ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006
AND EN 15804:2012+A2:2019/AC:2021

SOPRALENE GARDEN 5800

SOPREMA NV

Specific EPD

Programme: The international EPD® system, www.environdec.com
Programme operator: EPD International AB
EPD registration number: S-P-10380
Publication date: 2023-09-01
Valid until: 2028-08-30
Geographical scope: Europe

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

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GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	SOPREMA NV
Address	Bouwelven 5, 2280 Grobbendonk, Belgium
Contact details	info@soprema.be
Website	www.soprema.com

PRODUCT IDENTIFICATION

Product name	Sopralene Garden 5800
Additional label(s)	-
Product number / reference	-
Place(s) of production	Grobbendonk, Belgium
CPC code	3794 Bituminous mixtures

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) 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.

EPD INFORMATION

EPD program operator	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int´l EPD System PCR 2019:14 Construction products, version 1.3.1 (08.07.2023) is used.
EPD author	Silvia Vilčeková, Salvis, s.r.o.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	2023-08-30
EPD verifier	Elisabet Amat
EPD number	S-P-10380
ECO Platform nr.	-
Publishing date	2023-09-01
EPD valid until	2028-08-30

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Membrane composed of elastomer modified bitumen with root-repellent additives and a composite polyester reinforcement. Used as an upper layer within a single or multi layer waterproofing system for green roofs. The upper surface is finished with slates and the overlap(*) is protected by a thermofusible film. The lower surface is protected by a thermofusible film.

(*) product exists also with no overlap

PRODUCT APPLICATION

Used as an upper layer within a single or multi layer waterproofing system for green roofs. Fully applied by torch-on or hot-air method including the overlaps.

TECHNICAL SPECIFICATIONS

Further information can be found at *www.soprema.dk, www.soprema.se or www.soprema.com.*

PRODUCT STANDARDS

Product met requirements of EN 1849-1, EN 12311-1, EN 13948, EN 12730-A, EN 12691-A, EN 1107-1, EN 12310-1, EN 1109, EN 1296, EN 1110, EN 12316-1, EN 12317-1, EN 1928, EN 13501-1.

PHYSICAL PROPERTIES OF THE PRODUCT

Composition	Standard	Unit	Value	Tolerance
Mass	EN 1849-1	kg/m^2	5.8	± 15 %
Thickness overlap (indicative)	EN 1849-1	mm	3.9	-
Thickness membrane (indicative)	EN 1849-1	mm	4.8	-
Tensile force (L/T)	EN 12311-1	N/50 mm	850/650	± 20 %
Elongation at max. tensile force (L/T)	EN 12311-1	%	35/35	± 15
Resistance to root penetration	EN 13948	pass	-	-
Resistance to static loading	EN 12730-A	kg	≥ 20	-
Resistance to impact +23 °C	EN 12691-A	mm	≥ 1000	-
Resistance to impact -10 °C	EN 12691-A	mm	≥ 20	-
Dimensional stability	EN 1107-1	%	≤ 0.3	-
Resistance to tearing (nail shank) (L/T)	EN 12310-1	N	270/270	± 25 %
Flexibility at low temperature	EN 1109	°C	≤ -20	-
Flexibility at low temperature after aging	EN 1109 EN 1296	°C	-10	-15/+0
Flow resistance at elevated	EN 1110	°C	≥ 110	-
Flow resistance at elevated temperature after aging	EN 1110 EN 1296	°C	100	-0/+20
Joint properties: peel resistance	EN 12316-1	N/50 mm	135	± 25 %
Joint properties: shear resistance	EN 12317-1	N/50 mm	670	± 25 %
Watertightness	EN 1928	kPa/24 h	≥ 10	-
Reaction to fire	EN 13501-1	Class	NPD	-

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Bitumen	2.8012	0	-
Calcium carbonate	1.4455	0	-
Slates	1.1133	0	-
SBS	0.2951	0	-
Polyester mesh	0.1990	0	-
Oil	0.1628	100	-
LDPE	0.0102	0	-
PET coke	0.1239	0	-
Additive	0.0165	0	-
LDPE	0.0098	0	-
Tape	0.0013	0	-
Paper	0.0007	0	0.01% 0.0003 kg C/kg
Carton	0.0393	0	0.62% 0.0004 kg C/kg
Wooden pallets	0.1418	0	2.2% 0.064 kg C/kg

Mass of the raw materials and packaging include an extra 10% weight for the overlaps.

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at *www.soprema.dk* , *www.soprema.se* or *www.soprema.com*.

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The main raw materials for the production of the waterproofing system are bitumen (45.4%), SBS (4.8%), reinforcement (3.2%), minerals as fillers or finishing (43.5%) and other materials (3.1%). The finished packaged product is stored and transported on wooden pallets.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined according to PCR. Average distance of transportation from production plant to building site are assumed as 1253 km and 214 km while the transportation methods are assumed to be lorry with load capacity of >32 ton and 16-32 ton, respectively. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are taken into account. Transportation does not cause losses as product are packaged properly.

Energy consumption during installation represents 1.75 kWh. Wooden pallets used for transportation of products to client is accounted for in A5. It is assumed that the pallets are incinerated at the nearest municipal incineration plant for energy recovery. The distance is assumed as 50 km and the transportation method assumed to be lorry

PRODUCT USE AND MAINTENANCE (B1-B7)

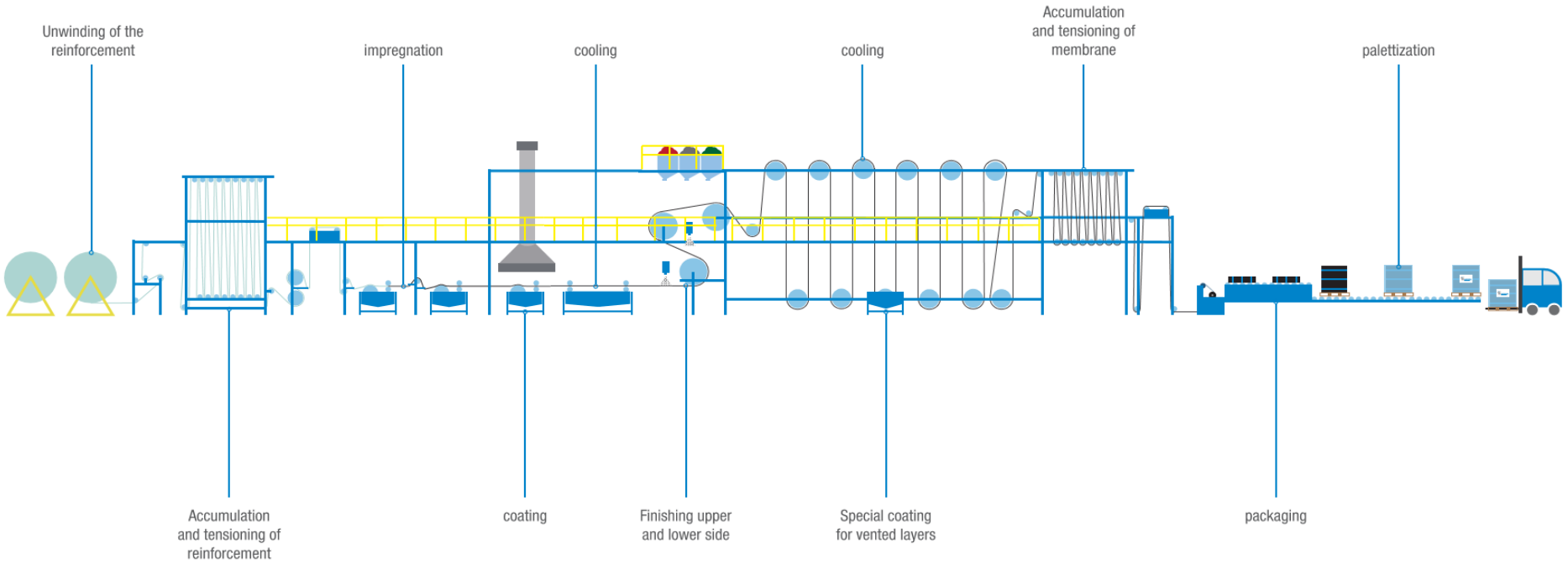
Environmental impacts from refurbishment (B5) are included in the study. So, it is considered that the old membrane is covered by a new one after 35 years except under layer. This means that one refurbishment is considered. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The impacts of the disassembly stage are assumed zero, since the consumption of energy and natural resources for disassembling the end-of-life product is negligible. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common. 15% of the material is assumed to be recycled and 45% used for energy recovery. 40% of waste is taken to landfill for final disposal.

Module D considers the benefits and loads of recycling and energy recovery (in this case only related to packaging end of life).

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2022

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 m2
Mass per declared unit	6.17 kg
Functional unit	-
Reference service life	70

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0645

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with the following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly), B5 (Refurbishment) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	x	MND	MND	MND	MND	x	MND	MND	x	x	x	x	x	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	BE	EU	EU	-	-	-	-	EU	-	-	EU	EU	EU	EU	EU		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.
The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass. Losses are considered negligible because they account for less than 1%.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 m2 of the product which is used within this study are calculated by considering the total product weight per annual production. The product output is fixed to 1 m2 and the corresponding amount of product is used in the calculations.
In the production plant, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the produced product output fixed to 1 m2 and the corresponding amount of product is used in the calculations.

Allocation used in Ecoinvent 3.8 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below.
Module A1: Within the product stage accurate data has been used, with the exception of acrylic tape due to its absence in the database. In this case, it was modelled as close to reality as possible using proxy, representative datapoint.
Module A3: In the plant, lots of different products are produced. Therefore, electricity and natural gas are allocated on yearly consumption.
Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality it may vary but as the role of transportation emission in total results is small and so the variety in load assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation companies to serve the needs of other clients.
Module A4: Transportation doesn't cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances and vehicle types are assumed according to the delivery in the last year.
Module A5: Energy consumption and used ancillary materials during installation are negligible, and can be assumed as zero. It is assumed that wood pallets are incinerated at the nearest municipal incineration plant for energy recovery. LDPE wrap and paper is recycled. The distance is assumed as 30 km and the transportation method assumed to be lorry.
Module B5: Old membrane is covered by a new one after 35 years except under layer.
Module C1: The impacts of the disassembly stage are assumed zero, since the consumption of energy and natural resources for disassembling the end-of-life product is negligible.
Module C2: Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.
Module C3, C4, D: According to the manufacturer's information, 15% of the material is assumed to be recycled and 45% used for energy recovery. 40% of waste is taken to landfill for final disposal. Module D considers the benefits of recycling and energy recovery which replaces district heat and electricity.

The allocations in the Ecoinvent 3.8 datasets used in this study follow the Ecoinvent system model 'Allocation, cut-off, EN15804'.

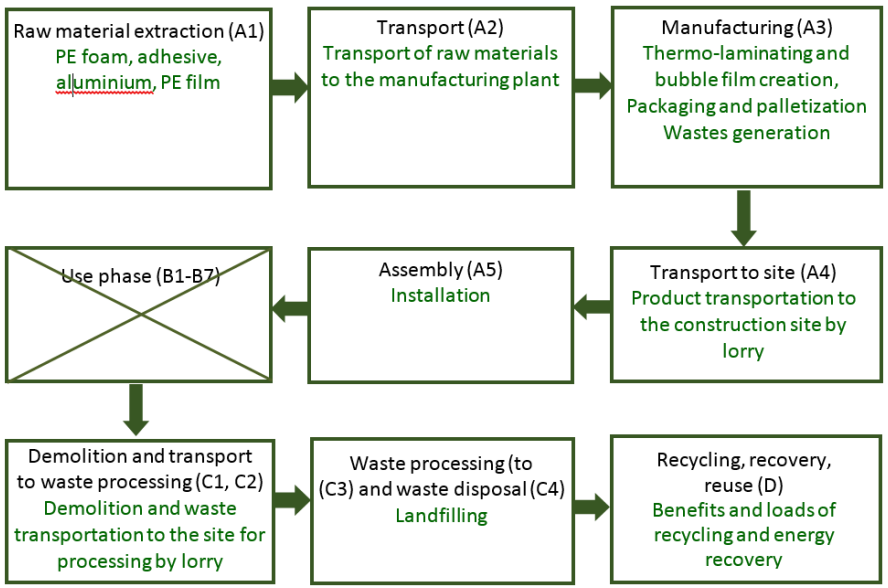
AVERAGES AND VARIABILITY

The results represent impacts for the analysed product. Averages and variability are not applicable.

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	>98%
Variation in GWP-GHG between products	-
Variation in GWP-GHG between sites	-



Process diagram

ENVIRONMENTAL IMPACT DATA

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. Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	3,34E0	1,81E0	5,15E-1	MND	MND	MND	MND	4,54E0	MND	MND	0E0	5,47E-2	1,79E1	7,55E-1	1,94E0
GWP – fossil	kg CO_2e	3,1E0	1,83E0	5,71E-1	MND	MND	MND	MND	4,53E0	MND	MND	0E0	5,47E-2	1,79E1	7,54E-1	2,15E0
GWP – biogenic	kg CO_2e	2,66E-3	0E0	-5,65E-2	MND	MND	MND	MND	1,73E-3	MND	MND	0E0	0E0	5,18E-4	4,75E-4	-2,11E-1
GWP – LULUC	kg CO_2e	2,41E-1	6,47E-4	1,39E-4	MND	MND	MND	MND	3,44E-3	MND	MND	0E0	2,05E-5	4,06E-4	5,99E-5	1,58E-3
Ozone depletion pot.	kg CFC_{-11}e	2,87E-7	4,45E-7	4,2E-8	MND	MND	MND	MND	4,22E-6	MND	MND	0E0	1,36E-8	7,93E-8	1,62E-8	1,82E-6
Acidification potential	mol H^+e	1,57E-2	5,71E-3	1,35E-3	MND	MND	MND	MND	2,12E-2	MND	MND	0E0	1,74E-4	6,36E-3	8,13E-4	1,73E-2
EP-freshwater	kg Pe	2,04E-4	1,43E-5	4,55E-6	MND	MND	MND	MND	9,64E-5	MND	MND	0E0	3,9E-7	7,95E-6	9,67E-7	5,24E-5
EP-marine	kg Ne	1,86E-2	1,23E-3	3,83E-4	MND	MND	MND	MND	3,75E-3	MND	MND	0E0	3,84E-5	1,62E-3	6,54E-4	2,31E-3
EP-terrestrial	mol Ne	2,5E-2	1,37E-2	4,2E-3	MND	MND	MND	MND	3,85E-2	MND	MND	0E0	4,26E-4	1,71E-2	1,74E-3	2,54E-2
POCP ("smog")[2)]	kg NMVOCe	1,26E-2	5,35E-3	1,45E-3	MND	MND	MND	MND	1,28E-1	MND	MND	0E0	1,68E-4	4,36E-3	6,83E-4	2,37E-1
ADP-minerals & metals[3)]	kg Sbe	3,01E-6	2,1E-5	2E-6	MND	MND	MND	MND	1,97E-5	MND	MND	0E0	1,34E-7	3,06E-6	1,91E-7	1,52E-5
ADP-fossil resources	MJ	4,49E1	2,9E1	6,13E0	MND	MND	MND	MND	1,28E2	MND	MND	0E0	8,73E-1	4,07E0	1,26E0	1,31E2
Water use[4)]	m^3e depr.	2,18E1	1,19E-1	2,7E-2	MND	MND	MND	MND	1,77E0	MND	MND	0E0	4,03E-3	6,27E-1	7,85E-3	9,59E-1

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[7)]	MJ	2,55E0	3,81E-1	1,22E-1	MND	MND	MND	MND	1,9E0	MND	MND	0E0	1,13E-2	1,88E-1	2,55E-2	1,28E0
Renew. PER as material	MJ	1,52E0	0E0	-2,26E0	MND	MND	MND	MND	9,65E-3	MND	MND	0E0	0E0	0E0	0E0	-7,42E-3
Total use of renew. PER	MJ	4,07E0	3,81E-1	-2,13E0	MND	MND	MND	MND	1,91E0	MND	MND	0E0	1,13E-2	1,88E-1	2,55E-2	1,27E0
Non-re. PER as energy	MJ	4,44E1	2,9E1	6,13E0	MND	MND	MND	MND	8,02E1	MND	MND	0E0	8,73E-1	4,08E0	1,26E0	7,33E1
Non-re. PER as material	MJ	1,33E2	0E0	-5,3E-1	MND	MND	MND	MND	4,82E1	MND	MND	0E0	0E0	7,58E1	0E0	5,76E1
Total use of non-re. PER	MJ	1,78E2	2,9E1	5,6E0	MND	MND	MND	MND	1,28E2	MND	MND	0E0	8,73E-1	7,99E1	1,26E0	1,31E2
Secondary materials	kg	1,66E-1	4,24E-3	3,66E-3	MND	MND	MND	MND	1,48E-2	MND	MND	0E0	2,46E-4	3,18E-3	4,43E-4	3,62E-2
Renew. secondary fuels	MJ	5,15E-2	3,99E-5	2,17E-5	MND	MND	MND	MND	4,05E-4	MND	MND	0E0	2,17E-6	3,71E-5	1,7E-5	6,67E-5
Non-ren. secondary fuels	MJ	6,11E0	0E0	0E0	MND	MND	MND	MND	6,11E0	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	6,58E-2	4,82E-3	6,52E-4	MND	MND	MND	MND	7,88E-2	MND	MND	0E0	1,16E-4	9,84E-3	1,33E-3	2,32E-2

8) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,48E-1	3E-2	1,53E-2	MND	MND	MND	MND	2,69E-1	MND	MND	0E0	9,36E-4	0E0	0E0	1,68E-1
Non-hazardous waste	kg	5,96E-1	1,72E0	1,9E-1	MND	MND	MND	MND	2,52E0	MND	MND	0E0	1,63E-2	0E0	5,03E0	1,77E0
Radioactive waste	kg	1,56E-3	2E-4	5,1E-6	MND	MND	MND	MND	4,93E-4	MND	MND	0E0	6,02E-6	0E0	0E0	7,8E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	MND	MND	MND	0E0	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	2,2E-4	0E0	4,98E-2	MND	MND	MND	MND	0E0	MND	MND	0E0	0E0	1,89E0	0E0	0E0
Materials for energy rec	kg	3,38E-2	0E0	1,03E-1	MND	MND	MND	MND	7,44E-2	MND	MND	0E0	0E0	5,66E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	MND	MND	MND	0E0	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	3,1E0	1,83E0	5,71E-1	MND	MND	MND	MND	4,53E0	MND	MND	0E0	5,47E-2	1,79E1	7,54E-1	2,15E0

10) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, Belgium, residual mix
Electricity CO_2e / kWh	0.34
Electricity data source and quality	Electricity production, photovoltaic, 3kwp slanted-roof installation, multi-si, panel, mounted
Electricity CO_2e / kWh	0.11
District heating data source and quality	Heat production, natural gas, at industrial furnace >100k
District heating CO_2e / kWh	0.0687

Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO_2e emissions, kg CO_2e / tkm	0.0863
Average transport distance, km	1253 (leg 1) 214 (leg 2)
Capacity utilization (including empty return) %	64
Bulk density of transported products	-
Volume capacity utilization factor	1

End of life scenario documentation

Scenario parameter	Value
Collection process – kg collected separately	12.5673
Recovery process – kg for recycling	1.8851
Recovery process – kg for energy recovery	5.6553
Disposal (total) – kg for final deposition	5.0269
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with an average lorry.

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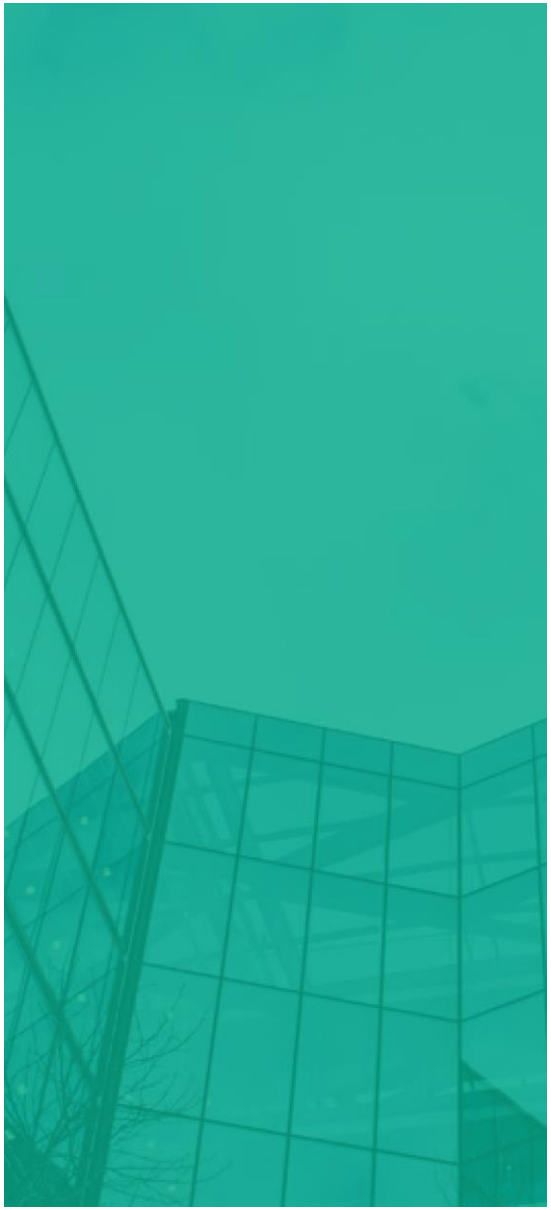
EPD International (2021). General Programme Instructions of the international EPD® system. Version 4.0. www.environdec.com.

Sopralene Garden 5800 LCA background report 23.07.2023



ABOUT THE MANUFACTURER

The SOPREMA Group has been developing and diversifying its activities, worldwide, by including, over the years, additional operations to its traditional trade, waterproofing. By becoming the world leader in waterproofing solutions, the group is today a key player in the construction sector.
SOPREMA was created in 1908 as an independent family group by Charles Geisen whose great-grandson, Pierre-Etienne Bindschedler, is now at the head of the company. Today we are rolling out millions of square metres of waterproofing, insulating and roofing material. As a result, SOPREMA claims a world-leading position in the design and manufacture of waterproofing solutions as well as roofing materials, sound and thermal insulation.
Today, SOPREMA operates all around the world with 101 manufacturing plants, more than 100 subsidiaries and more than 4,000 distributors.

Manufacturer	SOPREMA NV
EPD author	Silvia Vilčeková, Salvis, s.r.o.
EPD verifier	Elisabet Amat
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.8 (Allocation, cut-off, EN15804) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Bitumen membranes

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? Read more online.

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Elisabet Amat
EPD verification started on	27 July 2023
EPD verification completed on	30 August 2023
Supply-chain specific data %	>98%
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Silvia Vilčeková
EPD Generator module	Bitumen membranes
Independent software verifier	Ugo Pretato, Studio Fieschi & soci
Software verification date	2023-06-22

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elisabet Amat

VERIFICATION AND REGISTRATION (INTERNATIONAL EPD SYSTEM)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.3.1
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Third party verifier	Elisabet Amat, GREENIZE
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	☐ yes ☑ no

EPD® THE INTERNATIONAL EPD® SYSTEM

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ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	2,63E0	1,81E0	5,57E-1	MND	MND	MND	MND	4,37E0	MND	MND	0E0	5,41E-2	1,78E1	6,13E-1	2,08E0
Ozone depletion Pot.	kg CFC_{-11}e	1,86E-7	3,53E-7	3,5E-8	MND	MND	MND	MND	2,97E-6	MND	MND	0E0	1,08E-8	7,47E-8	1,28E-8	1,45E-6
Acidification	kg SO_2e	1,07E-2	4,23E-3	1,06E-3	MND	MND	MND	MND	1,77E-2	MND	MND	0E0	1,41E-4	5,09E-3	6,7E-4	1,48E-2
Eutrophication	kg PO_4^3e	3,26E-3	8,82E-4	3,09E-4	MND	MND	MND	MND	4,53E-3	MND	MND	0E0	2,99E-5	1,95E-3	3,62E-2	4,02E-3
POCP (“smog”)	kg C_2H_4e	5,19E-4	2,21E-4	1,34E-4	MND	MND	MND	MND	1,06E-3	MND	MND	0E0	6,58E-6	1,59E-4	1,23E-4	8,39E-4
ADP-elements	kg Sbe	5,87E-6	2,09E-5	1,99E-6	MND	MND	MND	MND	1,91E-5	MND	MND	0E0	1,3E-7	2,02E-6	1,84E-7	1,46E-5
ADP-fossil	MJ	1,73E2	2,9E1	6,13E0	MND	MND	MND	MND	1,28E2	MND	MND	0E0	8,73E-1	4,07E0	1,26E0	1,31E2

ANNEX 2 : LIFE-CYCLE ASSESSMENT RESULT VISUALIZATION