

**PROGRAMME:**

The International EPD® System,  
[www.environdec.com](http://www.environdec.com)

**PROGRAMME OPERATOR:**

EPD International AB

**REGISTRATION CODE**

EPD-IES-0020894

**TYPE OF EPD:**

EPD OF MULTIPLE PRODUCTS,  
BASED ON THE AVERAGE RESULTS  
OF THE PRODUCT GROUP

**REGISTRATION DATE**

2025/08/11

**UNTIL DATE**

2030/08/11

**EPD VERSION**

1

# SOPRAGUARD

One, Geo, Top, Life, Face in, Face out, Stick

ENVIRONMENTAL PRODUCT DECLARATION

waterproofing



This Environmental Product Declaration has been developed in accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 standards



An EPD may be updated or republished if conditions change. To find the latest version of the EPD and to confirm its validity, see [www.environdec.com](http://www.environdec.com)

# General Information

EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden,

Website: [www.environdec.com](http://www.environdec.com), E-mail: [support@environdec.com](mailto:support@environdec.com)

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

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

## ACCOUNTABILITIES FOR PCR, LCA AND INDEPENDENT, THIRD-PARTY VERIFICATION

### PRODUCT CATEGORY RULES (PCR)

PCR 2019:14 Construction products version 2.0.1 (EN 15804+A2) C-PCR-032 Flexible sheets for waterproofing (EN 17388:2024). Version: 2025-04-24.

PCR review was conducted by:

The Technical Committee of the International EPD System. See [www.environdec.com](http://www.environdec.com) for a list of members.

Review Chair: Rob Rouwette (chair), Noa Meron (co-chair).

The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).

### LIFE CYCLE ASSESSMENT (LCA)

LCA accountability: SGS TECNOS S.A.U.

### THIRD-PARTY VERIFICATION

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

Individual EPD verification with a pre-verified LCA/EPD tool

Third-party verifier: Marcel Gómez Ferrer from Marcel Gómez Consultoria Ambiental ([www.marcelgomez.com](http://www.marcelgomez.com));  
Tel: 0034 630 64 35 93; Email: [info@marcelgomez.com](mailto:info@marcelgomez.com)

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third-party verifier:

YES  NO





## The Company

### THE SOPREMA GROUP

An independent group since its inception in 1908, SOPREMA specializes in the design and implementation of cutting-edge waterproofing systems and thermal and acoustic insulation solutions, in line with the requirements of sustainable construction.

**With the collaboration of over 11,000 people worldwide and a turnover of 4.84 billion Euros in 2023, the SOPREMA Group has a global industrial and commercial presence, comprising 128 production plants, more than 120 branches, and over 70 distributors. It operates in 90 countries with 23 Research and Development centers, and has 48 technical training centers capable of passing on the technical expertise acquired over a century to new generations.**

The SOPREMA product range, the result of close collaboration between the marketing and Research and Development departments, is innovative and in perfect harmony with market needs and current standards. SOPREMA's success is based on a fundamental principle: focusing on ideas.

**SOPREMA's products and services aim to meet the needs of construction professionals, whether it be waterproofing with synthetic or bituminous membranes, thermal and acoustic insulation, liquid products, or civil engineering works – SOPREMA always has the solution.**

SOPREMA offers high-performance technological products, constantly optimized through Research and Development in an eco-design logic, boasting exceptional characteristics in terms of robustness, reliability, and longevity.

At SOPREMA, sustainability is an essential driver that propels us in two main aspects: developing high-energy efficiency products and adopting an approach oriented towards the life cycle analysis of our products. Our goal is to promote a renewed vision of construction, with more responsible and environmentally friendly practices.

#### HEADQUARTER

Soprema  
15 rue de Saint Nazaire  
67100 STRASBOURG - France  
[www.soprema.com](http://www.soprema.com)

#### PRODUCTION PLANT

Camí de Cal Font, 2-4-6, Polígono Industrial  
Laverno, Subirats  
08739 Barcelona - Spain

## Product Information

# SOPRAGUARD EPDM WATERPROOFING MEMBRANES

The **EPDM waterproofing membranes** from SOPRAGUARD are manufactured from a terpolymer elastomer widely used for waterproofing due to its excellent performance against atmospheric agents, acids and alkalis, ultraviolet rays, ozone, and more.

The combination of materials that make up the rubber compound is fed into an extruder, which heats the mixture to approximately 85°C.

This allows the material to be molded and stretched using rollers, with pressure adjusted to meet the required width and thickness parameters of the resulting sheets.

Subsequently, the sheets undergo a vulcanization process, during which a chemical reaction breaks the double bonds in the material, granting it enhanced resistance and flexibility.

This process enables the material to reach an elastic deformation of over 400%, allowing it to adapt to the shapes and contours of the surface to be waterproofed and to accommodate thermal expansion and contraction movements.

Sopraguard membranes are CE marked for their intended use.

## Products included in the EPD

The EPD corresponds to a virtual average product, calculated based on production volumes. The associated variability is set out in the additional information section.

### SOPRAGUARD ONE



Vulcanized synthetic EPDM rubber membrane with a smooth finish. designed for waterproofing.

#### APPLICATIONS

- + **Roofing:** all types of roofs, whether flat or sloped, industrial or commercial.

### SOPRAGUARD TOP

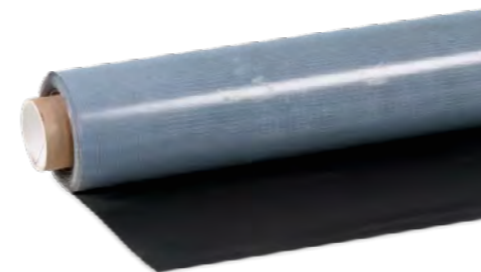


Vulcanized synthetic EPDM rubber membrane with an embossed finish, designed for waterproofing.

#### APPLICATIONS

- + **Roofing:** flat or sloped roofs, whether new or renovated, as well as walls, shower trays or water areas, slab edges, or other surfaces .

### SOPRAGUARD STICK



Self-adhesive waterproofing membrane made of vulcanized synthetic EPDM rubber with a factory applied dispersion adhesive to its surface.

#### APPLICATIONS

- + **Roofing:** new construction or renovation of: roofs, rain gutters, walls, parapet connections and others.

**Note:** for all the technical information, refer to the technical data sheet of the products.



## SOPRAGUARD FACE IN



Vulcanized synthetic EPDM rubber membrane with an embossed finish, designed for waterproofing. It serves as a waterproof barrier and functions as a vapor control layer.

### APPLICATIONS

- + **Facades:** facade applications and the interior side of window or door frames.

## SOPRAGUARD FACE OUT



Vulcanized synthetic EPDM rubber membrane with an embossed finish, designed for waterproofing. It serves as a waterproof barrier and functions as a vapor control layer.

### APPLICATIONS

- + **Facades:** facade applications and exterior window or door frames.

## SOPRAGUARD GEO



Vulcanized synthetic EPDM rubber membrane with a smooth finish, designed for waterproofing.

### APPLICATIONS

- + **Lining:** irrigation ponds, high-altitude reservoirs for artificial snow, large ornamental lakes, irrigation canals, tanks, forage covers, bio-purification systems, and other hydraulic construction applications.

## SOPRAGUARD LIFE

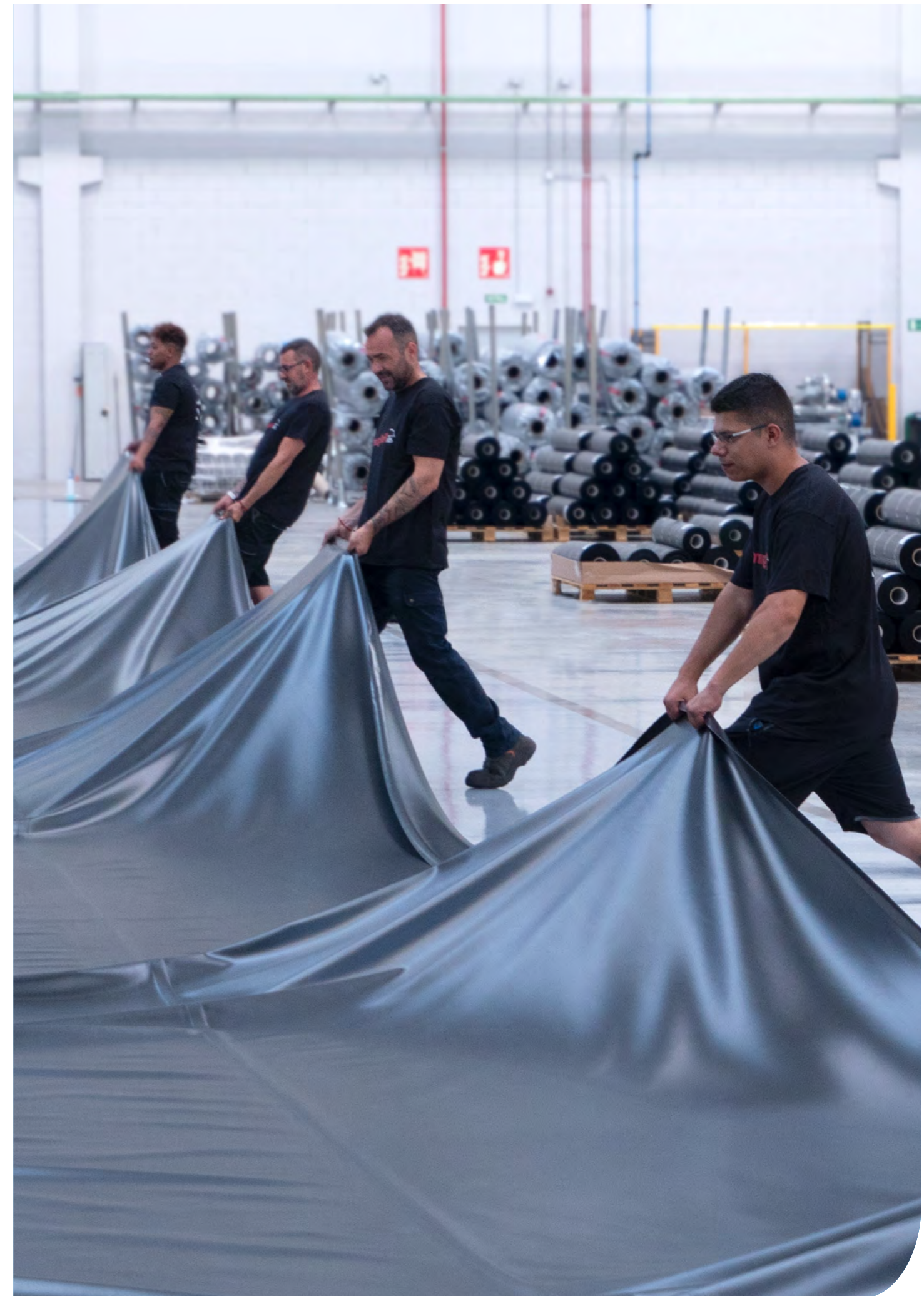


Vulcanized synthetic EPDM rubber membrane with an embossed finish, designed for waterproofing.

### APPLICATIONS

- + **Lining:** residential decorative ponds, naturalized swimming pools, streams, aquaculture, public fountains, and other applications.

**Note:** for all the technical information, refer to the technical data sheet of the products.



# Scope end type of EPD

System diagram of the processes included in the LCA, divided into life cycle stages and information modules as defined by EN 15804. This statement may not be comparable with those developed under other programs or based on different reference documents. In particular, it may not be

comparable with declarations not prepared according to EN 15804 (EN 15804:2012 + A2:2019/AC:2021). Similarly, environmental declarations may not be comparable if the data sources, information modules, or scenarios considered differ.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>GEOGRAPHY</b>																
SP	SP	SP	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
<b>SHARE OF PRIMARY DATA</b>																
8% GWP-GHG																
<b>VARIATIONS PRODUCTS</b>																
-10%/+15% <sup>1</sup>																
<b>VARIATIONS SITES</b>																
0%																
PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA, OF GWP GHG RESULTS FOR A1-A3											
Product manufacturing	Database	Ecoinvent v3.10	2023	Secondary data	0,00%											
Electricity generation for product manufacturing	Collected data	EPD owner	2023	Primary data	6,97%											
Raw material transportation	Collected data	EPD owner	2023	Primary data	0,30%											
Packaging production	Collected data	EPD owner	2023	Primary data	0,62%											
Other processes	Collected data	EPD owner	2023	Primary data	0,05%											
<b>Total share of primary data in GWP-GHG results for A1-A3</b>					<b>8%</b>											

1 - The deviation is calculated by comparing the maximum and minimum values with respect to the average value.

# LCA Information

## + TYPE OF EPD

Cradle to Grave + Module D

## + UN CPC

3480.Synthetic rubber and factice derived from oils.

## + FUNCTIONAL UNIT

1 m<sup>2</sup> of surface area covered by the EPDM sheet, including 6% overlap, with a thickness of 1.07 mm.  
The weight per 1m<sup>2</sup> of installed roof (including overlaps) is 1.414 kg/m<sup>2</sup> and the conversion factor to 1kg is 0.71 m<sup>2</sup>.

## + REFERENCE SERVICE LIFE (RSL): 50 years.

According to a study by SKZ - TeConA GmbH (Final Report No. 67236/99-X, Germany, 2004), EPDM membranes are expected to have a service life of over 50 years.

## + SOFTWARE

SimaPro 9.6.0.1

## + ENVIRONMENTAL IMPACT ASSESSMENT METHOD

EN 15804 Standard: EN 15804:2012 + A2:2019/AC:2021

## + MAIN DATABASES FOR GENERIC DATA

Ecoinvent 3.10 (allocation, cut-off by classification).

## + IMPACT MODELS USED:

CML-IA BASELINE V3.07/ EU25; RECIPE 2016 MIDPOINT (H) V1.06 / WORLD (2010) H; EDIP 2003 V1.07 / DEFAULT; CUMULATIVE ENERGY DEMAND V1.11; EF 3.1 METHOD (ADAPTED) V1.02 / EF 3.1 NORMALIZATION AND WEIGHTING SET; IPCC 2021 GWP 100A

## + GEOGRAPHICAL SCOPE FOR WHICH GEOGRAPHICAL LOCATION OF END-OF-LIFE THE PRODUCT'S PERFORMANCE HAS BEEN CALCULATED

Global

## + REPRESENTATIVE YEAR FOR THE INVENTORY FOR THE MANUFACTURING

2023

## + CUT OFF

A minimum of 99% of energy consumption in manufacturing facilities is accounted for, and 99% of the raw material mass is considered.

### Excluded Processes:

- Manufacturing of production equipment, buildings, or other capital goods
- Transportation of personnel to and within the plant
- Research and development activities
- Long-term emissions

## + ALLOCATION

Whenever possible, allocations have been avoided. When unavoidable, a mass-based physical allocation has been applied. Data on system composition have been directly obtained and analyzed following the principles of modularity and the polluter-pays principle.

## + AVERAGING

The purpose of the LCA study is to determine the average environmental impact of SOPRAGUARD membranes. To achieve this, a weighted average of the environmental impacts for each product range produced in 2023 is calculated, with the weighting based on the surface area produced for each product range. This approach ensures that the average environmental impacts accurately reflect the proportional contribution of each product range to the total production.

The variation in GWP-GHG among different membranes exceeds 10%. Therefore, the variations in other impact categories are also presented in this document.

## + DATA QUALITY

The data collected on components and energy correspond to the year 2023 and include information on raw material consumption and energy use. The plausibility and consistency of the collected data have been verified, ensuring good data quality.

Material and energy consumption invoices have been collected and checked. The study covers at least 95% of the materials and energy per module and at least 99% of the total material and energy use of each unit process.

# Content Declaration including Packaging

The average composition of the products, as a representative range for all the type and thicknesses, is provided in the table below, along with average packaging composition. Based on our knowledge, no substance listed

as a candidate for Authorization (Candidate List SVHC) or subject to Authorization (Annex XIV - REACH) is contained in the product at a concentration greater than 0.1% weight/weight.

PRODUCT COMPONENTS	WEIGHT %	POST-CONSUMER RECYCLED MATERIAL; WEIGHT - %	BIOGENIC MATERIAL; WEIGHT - % OF PRODUCT
EPDM	32-40%	0%	0%
Pigments and charges	38-53%	0%	0%
Plasticisers	13-16%	0%	0%
Additives	0,1-1%	0%	0%
Adhesive and plastic film	17-21%	0%	0%
<b>Total</b>	<b>1.33 kg/m<sup>2</sup> - 100%</b>	<b>0%</b>	<b>0%</b>

PACKAGING MATERIALS	WEIGHT (kg/m <sup>2</sup> )	WEIGHT - % (VERSUS THE PRODUCT)	BIOGENIC MATERIAL (kg C/m <sup>2</sup> )
PALLET	4,93 E-02	3,70%	0,025
CARDBOARD CORE	1,80 E-02	1,35%	0,091
TAPE	9,58 E-05	0,01%	0,000
FILM	4,95 E-04	0,04%	0,000
<b>TOTAL</b>	<b>6,81 E-02</b>	<b>5,10%</b>	<b>0,034</b>

RESULTS BY FUNCTIONAL UNIT	
Biogenic carbon content	Quantity (kg C)
Biogenic carbon contained in the product	0,000
Biogenic carbon contained in packaging	0,034

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

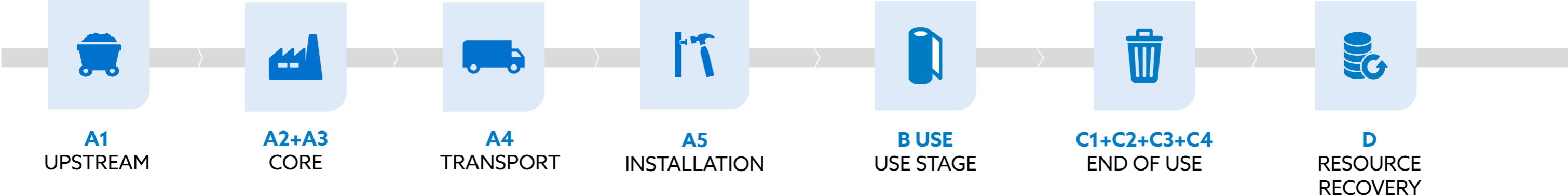
# Production process

Sopraguard EPDM waterproofing membranes are made using the most cutting-edge synthetic rubber calendaring and vulcanisation technologies. The manufacturing process begins with the storage of the raw material,

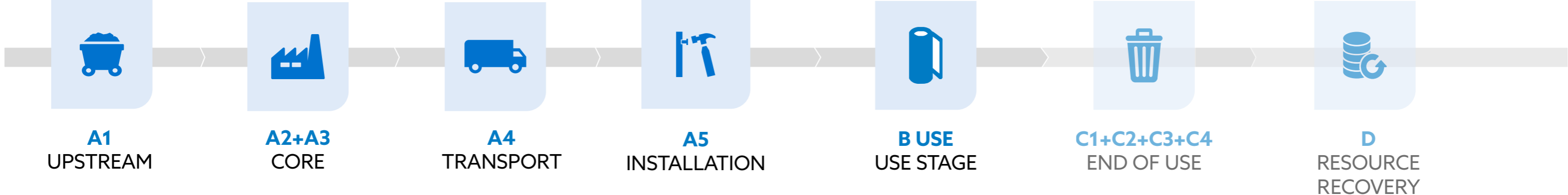
followed by heating, extrusion, and calendaring, a process through which the raw material is transformed into the membrane, which is then vulcanized through a heat process, subsequently cooled, cut, and packaged.



# Calculation rules



# Calculation rules



## PRODUCT STAGE

## CONSTRUCTION PROCESS STAGE

## USE STAGE

**A1 - A3**

- Raw material supply (A1)
- Energy sources used in manufacturing (A1)
- Raw materials transport to the plant, taking into account the specific distances provided by the company, considering 16-32 ton Euro VI trucks (A2).
- Manufacturing process (A3)
- The electricity mix used in manufacturing, based on the manufacturer's energy mix of 0,36612 kgCO<sub>2</sub>/kWh (A3)
- Manufacturing waste treatment and transport, considering that 100% of the packaging waste generated during the production process is sent to landfill (A3)



**A4**

This module accounts for the transport of the membranes from the production site to the application site, including the possibility of intermediate storage. It considers weighted distances averaged based on the type of transport used and the product's final destination, 96% of sales occur within Europe, with 77% specifically in Spain, as detailed below:

- Average distance: 966 km land and 352 km sea.
- Truck with an average load of 16-32 t (Euro VI) for land transport and medium cargo ship for sea transport.
- Load capacity utilization, including return transport, is assumed as the % in the Ecoinvent database with a predetermined volume factor of 1.

**A5**

This module covers product installation, accounting for packaging waste and the use of surface cleaner in the most representative application scenario for EPDM membranes. It excludes impacts from optional products or accessories. Parameters considered:

- Overlapping factor: 6%
- Secondary materials used in installation: 0,16 kg/m<sup>2</sup> Cleaner
- On-site installation product waste: 1% 0,013 kg/m<sup>2</sup>
- Waste collection and treatment: 58% of product packaging waste is landfilled (0,039 kg/m<sup>2</sup>), while the remaining 42% is destined for recycling (0,028 kg/m<sup>2</sup>).



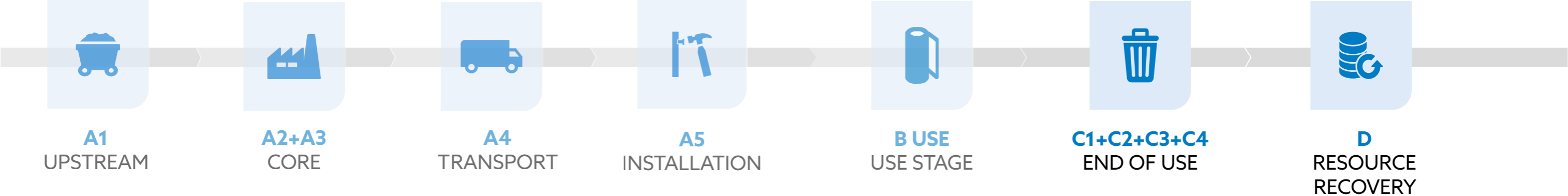
**B1 - B7**

The product does not generate emissions during use (B1). The product's performance indicates that its service life matches that of the building or pavement where it is installed. Once applied, system components require no end-user intervention (B2-B5).

The product does not consume water or electricity during its operational life.

Energy and emission savings from its insulating properties have not been accounted for (B6-B7).

# Calculation rules



## END OF LIFE STAGE

### C1+C2+C3+C4

- As the demolition and/or dismantling of the product is part of the demolition of the building itself, it is assumed that the environmental impact falls below the established cut-off rule and can therefore be underestimated. (C1)
- Transportation of construction waste from the site to the waste treatment sites (50 km) by 16-32 t (Euro VI) truck (C2)
- Incineration with energy recovery represents 45% (0.71 kg/m<sup>2</sup>) of the product, in accordance with the PEFCR document (C3).
- At the end of life, 55% (0.87 kg/m<sup>2</sup>) of the product is disposed of in landfill. (C4).

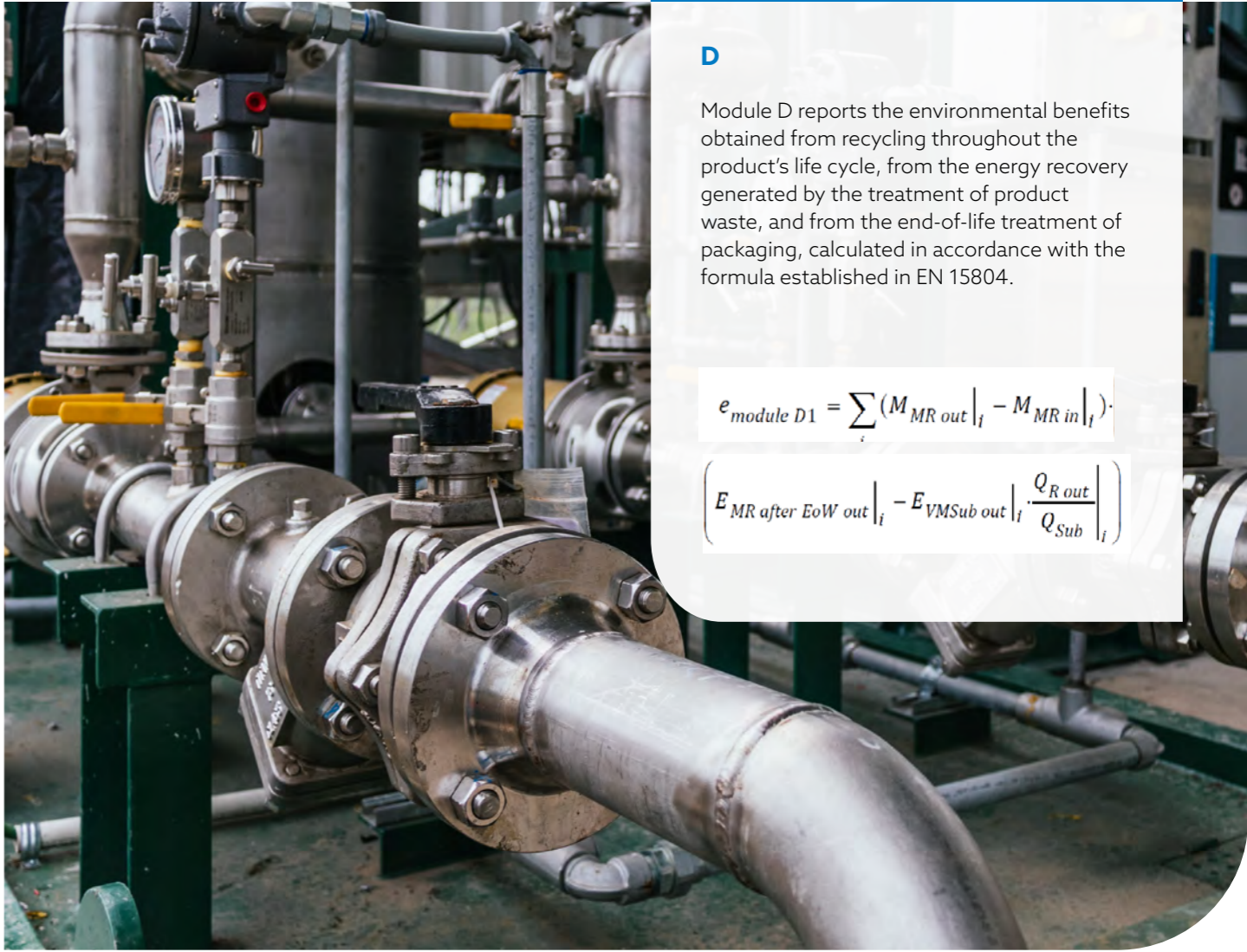


## BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES

### D

Module D reports the environmental benefits obtained from recycling throughout the product's life cycle, from the energy recovery generated by the treatment of product waste, and from the end-of-life treatment of packaging, calculated in accordance with the formula established in EN 15804.

$$e_{module D1} = \sum_i (M_{MR out} |_i - M_{MR in} |_i) \cdot \left( E_{MR after EoW out} |_i - E_{VMSub out} |_i \cdot \frac{Q_{R out} |_i}{Q_{Sub} |_i} \right)$$



# Environmental Performance

Results are declared per 1 m<sup>2</sup> of average product

## ENVIRONMENTAL IMPACT

SOPRAGUARD		PRODUCT STAGE	CONSTRUCTION PROCESS STAGE			STAGE OF USE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
GWP. t	kg CO2 eq	2,83 E+00	1,87 E-01	6,16 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,40 E-02	3,68 E-01	1,45 E-02	-2,07 E-02	
GWP. f	kg CO2 eq	2,95 E+00	1,87 E-01	4,92 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,40 E-02	3,68 E-01	1,45 E-02	-2,05 E-02	
GWP. b	kg CO2 eq	-1,24 E-01	0,00 E+00	1,24 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
GWP. luluc	kg CO2 eq	2,10 E-03	6,28 E-05	2,65 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,65 E-06	5,99 E-05	9,32 E-06	-1,42 E-04	
ODP	kg CFC-11 eq	9,08 E-08	1,36 E-08	2,48 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,03 E-09	2,12 E-09	1,74 E-09	-2,67 E-09	
AP	mol H+ eq	1,22 E-02	3,70 E-09	1,93 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,79 E-10	3,50 E-10	2,73 E-10	-3,70 E-10	
EPf	kg P eq	6,08 E-04	1,26 E-05	8,55 E-05	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,49 E-07	3,26 E-05	3,81 E-05	-7,68 E-06	
EPm	kg N eq	2,11 E-03	1,18 E-04	3,49 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,01 E-06	1,16 E-04	3,13 E-05	-2,78 E-05	
EPt	mol N eq	2,20 E-02	1,28 E-03	3,68 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	7,56 E-05	9,98 E-04	3,37 E-04	-2,92 E-04	
POCP	kg NMVOC eq	1,51 E-02	7,15 E-04	2,60 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,85 E-05	2,60 E-04	1,15 E-04	-9,97 E-05	
ADPe (1)	kg Sb eq	2,83 E-05	6,01 E-07	3,91 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,56 E-08	5,34 E-08	3,01 E-08	-6,77 E-08	
ADPf (1)	MJ	9,00 E+01	2,63 E+00	1,67 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,97 E-01	2,32 E-01	2,49 E-01	-3,12 E-01	
WDP (1)	m3 world eq depriv.	1,21 E+00	1,08 E-02	1,07 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	8,18 E-04	2,79 E-02	-1,38 E-01	-6,00 E-03	
GWP-GHG (2)	kg CO2 eq	3,06 E+00	1,92 E-01	5,15 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,43 E-02	3,70 E-01	1,49 E-02	-2,07 E-02	

(1) 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.

(2) This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

## ADDITIONAL ENVIRONMENTAL IMPACT

SOPRAGUARD		PRODUCT STAGE	CONSTRUCTION PROCESS STAGE			STAGE OF USE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
PM	disease incident	2,07 E-07	1,36 E-08	2,48 E-08	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,03 E-09	2,12 E-09	1,74 E-09	-2,67 E-09	
IRP (1)	kBq U235 eq	4,62 E-01	3,37 E-03	4,02 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,56 E-04	3,47 E-04	2,41 E-04	-4,78 E-03	
ETP-fw (2)	CTUe	5,33 E-00	5,70 E-01	1,06 E-00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,30 E-02	1,40 E+00	3,88 E-01	-7,26 E-02	
HTP -c (2)	CTUh	9,46 E+09	1,32 E-09	1,92 E-09	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,94 E-11	4,23 E-10	1,84 E-10	-1,11 E-10	
HTP-nc (2)	CTUh	2,21 E-08	1,63 E-09	3,79 E-09	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,24 E-10	4,11 E-09	1,21 E-09	-1,87 E-10	
SPQ (2)	dimensionless	1,97 E+01	1,56 E+00	2,24 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,19 E-01	1,58 E-01	5,46 E-01	-4,29 E+00	

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

(2) The results of this environmental impact indicator should be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## USE OF RESOURCES

SOPRAGUARD		PRODUCT STAGE	CONSTRUCTION PROCESS STAGE			STAGE OF USE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
IMPACT CATEGORY	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
PERE	MJ	4,79 E+00	4,47 E-02	4,66 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,66 E-01	3,38 E-03	7,53 E-03	4,29 E-03	
PERM	MJ	1,28 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
PERT	MJ	6,07 E+00	4,47 E-02	4,66 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	4,66 E-01	3,38 E-03	7,53 E-03	4,29 E-03	
PENRE	MJ	1,47 E+01	2,26 E-01	1,74 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,71 E-02	6,00 E-02	3,27 E-02	-1,77 E-01	
PENRM	MJ	4,35 E+01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,00 E+00	2,00 E+00	
PENRT	MJ	5,82 E+01	2,26 E-01	1,74 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,71 E-01	6,00 E-02	1,03 E+00	1,82 E+00	
SM	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
RSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
FW	m3	3,15 E-02	3,61 E-04	2,94 E-03	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,73 E-05	7,77 E-04	-3,20 E-03	-2,32 E-04	

# Results are declared per 1 m<sup>2</sup> of average product

## OUTPUT FLOWS AND WASTE PRODUCTION

SOPRAGUARD		PRODUCT STAGE	CONSTRUCTION PROCESS STAGE			STAGE OF USE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
WASTE	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
HWD	kg	6,36 E-04	1,76 E-05	1,72 E-04	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,33 E-06	2,21 E-06	1,65 E-06	-1,68 E-06	
MHWD	kg	2,64 E-01	1,25 E-01	9,24 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,51 E-03	1,85 E-01	8,86 E-01	-1,87 E-03	
RWD	kg	1,12 E-04	8,37 E-07	9,78 E-06	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	6,35 E-08	8,71 E-08	5,90 E-08	-1,11 E-06	

SOPRAGUARD		PRODUCT STAGE	CONSTRUCTION PROCESS STAGE			STAGE OF USE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
OUTPUT FLOWS	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
CRU	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
MFR	kg	1,25 E-01	0,00 E+00	2,84 E-02	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
MER	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
EEE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	
EET	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	

# Additional LCA results

## ENVIRONMENTAL IMPACT

The variation in GWP-GHG among the different products in the SOPRAGUARD family exceeds 10%. Therefore, the variations in other impact categories are presented in the table below. The variations in other impact categories are shown below. All variations are expressed in relation to the average output, weighted by production volume.

IMPACT CATEGORY	UNIT	MAX VARIABILITY	MIN VARIABILITY
GWP-total Global warming potential - total	kg CO2 eq	20,4%	-14,3%
GWP-fossil Global warming potential - fossil fuels	kg CO2 eq	14,6%	-9,7%
GWP-luluc Global warming potential - land use and land use change	kg CO2 eq	10,4%	-59,9%
ODP Depletion potential of the stratospheric ozone layer	kg CFC-11 eq	11,0%	-9,7%
AP Acidification potential, accumulated exceedance	mol H+ eq	24,2%	-80,5%
EP-freshwater Eutrophication potential - freshwater	kg P eq	13,9%	-8,5%
EP-marine Eutrophication potential - marine	kg N eq	13,9%	-18,2%
EP-terrestrial Eutrophication potential - terrestrial	mol N eq	17,2%	-9,8%
POCP Photochemical ozone creation potential	kg NMVOC eq	17,2%	-9,3%
ADPE Abiotic depletion potential - non-fossil resources	kg Sb eq	15,1%	-7,5%
ADPF Abiotic depletion potential - fossil resources	MJ	5,0%	-9,8%
WDP Water (user) deprivation potential	m3 depriv.	12,6%	-30,7%
GWP-GHG Global warming potential	kg CO2 eq	14,6%	-9,7%
PERT Total use of renewable primary energy	MJ	37,2%	-14,0%
PENRT Total use of non renewable primary energy resources	MJ	13,4%	-12,0%
FW Net use of fresh water	m3	10,3%	-13,1%
HWD Hazardous waste disposed	kg	19,3%	-23,2%
NHWD Non-hazardous waste disposed	kg	8,3%	-10,4%
RWD Radioactive waste disposed	kg	2,9%	-11,5%

# Additional Environmental Information

## END OF LIFE SCENARIOS

Environmental indicators EN 15804+A2, 100%end-of-life scenarios, per kg.

IMPACT CATEGORY	UNIT	100% Recycling			100% Incineration			100% Landfill		
		C3	C4	D	C3	C4	D	C3	C4	D
GWP-f	kg CO2 eq.	6,30 E-01	0,00 E+00	-3,89 E+00	8,15 E-01	1,02 E-02	-3,31 E-02	0,00 E+00	1,79 E-02	-1,03 E-02
GWP-b	kg CO2 eq.	-1,78 E-03	0,00 E+00	7,30 E-02	1,14 E+00	7,00 E-05	3,87 E-02	0,00 E+00	1,47 E-04	0,00 E+00
GWP-l	kg CO2 eq.	3,46 E-04	0,00 E+00	-3,49 E-03	1,32 E-04	8,27 E-06	-1,46 E-04	0,00 E+00	1,01 E-05	-1,40 E-04
GWP-t	kg CO2 eq.	6,29 E-01	0,00 E+00	-3,82 E+00	1,96 E+00	1,03 E-02	5,41 E-03	0,00 E+00	1,81 E-02	-1,05 E-02
ODP	kg CFC-11 eq.	7,12 E-09	0,00 E+00	-1,44 E-07	7,74 E-10	5,69 E-11	-3,93 E-11	0,00 E+00	4,46 E-10	-1,09 E-09
AP	mol H+ eq.	1,60 E-03	0,00 E+00	-1,73 E-02	4,79 E-04	3,44 E-05	-2,58 E-04	0,00 E+00	1,90 E-04	-3,54 E-10
EP-f	kg P eq.	7,88 E-05	0,00 E+00	-1,20 E-03	7,20 E-05	5,07 E-05	-1,13 E-05	0,00 E+00	2,75 E-05	-4,78 E-06
EP-m	kg N eq.	6,33 E-04	0,00 E+00	-2,58 E-03	2,57 E-04	1,11 E-05	-4,11 E-05	0,00 E+00	4,75 E-05	1,71 E-05
EP-t	mol N eq.	5,07 E-03	0,00 E+00	-2,83 E-02	2,21 E-03	1,20 E-04	-4,32 E-04	0,00 E+00	5,11 E-04	-1,80 E-04
POCP	kg NMVOC eq.	2,04 E-03	0,00 E+00	-2,37 E-02	5,75 E-04	3,48 E-05	-1,41 E-04	0,00 E+00	1,80 E-04	-6,67 E-05
ADPE	kg Sb eq.	2,51 E-06	0,00 E+00	-6,62 E-05	1,18 E-07	1,83 E-08	-7,06 E-08	0,00 E+00	3,94 E-08	-7,04 E-08
ADPF	MJ	6,15 E+00	0,00 E+00	-1,20 E+02	5,12 E-01	7,14 E-02	-4,16 E-01	0,00 E+00	3,91 E-01	-2,29 E-01
WDP	m3 world deprived	9,85 E-02	0,00 E+00	-2,56 E+00	6,16 E-02	1,07 E-03	-6,59 E-03	0,00 E+00	-2,50 E-01	-5,59 E-03
GWP-GHG	kg CO2 eq.	6,42 E-01	0,00 E+00	-4,06 E+00	8,17 E-01	1,03 E-02	-3,36 E-02	0,00 E+00	1,86 E-02	-1,03 E-02
PERT	MJ	3,40 E-01	0,00 E+00	-7,10 E+00	1,67 E-02	2,76 E-03	-8,71 E-01	0,00 E+00	EP E-03	4,29 E-03
PENRT	MJ	1,41 E+00	0,00 E+00	-2,14 E+01	1,33 E-01	2,87 E-02	2,67 E-01	0,00 E+00	3,57 E-02	1,90 E+00
FW	m3	2,81 E-03	0,00 E+00	-6,98 E-02	1,72 E-03	3,16 E-05	-2,49 E-04	0,00 E+00	-5,81 E-03	-2,20 E-04
HWD	kg	6,64 E-05	0,00 E+00	-1,09 E-03	4,90 E-06	2,96 E-07	-1,78 E-06	0,00 E+00	2,73 E-06	-1,63 E-06
NHWD	kg	2,72 E-01	0,00 E+00	1,93 E-02	4,09 E-01	3,08 E-02	-1,99 E-03	0,00 E+00	1,57 E+00	-2,26 E-03
RWD	kg	5,67 E-06	0,00 E+00	-1,37 E-04	1,93 E-07	2,66 E-08	-1,13 E-06	0,00 E+00	8,48 E-08	-1,10 E-06

# Additional Environmental Information

## ECOPROFILE CONVERSION THROUGH THE THICKNESS PARAMETER

By means of the following formula, the environmental impact value for the PVC membrane with a different thickness compared to the one obtained for the average ecoprofile can be calculated.

$$Y = X * \frac{\text{New membrane thickness}}{\text{Product range average thickness}}$$

Where X is the environmental impact value obtained for the average ecoprofile and Y is the interpolated value for the new membrane thickness.

PRODUCT RANGE NAME	AVERAGE MEMBRANE THICKNESS (mm)
SOPRAGUARD ONE	1,07
SOPRAGUARD GEO	1,07
SOPRAGUARD TOP	1,07
SOPRAGUARD LIFE	1,07
SOPRAGUARD FACE IN	1,07
SOPRAGUARD FACE OUT	1,07
SOPRAGUARD STICK	1,08

## Version History

This is the initial version of the Environmental Product Declaration (EPD) and Life Cycle Assessment (LCA).



# Abbreviations

ABBREVIATION	DEFINITION
<b>GENERAL ABBREVIATIONS</b>	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CPC	Central product classification
PEFCR	Product Environmental Footprint Category Rules
EPDM	Ethylene Propylene Diene Methylene
<b>ENVIRONMENTAL IMPACT INDICATORS (EN 15804)</b>	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-f	Global Warming Potential from fossil sources (kg CO <sub>2</sub> eq.)
GWP-b	Global Warming Potential from biogenic sources (kg CO <sub>2</sub> eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO <sub>2</sub> eq.)
GWP-t	Total Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO <sub>2</sub> eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H <sup>+</sup> eq.)
EP	Eutrophication Potential
EPf	Freshwater eutrophication potential (kg P eq.)
EPm	Marine eutrophication potential (kg N eq.)
EPt	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADPe	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADPf	Abiotic depletion potential for fossil resources (MJ)
WDP	Use
<b>ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS</b>	
PM	Particulate Matter emissions
IRP	Ionizing radiation, human health
ETP-fw	Eco-toxicity, freshwater
HTP-c	Human Toxicity, cancer effect
HTP-nc	Human Toxicity, non-cancer effect
SPQ	Land use related impacts soil quality

ABBREVIATION	DEFINITION
<b>RESOURCE USE INDICATORS</b>	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m <sup>3</sup> )
<b>WASTE INDICATORS</b>	
HWD	Hazardous Waste (disposed) (kg)
NHWD	Non-Hazardous Waste (disposed) (kg)
RWD	Radioactive Waste (disposed) (kg)
<b>OUTPUT FLOW INDICATORS</b>	
CRU	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
<b>LIFECYCLE STAGES / MODULES</b>	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
<b>OTHER RELEVANT TERMS</b>	
EC	European Community Number
MJ	Megajoule
kg	Kilogram
mm	Millimeter
m <sup>2</sup>	Square Meter
	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO <sub>2</sub> eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO <sub>2</sub> eq.	Kilograms of Carbon Dioxide Equivalent

## REFERENCES

- ISO 14020:2000: Environmental labels and declarations – General principles
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- ISO 14040, Environmental Management – Life Cycle Analysis – Principles and Framework (2006).
- ISO 14044:2006, Environmental management – Life cycle analysis – Requirements and guidelines (2006).
- General Programme Instructions of the International EPD® System. Version 5.0.1
- PCR 2019:14 Construction products - version 2.0.1
- EN (2019): EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for product category of construction products. Version: 2025-04-24
- EN 15804:2012+A2:2019/AC:2021 – Environmental Product Declarations – Basic Product Category Rules for Construction Products (2021).
- C-PCR-032 Flexible sheets for waterproofing (EN 17388:2024).
- EN 17388:2024
- LCA EPDM membranes (2025).

## CONTACTS

For additional information relative to the activities of the Soprema Iberia, Slu or in regards to this environmental declaration, please contact:  
[info@soprema.es](mailto:info@soprema.es)





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