



ENVIRONMENTAL PRODUCT DECLARATION

in accordance with EN15804:2012+A2:2019/AC:2021 and ISO14025 for:

RASCO SAM with Vulcanisation Strip (Thickness 1,5mm)

(Waterproofing membrane)



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 <u>www.environdec.com</u>."

Programme	e 1	EPD registration number	Pubblication date	Valid Until	Geographical scope
The International	EPD International AB	S-P-11231	2023-11-21	2028-11-20	Global
EPD System					
www.environdec.com					



1. Company description / goal & scope

As an innovative and dynamic company **Rasco Bitumentechnik GmbH** concentrates on the development, manufacturing and sale of building protection systems which are well-known throughout the market.

With bitumen-based solvent-free waterproofing systems we offer our customers those products which are required for safe and long-term building damp-proofing in accordance with current EN and DIN standards from one source.

In 1993 **Rasco Bitumentechnik GmbH** started the development, production and sale of anionic bitumen emulsions for further processing on a private label basis in the East-Westphalia town of Augustdorf. In-house research and development soon led to solvent-free bituminous products in the form of bitumen thick coatings, which were later followed by self-adhesive membranes. The company grew rapidly; so that just four years after the company was founded a move to new production facilities was required. Since 2006 the company has been a subsidiary company of a leading international building adhesives company. Thanks to focussed

and future-oriented policies, the success story has continued to this day.



Today, various bitumen waterproofing system products are produced and tested in two production and warehouse halls with a size of approximately 25,000m², products which are in accordance with general building regulations and product specific EN and DIN standards.

The goal of the study is to provide necessary data and documentation to produce an EPD according to the requirements of PCR Environdec (version 1.3.1, 2023-07-08) under EN 15804:2012+A2:2019/AC:2021 and to have more comprehension about the environmental impacts related to **RASCO SAM with Vulcanisation Strip** manufactured in **Rasco Bitumentechnik GmbH** located in Augustdorf (DE), including packaging of the finished products.







Target audience of the study are customers and other parties with an interest in the environmental impacts of **RASCO SAM with Vulcanisation Strip**. This analysis shall not support comparative assertions intended to be disclosed to the public

2. Product description

RASCO SAM with Vulcanisation Strip is a Cold-applied self-adhesive bituminous sealing membrane for waterproofing of structures in accordance with DIN 18533, EN 13969, DIN V 20000-202 and for use as a dampproof course in accordance with EN 14967. It protects underground structures according to DIN 18533 part 2 permanently against W1-E (ground damp and pressure-free water) and W4-E (splash water and ground damp at wall base as well as capillary water in and under walls) and can be used as dampproof course below screeds. It can also be applied to balconies, loggias and pergolas in accordance with DIN 18531 part 5.

RASCO SAM with Vulcanisation Strip is compliant with European legislation and it is sold in different delivery units:

- 20 rm / carton | 15 cartons / pallet | pallet weight approx. 550 kg
- 15 rm / carton | 15 cartons / pallet | pallet weight approx. 430 kg
- 5 rm / carton | 24 cartons / pallet | pallet weight approx. 250 kg

3. Content declaration

The main components and ancillary materials of the products included in this EPD are the following:

Materials	Percentage (%) by mass	Post-consumer recycled material weight-%	Biogenic Material, weight-% and kgC/kg
Bitumen	67,1	0	0 resp. 0
Additives	16,1	0	0 resp. 0
Polymers	16,9	0	0 resp. 0
Packaging Materials	Percentage (%) by mass	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Cardboard	1,4	0	0,40
Paper	0,851	0	0,40
Wood	2,93	0	0,43
PE	0,137	0	0

Table 1: Composition

The product does not contain a concentration higher than 0,1% (by unit weight) of either carcinogenic substances or substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency.





4. Declaration unit and reference service life

The delcared unit is 1m² of finished product packaging included (15 rm delivery unit).

Due to the selected system boundary, the reference service life of the product is not specified.

5. System boundaries and additional technical information

The approach is a "cradle to gate" with options, modules A1-A3 + A4-A5 + C + D; The following modules have been considered:

- A1 A3 (Product stage): extraction and transport of raw materials, packaging included production process.
- A4 A5 (Construction process stage): transport of the finished product to final customers and installation into the building with the incineration of the packaging material.
- **C1 C4** (End of life stage): collection rate of 100% as C&D waste, considering an end-of-life scenario with recycling, incineration, and disposal.
- **D** (Resource recovery stage): contains credits from the recycling of the product in module C3 and the credit from the incineration of a fraction of packaging waste. At the end of life, the product can be collected and recycled for use in substitution of virgin raw aggregates. Benefits and loads of energy recovery and recycling of installation and demolition wastes are considered.

A brief description of production process is the following:

The bituminous membrane production is a coating process. Raw materials such as bitumen, polymers, resins, fillers, and other additives are first put inside a primary mixer and heated up to 180°C. After a mixing time of 5 / 6 hours it cools down. Then the membrane is produced in a film coating process. At the end of the process, the product is wounded into rolls and palletized.





Table 2: system boundaries

	Proc	luct s	tage	pro	ruction cess ige	Use stage				End of life stage				Resource recovery stage			
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
Module	A1	A2	A3	A4	A5	B1	B2	В3	В4	B5	B6	B7	СІ	C2	С3	C4	D
Modules declared	Х	Х	Х	Х	Х	MND	MND	MND	MND	MND	MND	MND	Х	Х	Х	Х	Х
Geography	EU	EU	DE	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data			> 90	%		-	-	-	-	-	-	-	-	-	-	-	-
Variation – products			0%			-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites			0%			-	-	-	-	-	-	-	-	-	-	-	-

*MND = Module not Declared

Table 3: Transport to the building site (A4) per DU (Declared Unit)

Scenario information	Value	Unit
Means of transport: truck-trailer euro 5, gross weight 34-40 t, payload capacity	y 27 t	
Litres of fuel (diesel for truck)	0,00197	l/100km
Litres for fuel (HFO for ship)	6,9E006	l/100km
Transport distance - truck	1,3E003	km
Transport distance - ship	500	km
Capacity utilisation (including empty runs) - ship	0,48	%
Capacity utilisation (including empty runs) - truck	0,61	%
Gross density of products transported	-	kg/m3
Capacity utilisation volume factor	1	%





Table 4: Installation into the building site (A5) per DU

Scenario information	Value	Unit
Ancillary materials for installation	0	kg
Water use	0	m3
Other resources use (propane)	0	kg/m2
Electricity and other energy consumption for the installation	0	kWh
Waste materials on building site before waste processing, generated by the product's installation (specified by type)	0,00243(PE) 0,052(wood) 0,0248(cardboard) 0,0151(paper)	kg
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	6,47(recycling) 0,0122(landfill) 2,95(incineration)	kg

Table 5: End of life (C1-C4) per DU

Scenario information	Value	Unit
Collected separately	0	kg
Collected with mixed construction waste	1,78	kg
Reuse	0	kg
Recycling	0,266	kg
Energy recovery	0,71	kg
Landfill	0,799	kg
Transport to recycling	300	km
Transport to energy recovery	100	km
Transport to landfill	50	km





6. Cut-off and allocation

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied to hide data. Cut-off criteria, where applied, are described in Table 6.

Table 6: Cut-off criteria

Process excluded from study	Cut-off criteria	Quantified contribution from process		
A3: production (auxiliary materials)	Less than 10 ⁻⁴ kg/kg of finished product	Sensitivity study demonstrates a relative contribution lower than 0,5%		

For the allocation procedure and principles consider the following table:

Table 7: Allocation procedure and principles

Module	Allocation principle
Al	All data are referred to 1m ² of product. A1: electricity is allocated to the reference production line.
A3	All data are referred to 1m ² of packaged product. A3-wastes: the data are allocated to the whole plant production and to the reference production line.





7. Environmental performance and interpretation



Climate change

GWPtotal - Global Warming Potential refers to the emission/presence of GHGs (greenhouse gases) in the atmosphere (mainly CO2, N2O, CH4) which contribute to the increase in the temperature of the planet. GWP-total considers:

- GWP-fossil
- GWP-biogenic
- GWP-luluc (land use and land use change)

Ozone Depletion

Ozone Depletion Potential refers to the degradation of the stratospheric layer of the ozone involved in blocking the UV component of sunrays. Depletion is due to particularly reactive components that originate from chlorofluorocarbon (CFC) or chlorofluoromethane (CFM).



FP

ODP

Acidification

Acidification Potential refers to the emission of specific acidifying substances (i.e. NOx, SOx) in the air. These substances decrease the pH of the rainfall with predictable damages to the ecosystem.

Eutrophication

Eutrophication Potential refers to the nutrient enrichment, which determines unbalance in ecosystems and causes the death of the fauna and decreased biodiversity in flora. It considers:

- EP-freshwater: acquatic freshwater
- EP-marine: acquatic marine
- EP-terrestrial



Photochemical ozone formation

The Photochemical Ozone Creation Potential is the ozone formation in low atmosphere. This is quite common in the cities where a great amount of pollutants (like VOC and NOx) are emitted every day (Industrial emissions and vehicles). It is mainly diffused during the summertime.



Depletion of abiotic resources – minerals and metals

Abiotic Depletion Potential elements refers to the depletion of the mineral resources.

minerals&metals



Depletion of abiotic resources – fossil fuel

Abiotic Depletion Potential fossil fuel refers to the depletion of the fossil fuel resources.

ADP-fossil



Water use

It expresses the potential deprivation of water, that consists in not having the water needs satisfied.







The following tables show the environmental impacts for the products considered according to the requirements of EN15804:2012+A2:2019/AC:2021. The results are referred to the declared unit (see § 4). The additional environmental indicators are not declared. 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. We discourage the use of the outcomes from modules A1-A3 without considering the results obtained from modules C.

RASCO SAM with Vulcanisation Strip (1m² of product in 15 rm delivery unit)

Table 8: RASCO SAM with Vulcanisation Strip: Potential environmental impact – mandatory indicators according to EN 15804 referred to Im² of product in 15 rm delivery unit.

	A1-A3	A4	A5	C1	C2	С3	C4	D
GWP total [kg CO2 eq.]	3,49E00	2,05E-01	1,21E-01	0,00E00	1,39E-02	7,60E-01	1,01E-02	-1,54E-01
GWP fossil [kg CO2 eq.]	3,52E00	1,95E-01	3,78E-02	0,00E00	1,32E-02	7,60E-01	1,00E-02	-1,53E-01
GWP biogenic [kg CO2 eq.]	-3,30E-02	8,37E-03	8,27E-02	0,00E00	6,14E-04	5,04E-05	2,81E-05	-1,32E-03
GWP luluc [kg CO2 eq.]	3,32E-03	1,64E-03	7,76E-07	0,00E00	1,27E-04	2,01E-05	3,16E-05	-2,07E-05
ODP [kg CFC-11 eq.]	1,48E-04	2,42E-14	6,78E-15	0,00E00	1,78E-15	1,39E-13	2,59E-14	-1,39E-12
AP [Mole of H+ eq.]	1,62E-02	1,22E-03	2,15E-05	0,00E00	4,99E-05	4,00E-04	7,21E-05	-4,37E-04
EP freshwater [kg P eq.]	5,01E-04	6,51E-07	5,36E-09	0,00E00	5,01E-08	7,86E-08	2,05E-08	-3,69E-07
EP marin [kg N eq.]	3,49E-03	4,28E-04	8,63E-06	0,00E00	2,30E-05	1,56E-04	1,86E-05	-9,60E-05
EP terrestrial [Mole of N eq.]	3,73E-02	4,77E-03	9,80E-05	0,00E00	2,58E-04	1,78E-03	2,05E-04	-1,03E-03
POCP [kg NMVOC eq.]	1,23E-02	9,67E-04	2,17E-05	0,00E00	4,53E-05	4,06E-04	5,62E-05	-3,73E-04
ADP mineral [kg Sb eq.]	9,65E-06	1,19E-08	5,86E-11	0,00E00	9,09E-10	1,81E-09	4,70E-10	-1,80E-08
ADP fossil [MJ]	1,16E02	2,62E00	1,81E-02	0,00E00	1,87E-01	3,79E-01	1,35E-01	-1,06E01
WDP [m ³ world equiv.]	8,33E-01	2,17E-03	4,64E-03	0,00E00	1,66E-04	9,49E-02	1,12E-03	-1,73E-02

GWP total: Global Warming Potential total; GWP fossil: Global Warming Potential fossil fuels; GWP biogenic: Global Warming Potential biogenic; GWP luluc: Global Warming Potential land use and land use change; ODP: Depletion Potential of the stratospheric Ozone layer; AP: Acidification Potential; EP freshwater: Eutrophication Potential, freshwater; EP marine: Eutrophication Potential, marine; EP terrestrial: Eutrophication Potential, terrestrial; POCP: Formation potential of tropospheric ozone; ADP minerals: Abiotic Depletion Potential for non-fossil resources; ADP fossil: Abiotic Depletion Potential for fossil resources; WDP: Water Deprivation Potential.





Table 9: RASCO SAM with Vulcanisation Strip: Potential environmental impact additional mandatory and voluntary indicators according to EN 15804 referred to 1m² of product in 15 rm delivery unit.

	A1-A3	A4	A5	СІ	C2	С3	C4	D
GWP-GHG [kg CO2 eq.]	3,53E00	1,97E-01	3,78E-02	0,00E00	1,33E-02	7,60E-01	1,01E-02	-1,54E-01

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 10: RASCO SAM with Vulcanisation Strip: Use of resources referred to 1m² of product in 15 rm delivery unit.

	A1-A3	A4	A5	С1	C2	С3	C4	D
PERE [MJ]	5,43E00	1,76E-01	1,67E00	0,00E00	1,36E-02	8,41E-02	2,21E-02	-9,53E-01
PERM [MJ]	1,67E00	0,00E00	-1,67E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
PERT [MJ]	7,10E00	1,76E-01	4,08E-03	0,00E00	1,36E-02	8,41E-02	2,21E-02	-9,53E-01
PENRE [MJ]	1,16E02	2,63E00	1,30E-01	0,00E00	1,88E-01	3,79E-01	1,35E-01	-1,06E01
PENRM [MJ]	1,12E-01	0,00E00	-1,12E-01	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
PENRT [MJ]	1,16E02	2,63E00	1,81E-02	0,00E00	1,88E-01	3,79E-01	1,35E-01	-1,06E01
RSF [MJ]	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
NRSF [MJ]	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
FW [m3]	2,10E-02	1,93E-04	1,10E-04	0,00E00	1,49E-05	2,24E-03	3,42E-05	-7,87E-04

PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM: Use of renewable primary energy resources used as raw materials; PERT: Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials; PERT: Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials; PERT: Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials; PENRE: Use of non-renewable primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials; PENRT: Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); SM: Use of secondary material; RSF: Use of renewable secondary fuels; NRSF: Use of non-renewable secondary fuels; FW: Net use of fresh water.





	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD [kg]	1,59E-05	8,15E-12	6,43E-13	0,00E00	5,81E-13	1,29E-11	2,95E-12	8,95E-11
NHWD [kg]	4,42E-02	3,88E-04	5,21E-03	0,00E00	2,86E-05	1,04E-01	6,77E-01	-1,96E-03
RWD [kg]	2,84E-04	4,77E-06	7,85E-07	0,00E00	3,51E-07	1,61E-05	1,54E-06	-2,54E-04
CRU [kg]	1,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
MER [kg]	0,00E00	0,00E00	2,95E-02	0,00E00	0,00E00	6,02E-01	0,00E00	0,00E00
MFR [kg]	0,00E00	0,00E00	4,08E-02	0,00E00	0,00E00	0,00E00	0,00E00	0,00E00
EEE [MJ]	0,00E00	0,00E00	8,19E-04	0,00E00	0,00E00	8,45E-01	0,00E00	0,00E00
EET [MJ]	0,00E00	0,00E00	1,54E-03	0,00E00	0,00E00	1,58E00	0,00E00	0,00E00

Table 11: RASCO SAM with Vulcanisation Strip: Waste production and output flows referred to 1m² of product in 15 rm delivery unit.

HWD: Hazardous waste disposed; NHWD: Non-Hazardous waste disposed; RWD: Radioactive waste disposed; CRU: Components for re-use; MFR: Material for recycling; MER: Material for energy recovery; EEE: Exported energy electrical; EET: Exported energy thermal

Table 12: RASCO SAM with Vulcanisation Strip: Information on biogenic carbon content at the factory gate referred to 1m² of product in 15 rm delivery unit.

	Quantity
Biogenic carbon content in product [kg]	0,00E00
Biogenic carbon content in packaging [kg]	3,83E-02

More details about electrical mix used in this EPD, is shown below:

	Data source	GWP-GHG	Unit
Residual electricity grid mix (IT) - 2022	AIB	0,787	kg CO2-eqv/kWh





8. Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
	Al	
Bitumen	Sphera Database	2019-2025
Polymers	Sphera Database	2022-2025
Other additives	Ecoinvent Database 3.9	2022
Residual electricity grid mix (DE)	AIB; Sphera Database	2022
	A2 (Transport)	
Truck transport (27 ton payload – GLO)	Sphera Database	2022-2025
Diesel for transport (EU)	Sphera Database	2019-2025
	A3 (production)	
Packaging (EU)	Sphera Databse & Ecoinvent Database 3.9	2012-2022
Diesel mix (EU)	Sphera database	2019-2025
	A4 (transport)	
Truck transport (27ton payload - GLO)	Sphera Database	2022-2025
Diesel for transport (EU)	Sphera Database	2019-2025
Ocean ship (27500 DWT payload - GLO)	Sphera Database	2022-2024
Heavy fuel oil for ship transport (EU)	Sphera Database	2019-2025
	C1-C4 (End of Life)	
Truck transport (9,3 ton payload - GLO)	Sphera Database 2	
Diesel for transport (EU)	Sphera Database 2019-2025	
Construction waste dumping (EU)	Sphera Databse	2022-2025
Construction waste treatment (EU)	Sphera Database	2022-2025

All data included in table above refer to a period between 2019 and 2025; the most relevant ones are specific from supplier, while the others (i.e., transport and minor contribution dataset), come from European and global databases.

All datasets are not more than 10 years old according to EN 15804 §6.3.8.2 "Data quality requirements".

The Quality level concerning datasets used in the EPD can be considered as "very good" or "good" according to Annex E of the EN 15804 (current version). Primary data concern the year 2022 and represent the whole annual production.







9. Additional information

9.1 Disassembly

The finished product is potentially suitable for disassembly through selective demolition.

9.2 Biogenic content

Biogenic carbon content in 1m² of formulation is 0,00E00 kgC/kg. Biogenic carbon content at the factory gate referred to 1m² of product with packaging is 3,83E-02 kgC/kg.





10. Verification and registration

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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. For further information about comparability, see EN 15804 and ISO 14025.

CEN standard EN15804 served as the Core Product Category Rules (PCR)			
PCR:	PCR 2019:14 Construction products (EN 15804:A2), Version 1.3.1, 2023-07-08, UN CPC code 54		
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: Lars-Gunnar Lindfors. The review panel may be contacted via the Secretariat www.environdec.com/contact.		
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	EPD Process CertificationEPD Verification		
Third party verifier:	Certiquality S.r.l. Number of accreditations: 0008prd rev.000		
Accredited or approved by:	Accredia		
Procedure for follow-up of data during EPD validity involves third-party verifier	🗵 Yes 🗆 No		







11. References

- 1. EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS ENVIRONMENTAL PRODUCT DECLARATIONS CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- 2. EN 13707: FLEXIBLE SHEETS FOR WATERPROOFING REINFORCED BITUMEN SHEETS FOR ROOF WATERPROOFING DEFINITIONS AND CHARACTERISTICS
- 3. EUROPEAN DIRECTIVE 2008/98/EC
- 4. EUROPEAN RESIDUAL MIXES VERSION 1.0, 2023-06-01 (AIB: ASSOCIATION OF ISSUING BODIES)
- 5. EWA (EUROPEAN WATERPROOFING ASSOCIATION): SECTOR EPD S-P-00414
- 6. GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 3.01
- 7. ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS TYPE III ENVIRONMENTAL DECLARATIONS PRINCIPLES AND PROCEDURES
- 8. ISO 14044 ENVIRONMENTAL MANAGEMENT LIFE CYCLE ASSESSMENT REQUIREMENTS AND GUIDELINES
- 9. PCR 2019:14 CONSTRUCTION PRODUCTS (EN 15804: A2), UN CPC CODE 54; VERSION 1.31
- 10. EUROPEAN DIRECTIVE 94/62/EC







12. Contact information

EPD owner:	Rasco Bitumentechnik GmbH https://www.rasco-bitumen.com
LCA author:	Mapei SpA www.mapei.it; Environmental Sustainability Office
Programme operator:	The International EPD® System Address: EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden Website: <u>www.environdec.com</u> E-mail: <u>info@environdec.com</u>



