Sopro Bauchemie GmbH,
Wiesbaden

Declaration that

Sopro KMB Flex 2-K 651

complies with the Model Environmental Product Declaration

EPD-DBC-20250268-IBP1-EN

Dear customer,
Sopro Bauchemie GmbH is a member of Deutsche Bauchemie e.V. which has developed Model EPDs for Polymer-modified bituminous thick coatings. These Model EPDs were verified by the independent institute IBU (Institut Bauen und Umwelt); Germany's EPD program holder organisation.
The Model EPDs have been published on the website of Deutsche Bauchemie (https://muster-epd.deutsche-bauchemie.de), and also on the websites of the IBU[1] and ECO[2] (Platform of the European EPD Programme Operators[3]) and can be downloaded there.
As a member of Deutsche Bauchemie, and with the help of an internal members' guidance paper, Sopro Bauchemie GmbH is entitled to determine the compatibility of its product with the Model EPD.

By means of this declaration, we confirm that we have verified the conformity of

Sopro KMB Flex 2-K 651

with the Model EPD for Polymer-modified bituminous thick coatings according to the guidance developed for this purpose. This means that the LCA data and the other content of the attached Model EPD apply to the above-mentioned product and can be used for the assessment of buildings.
Please do not hesitate to contact us if you require any further information.
Yours sincerely,

Wiesbaden, den 15/09/2025

Qualitätsmanagement · Forschung & Entwicklung
Sopro
65203 Wiesbaden
Produktion · Technik

Stefan Großmann, Leiter ProduktTechnologie

Annex:
Polymer-modified bituminous thick coatings, EPD-DBC-20250268-IBP1-EN

[1] http://construction-environment.com/hp11212/EPD-Overview.htm
[2] http://www.eco-platform.org/list-of-all-eco-epd.html
[3] The mission of the ECO platform is to achieve the mutual recognition of EPDs from different Programme holders - http://www.eco-platform.org/the-mission.html

ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Deutsche Bauchemie e.V.
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DBC-20250268-IBP1-EN
Issue date	03.09.2025
Valid to	02.09.2030

Polymer modified bituminous thick coatings for waterproofing

Deutsche Bauchemie e.V.

Institut Bauen und Umwelt e.V.

www.ibu-epd.com | https://epd-online.com

ECO PLATFORM EPD VERIFIED













1. General Information

Deutsche Bauchemie e.V.

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-DBC-20250268-IBP1-EN

This declaration is based on the product category rules:

Polymer-enhanced bituminous thick layer compounds for sealing buildings, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

03.09.2025

Valid to

02.09.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Polymer modified bituminous thick coatings for waterproofing

Owner of the declaration

Deutsche Bauchemie e.V.
Mainzer Landstr. 55
60329 Frankfurt
Germany

Declared product / declared unit

1 kg: 600-1400 kg/m³

Scope:

This declaration is exclusively valid for the specified product groups (polymer modified bituminous thick coatings) for works in Germany for five years after the date of issue. This EPD is a Model EPD where the product displaying the highest environmental impact in a group was selected for calculating the EPD results.
This EPD may be used by members of DBC provided it has been proven that the respective product can be represented by this EPD. For this purpose, a guideline is available at the secretariat of DBC. The members of the association are listed on the website.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Matthias Schulz,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Polymer-modified bituminous thick coatings are paste-like bitumen-based emulsion masses which are enhanced with polymers and can be applied with a palette knife or sprayed on. Polymer-modified bituminous thick coatings can be polystyrene-filled and/or fibre-reinforced, and both single-component and twin-component. The second component can be powdery and mineral-based or liquid/paste-like.

Due to the possibility of applying them in thick layers, polymer-modified thick bituminous coatings represent a reliable and safe type of waterproofing which features good crack bridging. These are long-life waterproofing products which protect construction components and contribute to their functionality and value retention. The serviceability of buildings can be significantly improved and their service life considerably extended through their use. The product with the greatest environmental impact was selected as a representative product to calculate the LCA results.
For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) with the exception of Switzerland, products falling under Regulation (EU) No 305/2011 (CPR) need a Declaration of Performance (DoP) taking into consideration either the relevant harmonised European standards (hEN) or the European Technical Assessment (ETA) and the CE marking. The product requires a declaration of performance in compliance with *DIN EN 15814:2011+A2:2014*, Polymer-modified bituminous thick coatings for waterproofing and CE marking. The respective national provisions apply to use.

2.2 Application

Polymer modified bituminous thick coatings are used to waterproof construction components for the Polymer modified bituminous thick coatings are used to waterproof construction components for the following applications:

Module 1: Areas in contact with soil

- Against ground water and impact of pressuring water
- Polymer modified bituminous thick coatings protect the construction components against aggressive substances which occur naturally in the ground.

Module 2: On horizontal and sloping surfaces

- Outdoors: Balconies, loggias and pergolas.
- In areas in contact with soil: Earth-covered ceilings against non-pressuring water.

Module 3: Joints

- Movement and butt joints between concrete building components with high water penetration resistance.
- For intersections between building waterproofing on concrete components with high water penetration resistance

2.3 Technical Data

Information on the performance of the construction product in relation to its essential characteristics are contained in the declaration of performance in accordance with *EU Regulation No. 305/2011 (Construction Products Regulation)*.
Technical data in accordance with *EN 15814*, Polymer modified bituminous thick coatings for waterproofing:

- Crack-bridging capabilities to *EN 15812*, method A ·
- Flexibility at low temperatures to *EN 15813*
- Resistance to compression to *EN 15815*
- Resistance to rain to *EN 15816*
- Resistance to water to *EN 15817*
- Dimensional stability at high temperatures to *EN 15818*
- Reduction of layer thickness when fully dried to *EN 15819*
- Watertightness to *EN 15820*
- Water vapour diffusion resistance insofar as relevant for the application
- Pressure water (up to 3 m water column) to *PGFBB, Part 1*

Additionally required for Module 3 Joints/transitions to concrete components with high water penetration resistance:

Technical data according to the 'Testing principles regarding the issuing of general building supervisory inspection certificates for joint sealants in construction components i. a. made from concrete with high resistance to water penetration in contact with soil, Part 1: Seals for construction joints, crack cross-sections, transitions and connections *(PG-FBB, Part 1)*'.

The minimum requirements of the testing principles for the application areas indicated in the general building supervisory test certificate must be complied with. The characteristics for the proof of usability are to be specified in accordance with the testing principles.

Performance values for the product in accordance with declaration of performance in relation to its essential characteristics in accordance with *DIN EN 15814:2011+A2:2014*, Polymer modified bituminous thick coatings for waterproofing.

Technical data in accordance with EN 15814

Name	Value	Unit
Crack bridging features acc. to EN 15812, method A	Class CB2	-
Resistance to rain acc. to EN 15816)	At least Class R2	-
Resistance to water acc. to EN 15817	passed	-
Thickness depletion when dried out acc. to EN 15819	Declaration of value (≤ 50 %)	%
Waterproof acc. to EN 15820	Class W2A	-
Flexibility at low temperatures acc. to EN 15813	passed	-
Dimensional stability at high temperature acc. to EN 15818	passed	
Reaction to fire acc. to EN 13501-1	Class E	
Resistance to compression acc. to EN 15815	Class C2A	

Additionally required for Module 3 Joints/transitions to concrete components with high water penetration resistance:

Technical data according to the 'Testing principles regarding the issuing of general building supervisory inspection certificates for joint sealants in construction components i.a. made from concrete with high resistance to water penetration in contact with soil, Part 1: Seals for construction joints, crack cross-sections, transitions and connections (*PG-FBB, Part 1)*'.

The minimum requirements of the testing principles for the application areas indicated in the general building supervisory test certificate must be complied with. The characteristics for the proof of usability are to be specified in accordance with the testing principles.

Performance values for the product in accordance with declaration of performance in relation to its essential characteristics in accordance with *DIN EN 15814:2011+A2:2014,* Polymer modified bituminous thick coatings for waterproofing.

2.4 Delivery status

Liquid or paste-like in white tin or plastic containers, in separate or combined containers suitably tailored to the correct mixing ratio for the specific application. Single-component products in individual white tin or plastic containers. A protective foil can be placed over the product surface to optimise storage stability.

Typical containers contain 10 to 32 kg or litres of material. Barrels with a capacity of approximately 200 kg or litres or IBCs (Intermediate Bulk Containers) with more than 1 tonne or 1 m³ of content are used for larger applications.
The second component is packaged in tubular bags, polyethylene (PE) foil bags, compound bags and/or plastic containers and can be packed separately in cartons if necessary.

The containers are packed onto pallets and enclosed in plastic foil to secure them for transport.
A steel container was modelled for the LCA.

2.5 Base materials/Ancillary materials

Polymer-modified bituminous thick coatings contain at least 35 % binder (bitumen and polymers). They are classified under GISBAU/-GISCODE BBP 10 Bitumen Emulsions due to their composition.

On average, the products covered by this EPD contain the following basic and auxiliary materials within the following margins:

- Bitumen: ~ 20-60 %
- Water: ~ 0-40 %
- Polymers: ~ 0-25 %
- Inorganic & organic fillers: ~ 0-30 %
- Cement ~ 0-15 %
- Additives: ~ 2-10 %

The margins specified are average values and the composition of products which comply with the EPD can deviate from the specified concentration ranges in individual cases. More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).

No flame retardants are used in the polymer modified bituminous thick coating (PMBC). Bitumen and polymer binding agents are used as watery emulsions or dispersions and not dissolved in organic solvents.

The auxiliary materials in the polymer-modified bituminous thick coating (PMBC) can be mineral-based mixtures, expanded polystyrene or inorganic and polymer fibers.

1) This product contains substances from the ECHA list of materials which are especially problematic for approval: substances of very high concern (SVHC) (Date 31/01/2025) above a mass of 0.1 %: no.

At the time this model EDP was issued, none of the substances used was included in the *REACH* candidate list (list in accordance with Article 59, Paragraph 1 of the *REACH* regulation). Substances from the candidate list which are present at a concentration of 0.1 % or above may be listed next to other ingredients to be declared in Section 3 of the safety data sheet for the respective product.

2) This product contains further Category 1A or 1B carcinogenic, mutagenic andreprotoxic (CMR) materials which are not on the candidate list at a mass concentration of above 0.1 percent of mass in at least one partial product: no.

None of the input substances were classified as category 1A or 1B CMR substances at the time this model EPD was issued. Substances classified as Category 1A/1B CMR substances at a concentration of 0.1 % or above may be listed along with other ingredients to be declared in Section 3 of the safety data sheet of the respective product.

3) Biocide products were added to this construction product or it was treated with biocidal products (this then concerns a treated product as defined by the EU Regulation on Biocidal Products No. 528/2012): yes.

In-can preservatives based on one or a combination of several active ingredients are approved for product type 6 (In-can-preservation) according to *EU Biocide Product Regulation No. 528/2012.*

2.6 Manufacture

The formulated product components are generally mixed together from the ingredients in a batch process and packed into the supply container. Quality standards in accordance with *ISO 9001* and the provisions of relevant regulations such as the Industrial Safety Directive and the Federal Emissions Control Act are complied with.

2.7 Environment and health during manufacturing

Generally, no further environmental protection measures beyond those which are legally prescribed are necessary.

2.8 Product processing/Installation

Polymer-modified bituminous thick coatings are processed using palette knives, brushes, rollers or sprays. Work safety measures are to be taken in accordance with the specifications in the safety data sheet and the conditions on-site and consistently complied with. Polymer-modified bituminous thick coatings are marked with the GISBAU-GISCODE BPP 10 code due to their composition.

Polymer-modified bituminous thick coatings are worked at the ambient temperature and not under heat. No bitumen or solvent vapours occur as a result. No health-relevant inhalation exposure is therefore to be expected during the manufacture, processing and use of polymer-modified bituminous thick coatings.

2.9 Packaging

Completely empty containers and slightly product-contaminated foils can be recycled. Reusable wooden pallets are taken back by the building materials trade (reusable pallets against reimbursement within the deposit system), returned by them to building product manufacturers and returned to the production process.

2.10 Condition of use

In the use phase, polymer-modified bituminous thick coatings form a homogeneous sealing film which consists of bitumen and auxiliary materials.

2.11 Environment and health during use

During the use phase, polymer modified bituminous thick coatings behave inertly. No hazards are known for water, air and soil if the products are used as designated.

2.12 Reference service life

Polymer-modified bituminous thick coatings fulfil specialised tasks in the construction or renovation of buildings. The usability of buildings can be improved accordingly and their original service life significantly extended by their use. The anticipated reference service life depends on the specific installation situation and the associated exposure of the product. It can be influenced by the weather and also by mechanical or chemical loads. - -

2.13 Extraordinary effects

Fire

Even without special fire protection equipment, polymer modified bituminous thick coatings fulfil the requirements of *EN13501-1* for fire class E as a minimum. Due to their installation as building waterproofing with soil contact in mineral-based substrates such as masonry or concrete, and due to the quantity used (thin-coated max. 4 mm), they also have only a minor influence on the fire properties of the building in which they are installed.

Water

Polymer-modified bituminous thick coatings are waterproof. They are used to waterproof buildings against damaging water ingress and flood impacts.

Mechanical destruction

The mechanical destruction of polymer modified bituminous thick coatings does not lead to decomposition products which are hazardous to the environment or to health.

2.14 Re-use phase

According to the current state of knowledge, no environmentally harmful effects are to be expected from dismantling and recycling components to which polymer modified bituminous thick coatings still adhere. If polymer modified bituminous thick coatings can be removed from building components without too much effort, then thermal recycling is a worthwhile recycling variant due to their energy content.

2.15 Disposal

Individual components which can no longer be recycled must be mixed together at the prescribed ratio and hardened.

Polymer-modified bituminous thick coatings are disposed of as follows:

- Hardened product residues are not hazardous waste.
- Non-hardened product residues are hazardous waste.
- Completely empty, dried containers (free of drops and scraped-clean) can be recycled.
- Residual quantities are to be disposed of in accordance with the local regulations.

The following *EWC waste codes* may be appropriate: if the bitumen products have not been contaminated with other products.

2-Component bitumen emulsion:

- Component A (bitumen component): 170302 or 161001
- Component B (powder component) 101311, 101314, 160303 or 160304

Hardened product remains:

- Components A & B mixed and hardened: 050117 or 050199

2.16 Further information

Further information can be found in the manufacturer's product or safety data sheets and is also available from the manufacturer's website or on enquiry. Valuable technical information is also available from the association's website (https://deutsche-bauchemie.de/)

3. LCA: Calculation rules

3.1 Declared Unit

This model EPD is based on the declared unit of 1 kg of polymer-modified bituminous thick coating at the mixing ratio of both components required for processing.

The assessments relate to the representative worst-case product; the data for the production process consists of average values from various manufacturers and production plants.

A consumption value per surface area unit and formulations are not specified in this EPD due to the different areas of application (depending on whether it is applied to a flat surface or in joints). Precise information is available in the manufacturer's data sheets.

The density of the products is within a range of approximately 600-1400 kg/m³.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	kg
conversion factor	1	-
Gross density min value	600	kg/m^3
Goss density max value	1400	kg/m^3

-

3.2 System boundary

The Declaration type is according to EN 15804: Cradle to gate with options, modules C1–C4, and module D (A1–A3, C, D) and additional modules (A4-A5).

Modules A1-A3, A4, A5, C1, C2, C3, C4 and D are included in the LCA:

· A1: Raw materials supply;
· A2: Transport to works;
· A3: Production including energy provision, manufacture of packaging and also auxiliary and operating materials and waste treatment;
· A4: Transport to the building site;
· A5: Installation (incineration of packaging materials as wooden pallets, plastic and paper and product residues, emissions during installation and disposal of steel tin plate);
C1: Deconstruction and demolition of the entire product. It considers energy generation and consumption of diesel and all the emissions connected with the fuel-burning process to run the machines;
C2: Transport to EoL
C3: Waste processing for reuse, recovery and/or recycling. C3 is not relevant for the product declared in the EPD;
C4: Disposal;

D: Module D accounts for potential benefits that are beyond the defined system boundaries. Credits from the burning of the packaging materials and product residue were estimated.

3.3 Estimates and assumptions

If no specific *Managed LCA Content 2024* processes were available, the individual component ingredients of the formulations were estimated based on manufacturer specifications or literature.

3.4 Cut-off criteria

No cut-off rules were applied in calculating the LCA. All raw materials submitted by the association for the formulations were included. The manufacture of machines, systems and other infrastructure required to produce the products under consideration was not included in the LCA.

3.5 Background data

Data from the *Managed LCA Content 2024* database was used as background data. This was supplemented by information from the manufacturer and research in the relevant literature if background data was not available.

3.6 Data quality

Representative products have been used, and the product from the group with the greatest environmental impact has been used to calculate the LCA results for this model EPD. The primary data is not more than 5 years old, and the production data represent an average of the year 2023.

3.7 Period under review

Representative formulations from Deutsche Bauchemie e.V. from 2024 were compiled for the formulations. The production data relates to a primary data collection from 2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Germany

3.9 Allocation

No allocations were applied for production. A multi-input allocation with a potential credit for electricity and thermal energy is deployed in accordance with the simple credit method for the burning of the packaging as well as the product residue after installation. The potential credits from the incineration of the packaging are credited in Module D.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. -
EPDs for building products may not be comparable if they are not based on *EN 15804*. In this case, 1 kg of polymer-modified bituminous thick coating was selected as the declared unit. An appropriate conversion factor, such as the specific surface weight may need to be included depending on the application. The *Managed LCA Content 2024* background database was used for modelling.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

-

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.0157	kg C

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

The following technical information is the basis for the declared modules or can be used for the development of specific scenarios in the context of a building assessment if modules are not declared (MND).

The emission factor used for the electricity grid mix used in A3 is equal to 0.847 *EN15804+A2 (EF 3.1)* Climate Change - total kg CO_2 eq./kWh.
After the installation, the PMBC product installed is 0.79 kg. The loss is due to the installation waste and water evaporation (water contained as raw material in the PMBC and water contained in the Polychloroprene dispersion 57 % solids).

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.0016	l/100km
Transport distance	500	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	600 - 1400	kg/m^3
Capacity utilisation volume factor	100	-

Installation into the building (A5)

Name	Value	Unit
Auxiliary	-	kg
Water consumption	-	m^3
Other resources	-	kg
Electricity consumption	0.025	kWh
Other energy carriers	-	MJ
Material loss	0.21	kg
Output substances following waste treatment on site	-	kg
Dust in the air	-	kg
VOC in the air	-	kg

-

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type waste type	-	kg
Collected as mixed construction waste	0.79	kg
Reuse	-	kg
Recycling	-	kg
Energy recovery	-	kg
Landfilling	0.79	kg

5. LCA: Results

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DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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
X	X	X	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg polymer-modified bituminous thick coating

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.21E+00	4.42E-02	2.72E-01	3.77E-04	1.15E-02	0	1.19E-02	-1.15E-01
GWP-fossil	kg CO_2 eq	1.26E+00	4.31E-02	2.06E-01	3.68E-04	1.12E-02	0	1.18E-02	-1.14E-01
GWP-biogenic	kg CO_2 eq	-4.76E-02	2.46E-04	6.57E-02	2.51E-06	6.39E-05	0	3.41E-05	-8.03E-04
GWP-luluc	kg CO_2 eq	2.04E-03	8.28E-04	9.33E-06	7.02E-06	2.15E-04	0	7.1E-05	-1.38E-05
ODP	kg CFC11 eq	9.08E-12	1.36E-14	3.43E-14	1.15E-16	3.53E-15	0	3.19E-14	-1.48E-12
AP	mol H^+ eq	2.27E-03	1.6E-04	7.44E-05	1.82E-06	6.66E-05	0	8.4E-05	-1.11E-04
EP-freshwater	kg P eq	4.99E-06	1.17E-07	1.09E-08	9.94E-10	3.04E-08	0	2.69E-08	-3.01E-07
EP-marine	kg N eq	7.23E-04	7.43E-05	1.92E-05	8.79E-07	3.24E-05	0	2.16E-05	-3.99E-05
EP-terrestrial	mol N eq	7.98E-03	8.37E-04	3.13E-04	9.78E-06	3.62E-04	0	2.38E-04	-4.24E-04
POCP	kg NMVOC eq	2.13E-03	1.51E-04	5.24E-05	2.49E-06	6.44E-05	0	6.61E-05	-1.05E-04
ADPE	kg Sb eq	1.03E-06	7.33E-09	4.3E-10	6.21E-11	1.9E-09	0	7.66E-10	-1.15E-08
ADPF	MJ	3.4E+01	5.65E-01	3E-01	4.79E-03	1.47E-01	0	1.56E-01	-1.73E+00
WDP	m^3 world eq deprived	6.98E-02	3.09E-04	2.51E-02	2.62E-06	8.01E-05	0	1.35E-03	-1.58E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg polymer-modified bituminous thick coating

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	4.84E+00	6.26E-02	6.13E-01	5.3E-04	1.62E-02	0	2.72E-02	-7.13E-01
PERM	MJ	5.95E-01	0	-5.95E-01	0	0	0	0	0
PERT	MJ	5.43E+00	6.26E-02	1.75E-02	5.3E-04	1.62E-02	0	2.72E-02	-7.13E-01
PENRE	MJ	1.82E+01	5.65E-01	2.81E+00	4.79E-03	1.47E-01	0	1.56E-01	-1.73E+00
PENRM	MJ	1.58E+01	0	-2.51E+00	0	0	0	0	0
PENRT	MJ	3.4E+01	5.65E-01	3E-01	4.79E-03	1.47E-01	0	1.56E-01	-1.73E+00
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	6.61E-03	5.85E-05	6.23E-04	4.95E-07	1.52E-05	0	4.13E-05	-2.27E-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; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg polymer-modified bituminous thick coating

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.35E-06	2.75E-11	3.95E-11	2.33E-13	7.14E-12	0	3.89E-11	-1.65E-09
NHWD	kg	2.16E-02	9.56E-05	2.72E-02	8.1E-07	2.48E-05	0	7.91E-01	-9.92E-04
RWD	kg	4.87E-04	9E-07	1.33E-05	7.63E-09	2.34E-07	0	1.64E-06	-6.36E-05
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	4.18E-01	0	0	0	0	0

EET	MJ	0	0	9.65E-01	0	0	0	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg polymer-modified bituminous thick coating

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND	ND
SQP	SQP	ND	ND	ND	ND	ND	ND	ND	ND

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer for EN 15804:2012+A2:2019: additional indicators

1) Potential Human exposure efficiency relative to U235 (IRP). 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 the soil, from radon and from some construction materials is also not measured by this indicator.

2) The results of the environmental impact indicator. ADP, WDP, ETP-fw, HTP-c, HTP-nc, SQP shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

3) Additional environmental impact indicators (suggested by (*DIN EN 15804:2012+A2:2019*)) are not declared in the EPD. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high and as there is limited experience with the indicator (see ILCD classification in EN 15804, table 5). For this reason, results based on these indicators are not considered suitable for decision making process and are thus not declared in the EPD.

6. LCA: Interpretation

The majority of impacts are associated with the production phase modules (A1-A3). The most significant contribution to the production phase impacts is the upstream production of raw materials as the main driver. The transportation to the construction site (A4) generates the second largest impacts in the values of Eutrophication (marine and terrestrial) in the AP and POCP due to the ammonia and nitrate. Emissions associated with the manufacturing of raw materials also have some influence on the formation potential of tropospheric ozone (POCP) in the production phase. The installation process (A5) generates a minor contribution to almost all impacts except for Global Warming Potential (GWP), due to the incineration of the packaging materials paper, plastic and pallets and Water depletion due to the type of industrial process.
Overall, the impact categories and LCI parameters are dominated by the production process A1-A3:

GWP: for global warming potential (100y) more than 70 % of the impact is dominated by the production and installation, followed by the installation of the material A5. The raw materials production and acquisition are primarily responsible for the high impact in A1-A3.

ODP: This impact is driven by the raw materials production and acquisition in A1, leading the A1-A3 modules to achieve more than 80 % of the impacts. All other processes have a very low impact, except for module D that achieves a considerable benefit.

AP: for this environmental impact indicator, the main contribution is given by A1-A3 and in particular, the raw materials production and acquisition result the most significant. All the other processes have a much lower impact.

EP – freshwater- marine- terrestrial: these indicators behave in a similar way. The production of raw materials and their acquisition is again dominant compared to the other phases. However, in this case the module A4 results to have a slightly higher impact compared to the other categories in particular for marine and terrestrial eutrophication.

POCP: as for the previous indicators, this impact category is mainly influenced by A1-A3 emission.

ADPe: This category has a predominant process that has the almost unique contribution given by A1-A3 modules (almost 100 %) and specifically raw materials and acquisition. All the other processes do not contribute significantly to the impact.

ADPf: Also, for this category, the main contribution is given by the modules A1-A3.

WU: The main contribution to the water depletion is given by A1-A3, followed by A5.

Focusing on the contribution of the raw materials, it emerges that the main responsible for the majority of the environmental impact categories is polychloroprene dispersion 57 % solids, followed by the straight run bitumen. The contribution of the polychloroprene dispersion 57 % solids ranges between 63 % approximately for ADPF and 95 % approximately for ODP. The highest contribution of the straight-run bitumen appears in ADPF. Considerable impacts are also given by fatty acids and condensate that count for EP freshwater, marine and terrestrial for approximately 7-8 %.

7. Requisite evidence

- 7.1 Leaching

Tests carried out so far to determine leaching behaviour (eluate analysis) give no clear indication that any negative effects on soil and ground water are to be expected. Tests based on the Requirements of Buildings with regard to their effect on Soil and Ground Water (ABuG), July 2017 edition, can be performed on a voluntary basis in accordance with Appendix 10 of the Model Administrative Provisions of the Technical Building Regulations (*MVV TB*)

8. References

Standards

DIN 18195
DIN 18195:2017-07, Waterproofing of buildings - Vocabulary

EN 13501-1
DIN EN 13501-1:2019-05, Fire classification of building products and building elements – Part 1: Classification using data from reaction to fire tests.

EN 15804
EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025
EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

Further references

EN 15812
DIN EN 15812:2011-06, Polymer modified bituminous thick coatings for waterproofing - Determination of crack bridging ability

EN 15813
DIN EN 15813:2011-06, Polymer modified bituminous thick coatings for waterproofing - Determination of flexibility at low temperatures.

EN 15814
DIN EN 15814:2015-03, Polymer modified bituminous thick coatings for waterproofing - Definitions and requirements

EN 15815
DIN EN 15815:2011-06, Polymer modified bituminous thick coatings for waterproofing - Resistance to compression.

EN 15816
DIN EN 15816:2011-06, Polymer-modified bituminous thick coatings for waterproofing - Resistance to rain.

EN 15817
DIN EN 15817:2011-06, Polymer modified bituminous thick coatings for waterproofing - Water resistance.

EN 15818
DIN EN 15818:2011-06, Polymer modified bituminous thick coatings for waterproofing - Determination of dimensional stability at high temperature.

EN 15819
DIN EN 15819:2011-06, Polymer modified bituminous thick coatings for waterproofing - Reduction of the thickness of the layer when fully dried.

EN 15820
DIN EN 15820:2011-06, Polymer modified bituminous thick coatings for waterproofing - Determination of watertightness.

ISO 9001
DIN EN ISO 9001:2015-11, Quality management systems - Requirements.

CPR
CPR Regulation
(EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

Managed LCA Content. (2024)
Dataset documentation for the software-system and databases (version 2024.2), LBP, University of Stuttgart and Sphera, Leinfelden-Echterdingen. Retrieved from (https://sphera.com/product-sustainability-software/)

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Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2022
www.ibu-epd.com

EU Ordinance on Biocide Products (EU) No 528/2012):
Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products* which harmonises the rules in the European Union (EU) concerning the sale and use of biocidal products, while ensuring high levels of protection of human and animal health, and of the environment.
* products such as household disinfectants, insecticides and other chemicals used to suppress pests - parasites, fungi, bacteria, etc. - or to protect materials. As their properties can pose risks to humans, animals and the environment, they are regulated at the EU level.

EWC waste code
European Waste Catalogue regulation (EWC).

GISBAU
GISBAU: Construction industry trade association hazardous substance information system https://www.bgbau.de/.

MVV TB
Model Administrative Provisions of the Technical Building Regulations, 2024/1 edition.

PCR Part A
Calculation rules for the LCA and requirements of the project report , Version 1.4, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 04-2024

PCR Part B
Product category rules for building products Part B: Requirements of the EPD for Polymer-enhanced bituminous thick layer compounds for sealing buildings, Version 11, Institut

Bauen und Umwelt e.V. (IBU), 2024.

PG-FBB, Part 1
Testing principles regarding the issuing of general building supervisory inspection certificates for joint sealants in construction components i. a. made from concrete with high resistance to water penetration in contact with soil, Part 1: Seals for construction joints, crack cross-sections, transitions and connections; May 2020

REACH regulations

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

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