the potential impact over the environment of the life cycle of the product. The indicated impacts in this point are referred to one m<sup>2</sup> of the PVC DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey. The results are indicated for 90 years of RSL of the building, and for the different life cycle stages.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	5,64	0,447	0,226	0	0	0	12,6	0	0	0	Not relevant	5,20E-02	0,264	0	MND	19,2
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,85E-06	3,27E-08	9,70E-09	0	0	0	3,79E-06	0	0	0	Not relevant	3,67E-09	1,88E-09	0	MND	5,70E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,90E-02	1,49E-03	1,32E-03	0	0	0	6,30E-02	0	0	0	Not relevant	1,64E-04	2,03E-04	0	MND	9,50E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	4,60E-03	3,58E-04	4,29E-04	0	0	0	1,10E-02	0	0	0	Not relevant	3,86E-05	1,30E-02	0	MND	2,90E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,94E-03	6,42E-05	8,73E-05	0	0	0	4,18E-03	0	0	0	Not relevant	6,91E-06	5,26E-05	0	MND	6,34E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	3,07E-06	1,41E-06	3,93E-06	0	0	0	1,68E-05	0	0	0	Not relevant	1,32E-07	2,34E-08	0	MND	2,54E-05
Depletion of abiotic resources, fossil (MJ)	69,6	6,86	2,98	0	0	0	159	0	0	0	Not relevant	0,776	0,432	0	MND	239

**Table 6** Potential environmental impact of one m<sup>2</sup> of DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey.

### 3.2. USE OF RESOURCES

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
		A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	0,539
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	0
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	0,539
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	11,2	6,86	2,98	0	0	0	42,0	0	0	0	Not relevant	0,776	0,432	0	MND	64,2
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	58,4	0	0	0	0	0	117	0	0	0	Not relevant	0	0	0	MND	175
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	69,6	6,86	2,98	0	0	0	159	0	0	0	Not relevant	0,776	0,432	0	MND	239
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	0,150
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	0
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	0
Use of net fresh water (m3/m2)	4,25E+06	4,29E+05	2,87E+06	0	0	0	1,51E+07	0	0	0	Not relevant	4,03E+04	5,04E+04	0	MND	2,27E+07

**Table 7** Use of resources, renewable and non-renewable, of 1 m<sup>2</sup> of DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey.

### 3.3. OTHER ENVIRONMENTAL INFORMATION (WASTE AND OUTPUT FLOWS)

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
		A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,90E-05	8,48E-06	7,85E-06	0	0	0	1,31E-04	0	0	0	0	9,11E-07	5,04E-07	0	MND	1,97E-04
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,643	0,547	0,141	0	0	0	2,66	0	0	0	0	4,47E-02	4,34	0	MND	8,38
Radioactive waste disposed (Kg/m <sup>2</sup> )	7,14E-05	4,00E-05	8,30E-06	0	0	0	2,39E-04	0	0	0	0	4,50E-06	2,31E-06	0	MND	3,66E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 8** Waste production of 1 m<sup>2</sup> of DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey.

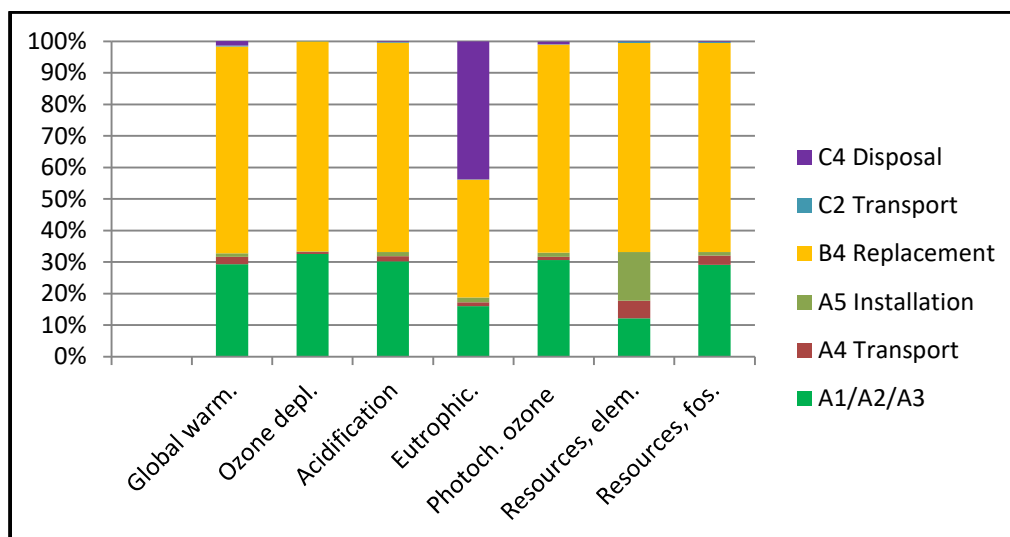
#### 4. INTERPRETATION OF RESULTS

As we can see in Figures 13 and 14, the impact of the life cycle of DANOPOL HS 1.5 (1.06x20) and DANOPOL HS 1.5 (1.06x20) Dark Grey is dominated by the Replacement stage (B4) for most of the impact indicators. This is due to the fact that during the RSL of the building (90 years) two replenishments of the PVC sheet are required. Indeed, this stage determines between 67% (ozone depletion) and 37% (eutrophication) of the total life cycle impact.

The next stage with the highest impact is the product stage (A1-A3), which represents between 33% (Ozone layer depletion) and 12% (Abiotic resources depletion, elements) of the whole impact of the life cycle. Transport of the product to the customer (A4) represents between 6% (Abiotic resources depletion, elements) and 0% (Ozone layer depletion) of the whole impact. Construction/installation stage (A5) represents between 15% (Abiotic resources depletion, elements) due to welding, and 0% (Ozone layer depletion) of the whole impact. Waste deposition to landfill (C4) represents between 44% (Eutrophication) and 0% (Abiotic resources depletion, elements and energy, Acidification and Ozone layer depletion).

Impact category	A1/A2/A3	A4 Transport	A5 Installation	B4 Replacement	C2 Transport	C4 Disposal
Global warming (kg CO <sub>2</sub> eq.)	29,3%	2,3%	1,2%	65,6%	0,3%	1,4%
Ozone layer depletion (kg CFC-11 eq.)	32,6%	0,6%	0,2%	66,6%	0,1%	0,0%
Acidification of soil and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	30,2%	1,6%	1,4%	66,4%	0,2%	0,2%
Eutrophication (Kg PO <sub>4</sub> <sup>3-</sup> -eq/m <sup>2</sup> )	16,0%	1,2%	1,5%	37,4%	0,1%	43,8%
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	30,6%	1,0%	1,4%	66,0%	0,1%	0,8%
Depletion of abiotic resources, elements (Kg Sb-eq)	12,1%	5,6%	15,5%	66,3%	0,5%	0,1%
Depletion of abiotic resources, fossil (MJ)	29,1%	2,9%	1,2%	66,3%	0,3%	0,2%

**Table 10** Potential Environmental impact of 1 m<sup>2</sup> of DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey, in %.



**Figure 5** Contribution of the different life cycle stages to the environmental impact of one m<sup>2</sup> of DANOPOL HS 1.5 (1,80x15) and DANOPOL HS 1.5 (1,80x15) Dark Grey.

## 5. DIFFERENCES WITH OTHER VERSIONS OF THE EPD®

This EPD® is the first version, so no older versions exist.

## 6. VERIFICATION

CEN standard EN 15804 serves as core PCR	
Product Category Rule (PCR) review was conducted by	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>
Independent verification of the declaration and data, according to ISO 14025:2010	External EPD® verification
Third party verifier	TECNALIA R&I Certificación (accreditation no. 125/C-PR283 by ENAC) Name of the verifier: Patxi Hernández
Accredited or approved by	The International EPD System®, Operated by EPD International AB <a href="http://www.environdec.com">www.environdec.com</a>  Sweden

## 7. REFERENCES

- GENERAL PROGRAMME INSTRUCTIONS for Environmental Product Declarations, EPD. Version 2.01 updated in 18-09-2013
- ISO 14025:2010 Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures
- ISO 14040: Environmental management-Life Cycle Assessment-Principles and framework (2006)
- ISO 14044: Environmental management-Life Cycle Assessment-Requirements and guidelines (2006)



- PCR: Flexible sheets for waterproofing - bitumen , plastic or rubber sheets for roof waterproofing (2014:12) version 1.0
- Requirements for Environmental Product Declarations. MSR 1992:2 Rev 2009. Swedish Environmental Management Council
- UNE-EN 15804: Sustainability in construction. Environmental Product Declarations (2012)

## 8. ENVIRONMENTAL PERFORMANCE OF OTHER DANOPOL RANGES

In this point it is indicated the environmental performance of the next DANOPOL ranges:

- DANOPOL 1.2 FV and 1.2 FV NI
- DANOPOL 1.2 HS (25x1,06) and 1.2 HS (25x1,06) Dark Grey. Includes verde
- DANOPOL 1.2 HS (1,80x20) and 1.2 HS (1,80x20) Dark Grey
- DANOPOL 1.2 HS Blanco
- DANOPOL 1.2 HS DW
- DANOPOL 1.5 FV and 1.5 FV NI
- DANOPOL HS 1.5 (1,06x20) and HS 1.5 (1,06x20) Dark Grey
- DANOPOL 1.8 FV
- DANOPOL 1.8 HS (1,80x13)

**It has been assumed the same hypothesis and limits of the system than for DANOPOL HS 1.5 (1,80x15),** following *PCR* Flexible sheets for waterproofing - bitumen, plastic or rubber sheets 2014:12 principles.

### 8.1 MATERIALS AND CHEMICAL SUBSTANCES CONTENT

Material (g/m <sup>2</sup> )	DANOPOL 1.2 FV and 1.2 FV NI	DANOPOL 1.2 HS (25x1,06) and 1.2 HS (1,06x25) Dark Grey	DANOPOL 1.2 HS (1,80x20) and 1.2 HS (1,80x20) Dark Grey	DANOPOL 1.2 HS BLANCO	DANOPOL 1.2 HS DW
Glass fibre membrane	35	0	0	0	0
PET fibre membrane	0	93	93	93	93
Upper PVC	609	609	609	609	609
Lower PVC	457	457	457	457	457
Recycled lower PVC	457	457	457	457	457
<b>Total</b>	<b>1558</b>	<b>1616</b>	<b>1616</b>	<b>1616</b>	<b>1616</b>

**Table 11** Material content of the product for the indicated ranges.

Material (g/m <sup>2</sup> )	DANOPOL 1.5 FV and 1.5 FV NI	DANOPOL HS 1.5 (1,06X20) and HS 1.5 (1,06X20) Dark Grey	DANOPOL 1.8 FV	DANOPOL 1.8 HS (1,80X13)
Glass fibre membrane	35	0	35	0
PET fibre membrane	0	93	0	93
Upper PVC	761	761	914	914
Lower PVC	571	571	685	685
Recycled lower PVC	571	571	685	685
<b>Total</b>	<b>1938</b>	<b>1996</b>	<b>2319</b>	<b>2377</b>

**Table 12** Material content of the product for the indicated ranges.

## 8.2 HYPHOTES APPLIED TO A4 MODULE TRANSPORT OF THE PRODUCT

RANGE	TYPE	PARAMETER	UNIT (EXPRESSED BY FUNCTIONAL UNIT)
<b>DANOPOL 1.2 FV and 1.2 FV NI</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	403 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1.66 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	1.005 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1.66 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL 1.2 HS (25x1,06) and 1.2 HS (1,06x25) Dark Grey</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	1.535 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	64 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL 1.2 HS (1,80x20) and 1.2 HS (1,80x20) Dark Grey</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	622 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)

	TYPE	PARAMETER	UNIT (EXPRESSED BY FUNCTIONAL UNIT)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	924 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL 1.2 HS BLANCO</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	552 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	11.157 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL 1.8 HS (1,80X13)</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	622 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	924 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	1,72 Kg/m <sup>2</sup> (with packaging)

RANGE	TYPE	PARAMETER	UNIT (EXPRESSED BY FUNCTIONAL UNIT)
<b>DANOPOL 1.5 FV and 1.5 FV NI</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	553 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,04 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	1.425 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,04 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL HS 1.5 (1,06X20) and HS 1.5 (1,06X20) Dark Grey</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	1.257 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,10 Kg/m <sup>2</sup> (packaging included)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	52 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,10 Kg/m <sup>2</sup> (packaging included)
<b>DANOPOL 1.8 FV</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	347 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,42 Kg/m <sup>2</sup> (packaging included)

	TYPE	PARAMETER	UNIT (EXPRESSED BY FUNCTIONAL UNIT)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	99 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,42 Kg/m <sup>2</sup> (with packaging)
<b>DANOPOL 1.8 HS (1,80X13)</b>	Truck	Fuel consumption of the vehicle, type of vehicle used for the transportation	>32 Tn truck. Fuel consumption: 31,1 l/100 Km
		Distance	2.140 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,48 Kg/m <sup>2</sup> (with packaging)
	Boat	Fuel consumption of the vehicle, type of vehicle used for the transportation	Transoceanic ship. Fuel consumption: 0.14 L/100 TnKm
		Distance	4 Km
		Capacity use (including empty returns)	>95%
		Density of the transported products	2,48 Kg/m <sup>2</sup> (with packaging)

**Table 13** Hypotheses applied to module A4 Transport of the product, for the indicated product ranges.

### 8.3 HYPHOTHESIS APPLIED TO MODULE C END OF LIFE

Here the main hypothesis and parameters applied to the calculation of module C4 Disposal. Hypothesis applied to modules C1, C2 and C3 have been explained before, since they are the same for all DANOPOL product ranges.

Range	Collection process specified by type	Recovery System specified by type	Disposal specified by type	Assumptions for scenario development (i.e. transport)
DANOPOL 1.2 FV and 1.2 FV NI	3,52 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	3,52 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.2 HS (1,06X25) and HS (1,06X25) Dark Grey	4,33 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	4,33 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.2 HS (1,80X20) and 1,2 HS (1,80X20) Dark Grey	3,55 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	3,55 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.2 HS Blanco	3,55 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	3,55 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.2 HS DW	3,69 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	3,69 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.5 FV and 1.5 FV NI	4,35 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	4,35 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL HS 1.5 (1,05X20) and HS 1.5 (1,06X20) Dark Grey	4,33 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	4,33 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL HS 1.5 (1,80X15) and HS 1.5 (1,80X15)	4,33 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	4,33 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.8 FV	5,02 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	5,02 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km
DANOPOL 1.8 HS (1,80X13)	5,14 Kg (mixed with the other construction waste)	Any reuse, recycling or energy valorisation	5,14 Kg to landfill	16-32 truck with a fuel consumption of 25 litres/100 km. Distance to landfill: 50 km

**Table 14** Hypothesis applied to module C End of Life, for all the indicated DANOPOL product ranges.

## 8.4 ENVIRONMENTAL PERFORMANCE RELATED INFORMATION

### ➤ DANOPOL 1.2 FV AND 1.2 FV NI

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	4,38	0,190	0,390	0	0	0	9,19	0	0	0	Not relevant	4,22E-02	0,195	0	MND	14,4
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,48E-06	1,39E-08	1,78E-08	0	0	0	2,99E-06	0	0	0	Not relevant	2,96E-09	1,43E-09	0	MND	4,51E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,24E-02	6,89E-04	2,12E-03	0	0	0	4,72E-02	0	0	0	Not relevant	1,32E-04	1,56E-04	0	MND	7,28E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3-</sup> -eq/m <sup>2</sup> )	3,60E-03	1,56E-04	8,14E-04	0	0	0	7,91E-03	0	0	0	Not relevant	3,11E-05	9,18E-03	0	MND	2,17E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,52E-03	2,94E-05	1,59E-04	0	0	0	3,18E-03	0	0	0	Not relevant	5,57E-06	3,90E-05	0	MND	4,94E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	1,83E-06	5,91E-07	3,16E-06	0	0	0	6,24E-06	0	0	0	Not relevant	1,06E-07	1,73E-08	0	MND	1,19E-05
Depletion of abiotic resources, fossil (MJ)	51,8	2,92	5,18	0	0	0	110	0	0	0	Not relevant	0,625	0,327	0	MND	170

**Table 15** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 FV and 1.2 FV NI.



Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	21,3	2,92	5,18	0	0	0	42,7	0	0	0	Not relevant	0,625	0,327	0	MND	<b>73,1</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	30,5	0	0	0	0	0	60,9	0	0	0	Not relevant	0	0	0	MND	<b>91,4</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	51,8	2,92	5,18	0	0	0	104	0	0	0	Not relevant	0,625	0,327	0	MND	<b>164</b>
Use of secondary material (Kg/m2)	1,67E-02	0	0	0	0	0	3,33E-02	0	0	0	Not relevant	0	0	0	MND	<b>5,00E-02</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	4,14E+06	8,50E+05	9,72E+06	0	0	0	8,27E+06	0	0	0	Not relevant	3,27E+04	5,04E+04	0	MND	<b>2,31E+07</b>

**Table 16** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 FV and 1.2 FV NI.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	1,86E-05	1,56E-06	5,62E-06	0	0	0	5,15E-05	0	0	0	0	7,34E-07	3,76E-07	0	MND	7,84E-05
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,506	9,16E-02	3,37E-02	0	0	0	1,26	0	0	0	0	3,60E-02	3,51	0	MND	5,44
Radioactive waste disposed (Kg/m <sup>2</sup> )	5,59E-05	7,48E-06	5,08E-06	0	0	0	1,37E-04	0	0	0	0	3,63E-06	1,75E-06	0	MND	2,11E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 17** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 FV and 1.2 FV NI.

➤ DANOPOL 1.2 HS (1,06x25) AND 1.2 HS (1,06x25) DARK GREY

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	4,59	0,295	0,285	0	0	0	10,3	0	0	0	Not relevant	4,25E-02	0,264	0	MND	15,8
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,49E-06	2,15E-08	1,26E-08	0	0	0	3,04E-06	0	0	0	Not relevant	2,97E-09	1,88E-09	0	MND	4,57E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,32E-02	9,92E-04	1,63E-03	0	0	0	5,17E-02	0	0	0	Not relevant	1,33E-04	2,03E-04	0	MND	7,79E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	3,78E-03	2,37E-04	5,64E-04	0	0	0	9,15E-03	0	0	0	Not relevant	3,13E-05	1,26E-02	0	MND	2,64E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,57E-03	4,27E-05	1,13E-04	0	0	0	3,46E-03	0	0	0	Not relevant	5,60E-06	5,26E-05	0	MND	5,24E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	2,79E-06	9,28E-07	4,42E-06	0	0	0	1,63E-05	0	0	0	Not relevant	1,07E-07	2,34E-08	0	MND	2,46E-05
Depletion of abiotic resources, fossil (MJ)	57,4	4,53	3,71	0	0	0	131	0	0	0	Not relevant	0,629	0,432	0	MND	198

**Table 18** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,06X25) and 1.2 HS (1,06X25) DARK GREY.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	30,1	4,53	3,71	0	0	0	76,4	0	0	0	Not relevant	0,629	0,432	0	MND	<b>116</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	27,3	0	0	0	0	0	54,6	0	0	0	Not relevant	0	0	0	MND	<b>81,9</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	57,4	4,53	3,71	0	0	0	131	0	0	0	Not relevant	0,629	0,432	0	MND	<b>198</b>
Use of secondary material (Kg/m2)	0,509	0	0	0	0	0	1,02	0	0	0	Not relevant	0	0	0	MND	<b>1,53</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	3,74E+06	2,51E+05	2,95E+06	0	0	0	1,37E+07	0	0	0	Not relevant	3,27E+04	4,30E+04	0	MND	<b>2,07E+07</b>

**Table 19** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,06X25) and 1.2 HS (1,06X25) DARK GREY.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,53E-05	5,59E-06	1,07E-05	0	0	0	1,23E-04	0	0	0	0	7,38E-07	5,04E-07	0	MND	<b>1,86E-04</b>
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,534	0,360	0,159	0	0	0	2,11	0	0	0	0	3,62E-02	4,34	0	MND	<b>7,54</b>
Radioactive waste disposed (Kg/m <sup>2</sup> )	6,01E-05	2,64E-05	1,09E-05	0	0	0	1,95E-04	0	0	0	0	3,65E-06	2,31E-06	0	MND	<b>2,98E-04</b>
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	<b>0,156</b>
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>

**Table 20** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,06X25) and 1.2 HS (1,06X25) DARK GREY.

➤ DANOPOL 1.2 HS (1,80x20) AND 1.2 HS (1,80X20) DARK GREY

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	4,58	0,129	0,224	0	0	0	9,87	0	0	0	Not relevant	4,25E-02	0,215	0	MND	15,1
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,49E-06	9,32E-09	9,62E-09	0	0	0	3,01E-06	0	0	0	Not relevant	2,98E-09	1,57E-09	0	MND	4,52E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,32E-02	6,18E-04	1,31E-03	0	0	0	5,03E-02	0	0	0	Not relevant	1,33E-04	1,67E-04	0	MND	7,57E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	3,77E-03	1,17E-04	4,26E-04	0	0	0	8,63E-03	0	0	0	Not relevant	3,14E-05	1,03E-02	0	MND	2,33E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,57E-03	2,55E-05	8,65E-05	0	0	0	3,37E-03	0	0	0	Not relevant	5,61E-06	4,30E-05	0	MND	5,10E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	2,77E-06	3,78E-07	3,91E-06	0	0	0	1,41E-05	0	0	0	Not relevant	1,07E-07	1,96E-08	0	MND	2,13E-05
Depletion of abiotic resources, fossil (MJ)	57,3	1,97	2,96	0	0	0	125	0	0	0	Not relevant	0,630	0,362	0	MND	188

**Table 21** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,80X20) and 1.2 HS (1,80X20) Dark Grey.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	25,0	1,97	2,96	0	0	0	50,0	0	0	0	Not relevant	0,630	0,362	0	MND	<b>80,9</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	32,3	0	0	0	0	0	64,6	0	0	0	Not relevant	0	0	0	MND	<b>97,0</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	57,3	1,97	2,96	0	0	0	115	0	0	0	Not relevant	0,630	0,362	0	MND	<b>178</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	3,53E+06	1,26E+05	2,86E+06	0	0	0	1,30E+07	0	0	0	Not relevant	3,27E+04	4,17E+04	0	MND	<b>1,96E+07</b>

**Table 22** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,80X20) and 1.2 HS (1,80X20) Dark Grey.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,52E-05	2,40E-06	7,77E-06	0	0	0	1,11E-04	0	0	0	0	7,39E-07	4,23E-07	0	MND	<b>1,68E-04</b>
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,526	0,146	0,140	0	0	0	1,62	0	0	0	0	3,63E-02	3,54	0	MND	<b>6,01</b>
Radioactive waste disposed (Kg/m <sup>2</sup> )	5,95E-05	1,14E-05	8,23E-06	0	0	0	1,58E-04	0	0	0	0	3,65E-06	1,94E-06	0	MND	<b>2,43E-04</b>
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	<b>0,156</b>
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>

**Table 23** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS (1,80x20) and 1.2 HS (1,80X20) Dark Grey.



➤ **DANOPOL 1.2 HS BLANCO**

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	4,58	0,223	0,224	0	0	0	10,1	0	0	0	Not relevant	4,25E-02	0,215	0	MND	<b>15,4</b>
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,49E-06	1,50E-08	9,62E-09	0	0	0	3,02E-06	0	0	0	Not relevant	2,98E-09	1,57E-09	0	MND	<b>4,54E-06</b>
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,32E-02	3,03E-03	1,31E-03	0	0	0	5,51E-02	0	0	0	Not relevant	1,33E-04	1,67E-04	0	MND	<b>8,30E-02</b>
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	3,77E-03	3,50E-04	4,26E-04	0	0	0	9,09E-03	0	0	0	Not relevant	3,14E-05	1,03E-02	0	MND	<b>2,40E-02</b>
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,57E-03	1,17E-04	8,65E-05	0	0	0	3,55E-03	0	0	0	Not relevant	5,61E-06	4,30E-05	0	MND	<b>5,37E-03</b>
Depletion of abiotic resources, elements (Kg Sb-eq)	2,77E-06	3,64E-07	3,91E-06	0	0	0	1,41E-05	0	0	0	Not relevant	1,07E-07	1,96E-08	0	MND	<b>2,13E-05</b>
Depletion of abiotic resources, fossil (MJ)	57,3	3,27	2,96	0	0	0	127	0	0	0	Not relevant	0,630	0,362	0	MND	<b>192</b>

**Table 24** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS BLANCO.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	25,0	3,27	2,96	0	0	0	50,0	0	0	0	Not relevant	0,630	0,362	0	MND	<b>82,2</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	32,3	0	0	0	0	0	64,6	0	0	0	Not relevant	0	0	0	MND	<b>97,0</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	57,3	3,27	2,96	0	0	0	115,0	0	0	0	Not relevant	0,630	0,362	0	MND	<b>179</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	3,53E+06	2,44E+05	2,86E+06	0	0	0	1,33E+07	0	0	0	Not relevant	3,27E+04	4,17E+04	0	MND	<b>2,00E+07</b>

**Table 25** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS BLANCO.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,52E-05	3,65E-06	7,77E-06	0	0	0	1,13E-04	0	0	0	0	7,39E-07	4,23E-07	0	MND	<b>1,71E-04</b>
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,526	0,132	0,140	0	0	0	1,60	0	0	0	0	3,63E-02	3,54	0	MND	<b>5,97</b>
Radioactive waste disposed (Kg/m <sup>2</sup> )	5,95E-05	1,86E-05	8,23E-06	0	0	0	1,73E-04	0	0	0	0	3,65E-06	1,94E-06	0	MND	<b>2,65E-04</b>
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	<b>0,156</b>
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>

**Table 26** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS BLANCO.

➤ DANOPOL 1.2 HS DW

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	4,58	0,190	0,130	0	0	0	9,81	0	0	0	Not relevant	4,37E-02	0,216	0	MND	15,0
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,49E-06	1,31E-08	5,94E-09	0	0	0	3,01E-06	0	0	0	Not relevant	3,06E-09	1,66E-09	0	MND	4,52E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,32E-02	2,13E-03	7,08E-04	0	0	0	5,21E-02	0	0	0	Not relevant	1,37E-04	1,72E-04	0	MND	7,84E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3-</sup> -eq/m <sup>2</sup> )	3,77E-03	2,64E-04	2,71E-04	0	0	0	8,61E-03	0	0	0	Not relevant	3,22E-05	1,03E-02	0	MND	2,33E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,57E-03	8,24E-05	5,32E-05	0	0	0	3,41E-03	0	0	0	Not relevant	5,77E-06	4,33E-05	0	MND	5,17E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	2,77E-06	3,79E-07	1,05E-06	0	0	0	8,40E-06	0	0	0	Not relevant	1,10E-07	2,06E-08	0	MND	1,27E-05
Depletion of abiotic resources, fossil (MJ)	57,3	2,82	1,73	0	0	0	124	0	0	0	Not relevant	0,647	0,383	0	MND	187

**Table 27** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS DW.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,144	0	0	0	0	0	0,287	0	0	0	Not relevant	0	0	0	MND	<b>0,431</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	25,0	2,82	1,73	0	0	0	50,0	0	0	0	Not relevant	0,647	0,647	0	MND	<b>80,8</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	32,3	0	0	0	0	0	64,6	0	0	0	Not relevant	0	0	0	MND	<b>97,0</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	57,3	2,82	1,73	0	0	0	115	0	0	0	Not relevant	0,647	0,647	0	MND	<b>178</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	3,53E+06	2,02E+05	7,15E+05	0	0	0	8,89E+06	0	0	0	Not relevant	3,36E+04	3,36E+04	0	MND	<b>1,34E+07</b>

**Table 28** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS DW.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,52E-05	3,23E-06	5,62E-06	0	0	0	1,08E-04	0	0	0	0	7,60E-07	4,46E-07	0	MND	1,63E-04
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,526	0,141	3,37E-02	0	0	0	1,40	0	0	0	0	3,73E-02	3,68	0	MND	5,82
Radioactive waste disposed (Kg/m <sup>2</sup> )	5,95E-05	1,61E-05	5,08E-06	0	0	0	1,61E-04	0	0	0	0	3,76E-06	2,05E-06	0	MND	2,48E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 29** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.2 HS DW.

➤ DANOPOL 1.5 FV AND DANOPOL 1.5 FV NI

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	5,43	0,272	0,132	0	0	0	11,7	0	0	0	Not relevant	5,21E-02	0,243	0	MND	17,8
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,85E-06	1,81E-08	6,02E-09	0	0	0	3,75E-06	0	0	0	Not relevant	3,65E-09	1,76E-09	0	MND	5,63E-06
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,78E-02	4,14E-03	7,18E-04	0	0	0	6,53E-02	0	0	0	Not relevant	1,63E-04	1,93E-04	0	MND	9,84E-02
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	4,43E-03	4,60E-04	2,75E-04	0	0	0	1,03E-02	0	0	0	Not relevant	3,84E-05	1,14E-02	0	MND	2,69E-02
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,89E-03	1,58E-04	5,39E-05	0	0	0	4,20E-03	0	0	0	Not relevant	6,87E-06	4,86E-05	0	MND	6,36E-03
Depletion of abiotic resources, elements (Kg Sb-eq)	2,13E-06	3,77E-07	1,07E-06	0	0	0	7,15E-06	0	0	0	Not relevant	1,31E-07	2,14E-08	0	MND	1,09E-05
Depletion of abiotic resources, fossil (MJ)	64,0	3,96	1,75	0	0	0	139	0	0	0	Not relevant	0,772	0,405	0	MND	210

**Table 30** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.5 FV and DANOPOL 1.5 FV NI.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	<b>0,539</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	<b>0,539</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	25,9	3,96	1,75	0	0	0	51,9	0	0	0	Not relevant	0,772	0,405	0	MND	<b>84,7</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	38,1	0	0	0	0	0	76,1	0	0	0	Not relevant	0	0	0	MND	<b>114</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	64,0	3,96	1,75	0	0	0	128	0	0	0	Not relevant	0,772	0,405	0	MND	<b>199</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	4,03E+06	3,02E+05	7,25E+05	0	0	0	1,01E+07	0	0	0	Not relevant	4,01E+04	4,54E+04	0	MND	<b>1,53E+07</b>

**Table 31** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.5 FV and DANOPOL 1.5 FV NI.



Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	2,24E-05	4,33E-06	5,70E-06	0	0	0	6,49E-05	0	0	0	0	9,06E-07	4,67E-07	0	MND	9,87E-05
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,624	0,133	3,42E-02	0	0	0	1,58	0	0	0	0	4,45E-02	4,36	0	MND	6,78
Radioactive waste disposed (Kg/m <sup>2</sup> )	6,78E-05	2,24E-05	5,15E-06	0	0	0	1,91E-04	0	0	0	0	4,48E-06	2,17E-06	0	MND	2,93E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 32** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.5 FV and DANOPOL 1.5 FV NI.

➤ **DANOPOL HS 1.5 (1,06X20) AND HS 1.5 (1,06X20) DARK GREY**

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	5,64	0,295	0,293	0	0	0	12,4	0	0	0	Not relevant	5,24E-02	0,264	0	MND	<b>19,0</b>
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	1,85E-06	2,15E-08	1,27E-08	0	0	0	3,78E-06	0	0	0	Not relevant	3,67E-09	1,88E-09	0	MND	<b>5,67E-06</b>
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	2,86E-02	9,93E-04	1,68E-03	0	0	0	6,25E-02	0	0	0	Not relevant	1,64E-04	2,03E-04	0	MND	<b>9,41E-02</b>
Eutrophication (Kg PO <sub>4</sub> <sup>3-</sup> -eq/m <sup>2</sup> )	4,60E-03	2,37E-04	5,73E-04	0	0	0	1,08E-02	0	0	0	Not relevant	3,86E-05	1,26E-02	0	MND	<b>2,89E-02</b>
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	1,94E-03	4,27E-05	1,16E-04	0	0	0	4,20E-03	0	0	0	Not relevant	6,91E-06	5,26E-05	0	MND	<b>6,36E-03</b>
Depletion of abiotic resources, elements (Kg Sb-eq)	3,07E-06	9,28E-07	4,43E-06	0	0	0	1,68E-05	0	0	0	Not relevant	1,32E-07	2,34E-08	0	MND	<b>2,54E-05</b>
Depletion of abiotic resources, fossil (MJ)	69,6	4,53	3,85	0	0	0	156	0	0	0	Not relevant	0,776	0,432	0	MND	<b>235</b>

**Table 33** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL HS 1.5 (1,06X20) and HS 1.5 (1,06X20) Dark Grey.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	<b>0,539</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,180	0	0	0	0	0	0,359	0	0	0	Not relevant	0	0	0	MND	<b>0,539</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	29,7	4,53	3,85	0	0	0	59,4	0	0	0	Not relevant	0,776	0,432	0	MND	<b>98,6</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	39,9	0	0	0	0	0	79,8	0	0	0	Not relevant	0	0	0	MND	<b>120</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	69,6	4,53	3,85	0	0	0	139	0	0	0	Not relevant	0,776	0,432	0	MND	<b>218</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	4,25E+06	2,83E+05	3,24E+06	0	0	0	1,55E+07	0	0	0	Not relevant	4,03E+04	5,04E+04	0	MND	<b>2,34E+07</b>

**Table 34** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL HS 1.5 (1,06X20) and HS 1.5 (1,06X20) Dark Grey

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	4,90E-05	5,59E-06	1,07E-05	0	0	0	1,31E-04	0	0	0	0	9,11E-07	5,04E-07	0	MND	1,97E-04
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,643	0,360	0,160	0	0	0	2,33	0	0	0	0	4,47E-02	4,34	0	MND	7,88
Radioactive waste disposed (Kg/m <sup>2</sup> )	7,14E-05	2,64E-05	1,09E-05	0	0	0	2,17E-04	0	0	0	0	4,50E-06	2,31E-06	0	MND	3,33E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 35** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL HS 1.5 (1,06X20) and HS 1.5 (1,06X20) Dark Grey

➤ **DANOPOL 1.8 FV**

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	6,49	9,51E-02	0,134	0	0	0	13,4	0	0	0	Not relevant	6,20E-02	0,291	0	MND	<b>20,5</b>
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	2,22E-06	6,93E-09	6,10E-09	0	0	0	4,46E-06	0	0	0	Not relevant	4,34E-09	1,97E-09	0	MND	<b>6,70E-06</b>
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	3,32E-02	3,45E-04	7,27E-04	0	0	0	6,86E-02	0	0	0	Not relevant	1,94E-04	2,23E-04	0	MND	<b>0,103</b>
Eutrophication (Kg PO <sub>4</sub> <sup>3-</sup> -eq/m <sup>2</sup> )	5,27E-03	7,81E-05	2,79E-04	0	0	0	1,12E-02	0	0	0	Not relevant	4,57E-05	1,37E-02	0	MND	<b>3,06E-02</b>
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	2,26E-03	1,47E-05	5,47E-05	0	0	0	4,66E-03	0	0	0	Not relevant	8,17E-06	5,79E-05	0	MND	<b>7,06E-03</b>
Depletion of abiotic resources, elements (Kg Sb-eq)	2,44E-06	2,95E-07	1,08E-06	0	0	0	7,63E-06	0	0	0	Not relevant	1,56E-07	2,41E-08	0	MND	<b>1,16E-05</b>
Depletion of abiotic resources, fossil (MJ)	76,3	1,46	1,77	0	0	0	159	0	0	0	Not relevant	0,918	0,453	0	MND	<b>240</b>

**Table 36** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.8 FV.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,215	0	0	0	0	0	0,431	0	0	0	Not relevant	0	0	0	MND	<b>0,646</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,215	0	0	0	0	0	0,431	0	0	0	Not relevant	0	0	0	MND	<b>0,646</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	30,6	1,46	1,77	0	0	0	61,2	0	0	0	Not relevant	0,918	0,453	0	MND	<b>96,5</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	45,7	0	0	0	0	0	91,4	0	0	0	Not relevant	0	0	0	MND	<b>137</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	76,3	1,46	1,77	0	0	0	153	0	0	0	Not relevant	0,918	0,453	0	MND	<b>233,5</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	4,79E+06	9,17E+04	7,35E+05	0	0	0	1,12E+07	0	0	0	Not relevant	4,77E+04	5,35E+04	0	MND	<b>1,69E+07</b>

**Table 37** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.8 FV.

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	2,64E-05	1,80E-06	5,77E-06	0	0	0	6,79E-05	0	0	0	0	1,08E-06	5,23E-07	0	MND	<b>1,03E-04</b>
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,742	0,115	3,47E-02	0	0	0	1,78	0	0	0	0	5,29E-02	5,02	0	MND	<b>7,75</b>
Radioactive waste disposed (Kg/m <sup>2</sup> )	8,07E-05	8,49E-06	5,22E-06	0	0	0	1,89E-04	0	0	0	0	5,33E-06	2,43E-06	0	MND	<b>2,91E-04</b>
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	<b>0,156</b>
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	<b>0</b>

**Table 38** Other Environmental information of the life cycle of one m<sup>2</sup> of DANOPOL 1.8 FV.

➤ DANOPOL 1.8 HS (1,80X13)

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Global warming (Kg CO <sub>2</sub> -eq /m <sup>2</sup> )	6,70	0,592	0,228	0	0	0	15,0	0	0	0	Not relevant	6,23E-02	0,312	0	MND	<b>22,9</b>
Ozone layer depletion (Kg CFC 11-eq/m <sup>2</sup> )	2,22E-06	4,32E-08	9,78E-09	0	0	0	4,55E-06	0	0	0	Not relevant	4,36E-09	2,18E-09	0	MND	<b>6,84E-06</b>
Acidification of land and water (Kg SO <sub>2</sub> -eq/m <sup>2</sup> )	3,40E-02	1,97E-03	1,33E-03	0	0	0	7,46E-02	0	0	0	Not relevant	1,95E-04	2,39E-04	0	MND	<b>0,112</b>
Eutrophication (Kg PO <sub>4</sub> <sup>3</sup> -eq/m <sup>2</sup> )	5,44E-03	4,73E-04	4,33E-04	0	0	0	1,27E-02	0	0	0	Not relevant	4,59E-05	1,49E-02	0	MND	<b>3,40E-02</b>
Photochemical ozone creation (Kg ethilene-eq/m <sup>2</sup> )	2,31E-03	8,48E-05	8,81E-05	0	0	0	4,97E-03	0	0	0	Not relevant	8,21E-06	6,22E-05	0	MND	<b>7,52E-03</b>
Depletion of abiotic resources, elements (Kg Sb-eq)	3,38E-06	1,87E-06	3,94E-06	0	0	0	1,84E-05	0	0	0	Not relevant	1,56E-07	2,72E-08	0	MND	<b>2,77E-05</b>
Depletion of abiotic resources, fossil (MJ)	81,9	9,09	3,00	0	0	0	188	0	0	0	Not relevant	0,922	0,502	0	MND	<b>283</b>

**Table 39** Environmental impact of the life cycle of one m<sup>2</sup> of DANOPOL 1.8 HS (1,80X13).



Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ/m2)	0,215	0	0	0	0	0	0,431	0	0	0	Not relevant	0	0	0	MND	<b>0,646</b>
Use of renewable primary energy resources used as raw materials (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	0,215	0	0	0	0	0	0,431	0	0	0	Not relevant	0	0	0	MND	<b>0,646</b>
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ/m2)	34,4	9,09	3,00	0	0	0	68,7	0	0	0	Not relevant	0,922	0,502	0	MND	<b>117</b>
Use of non-renewable primary energy resources used as raw materials (MJ/m2)	47,5	0	0	0	0	0	95,1	0	0	0	Not relevant	0	0	0	MND	<b>143</b>
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)(MJ/m2)	81,9	9,09	3,00	0	0	0	167	0	0	0	Not relevant	0,922	0,502	0	MND	<b>262</b>
Use of secondary material (Kg/m2)	5,00E-02	0	0	0	0	0	0,100	0	0	0	Not relevant	0	0	0	MND	<b>0,150</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of renewable secondary fuels (MJ/m2)	0	0	0	0	0	0	0	0	0	0	Not relevant	0	0	0	MND	<b>0</b>
Use of net fresh water (m3/m2)	4,78E+06	4,81E+05	2,85E+06	0	0	0	1,62E+07	0	0	0	Not relevant	4,11E+04	5,28E+04	0	MND	<b>2,44E+07</b>

**Table 40** Use of natural resources of the life cycle of one m<sup>2</sup> of DANOPOL 1.8 HS (1,80X13).

Indicator	Product stage	Construction stage		Use stage							End of life stage				D Reuse, recovery and recycling potential	Total
	A1/A2/A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal		
Hazardous waste disposed (Kg/m <sup>2</sup> )	5,30E-05	1,12E-05	7,93E-06	0	0	0	1,44E-04	0	0	0	0	1,08E-06	5,85E-07	0	MND	2,18E-04
Non-hazardous waste disposed (Kg/m <sup>2</sup> )	0,762	0,724	0,141	0	0	0	3,25	0	0	0	0	5,32E-02	5,15	0	MND	10,1
Radioactive waste disposed (Kg/m <sup>2</sup> )	8,43E-05	5,29E-05	8,37E-06	0	0	0	2,91E-04	0	0	0	0	5,35E-06	2,69E-06	0	MND	4,45E-04
Materials for reuse (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0
Materials for recycling (Kg/m <sup>2</sup> )	1,58E-05	0	5,21E-02	0	0	0	0,104	0	0	0	0	0	0	0	MND	0,156
Materials for energy valorisation (Kg/m <sup>2</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MND	0

**Table 41** Other Environmental information of the life cycle of DANOPOL 1.8 HS (1,80X13).