ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	VdL - Verband der deutschen Lack- und Druckfarbenindustrie e.V.
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VDL-20240620-IBN1-EN
Issue date	03.06.2025
Valid to	02.06.2030

Dispersion-based facade paints

Verband der deutschen Lack- und Druckfarbenindustrie e.V. (VdL)

Institut Bauen und Umwelt e.V.

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1. General Information

Verband der deutschen Lack- und Druckfarbenindustrie e.V. (VdL)

Programme holder

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

Declaration number

EPD-VDL-20240620-IBN1-EN

This declaration is based on the product category rules:

Coatings with organic binders, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

03.06.2025

Valid to

02.06.2030

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

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

Dispersion-based facade paints

Owner of the declaration

VdL - Verband der deutschen Lack- und Druckfarbenindustrie e.V.
Mainzer Landstraße 55
60329 Frankfurt a. M.
Germany

Declared product / declared unit

Production of 1 kg dispersion-based facade paint; density 1,000 - 1,700 kg/m³

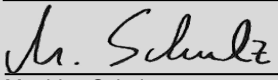
Scope:

This is an Association EPD of the Verband der deutschen Lack- und Druckfarbenindustrie e.V. (Association of the German Paint and Printing Ink Industry) (VdL). To calculate the LCA, a representative worst-case composition was determined for a range of products with the highest environmental impact.
This worst-case declaration is based on the information provided by the members of the VdL sector group for architectural coatings. It applies exclusively to the products represented by the worst-case composition for plants in Germany, for five years from the date of issue.
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

Dispersion-based facade paints comply with *EN 1062-1*.
They consist of organic and inorganic binders based on synthetic, water glass, and/or silicone resins, but also based on natural resins from regenerative sources, inorganic and organic pigments used for colouring and adjusting the covering capacity, mineral fillers such as chalk, water and smaller volumes of additives (thickeners, defoamers, wetting agents, preservatives etc.). They dry physically by evaporation of the water they contain. The use of dispersion-based facade paints also improves the serviceability of buildings and extends their service life.
The product with the highest environmental impact is used as the representative product for calculating the LCA results. For the use of the product, the respective national regulations apply at the place of use; in Germany, for example, the *building regulations of the federal states* and the technical regulations based on these regulations.

2.2 Application

The declared products are used as facade paints in accordance with *EN 1062-1*.
The requirements of the Decopaint Guideline for the Decopaint product group c exterior coatings for walls made of mineral substrate apply.

2.3 Technical Data

The following technical data is relevant for the declared product.

Construction data

Name	Value	Unit
Density	1000 - 1700	kg/m^3
Solids content	40 - 80	%
pH value	7 - 11,5	-

Further technical data according to the *PCR: Coatings with organic binders* are not relevant for the product.

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

2.4 Delivery status

Liquid or paste-like in plastic or metal containers. Typical container sizes contain 1 to 30 litres, but usually 10 to 20 litres of product. For larger applications, drums with approx. 200 litres or IBCs (Intermediate Bulk Containers) with a capacity of up to 1000 litres are also used.

2.5 Base materials/Ancillary materials

Dispersion-based facade paints generally consist of at least one polymer dispersion, synthetic resins dispersed in water, inorganic and organic pigments and mineral fillers (e.g. chalk). Auxiliaries such as thickeners, defoamers, wetting and dispersing agents, and preservatives are used to fine-tune the product properties.

In general, the products described in this EPD contain the following quantities of the listed raw materials and additives:

Name	Value	Unit
Polymer dispersion (solids content)	3 - 35	% by mass
Water glass (alkali silicates)	0 - 25	% by mass
Mineral fillers	5 - 50	% by mass
Pigments	3 - 25	% by mass
Water	20 - 50	% by mass
Organic solvents	0 - 3	% by mass
Preservation	0 - 2	% by mass
Hydrophobisation	0 - 10	% by mass
Ancillary materials	1 - 6	% by mass

The following ancillary materials are used:
Thickening agents < 2 % by mass
Dispersing agents/emulsifiers < 2 % by mass
Wetting agents < 1 % by mass
Other ancillary materials < 2 % by mass

The composition of products that comply with the EPD may deviate from the concentration bands mentioned in individual cases. More detailed information can be found in the respective manufacturer's specifications (e.g. product data sheets).

1) The product contains substances on the *ECHA candidate lis*t of substances of very high concern (SVHC) for authorisation (date 21.01.2025) above 0.1 % by mass: no.

2) The product contains other CMR substances of category 1A or 1B that are not on the candidate list, above 0.1 % by mass: no.

3) Biocidal products have been added to this construction product or it has been treated with biocidal products (it is therefore a treated product within the meaning of the *Biocidal Products Regulation* (EU) No. 528/2012): yes.

In-can preservatives: bis(3-aminopropyl)(dodecyl)amine (BDA); benzisothiazolinone (BIT); bronopol (BNPD); chloromethylisothiazolinone (CIT); chloromethylisothiazolinone (CIT) /methylisothiazolinone (MIT) 3:1; dibromodicyanobutane (DBDCB);(ethylenedioxy) dimethanol (EDDM); 3-iodine-2-propinyl butylcarbamate (IPBC); methylisothiazolinone (MIT); sodium pyrithione; silver chloride; tetramethylolacetylenediurea (TMAD); zinc pyrithione.

Film preservatives: diuron (DMCU), isoproturon, terbutryn, dichloroctylisothiazolinone (DCOIT), octylisothiazolinone (OIT), 3-iodine-2-propinyl butylcarbamate (IPBC), zinc pyrithione.

2.6 Manufacture

Dispersion-based facade paints are usually mixed discontinuously in batch operation, i.e. in individual batches or series of individual batches from the ingredients and filled into the delivery containers.
Quality standards in accordance with *ISO 9001* and the provisions of relevant regulations such as the German Ordinance on Industrial Safety and Health (*BetrSichV*) and the German Immission Control Act (*BImSchG*) are complied with.

2.7 Environment and health during manufacturing

As a rule, no special environmental or health protection measures beyond those required by law are necessary.

2.8 Product processing/Installation

Dispersion-based facade paints are usually applied by hand using suitable tools. The paints are applied by brushing, rolling or spraying.

If necessary, occupational safety measures (hand and eye protection, ventilation) must be taken in accordance with the information in the safety data sheet and the conditions on site and must be consistently adhered to.
Depending on their composition, dispersion-based paints are assigned to the *GISCODE* for coating materials (BSW10-60) of GISBAU.
Depending on the application and product specification, different application quantities between 100 and 500 g/m² are possible.

2.9 Packaging

Empty containers can be recycled. Reusable wooden pallets are taken back by the building materials trade (reusable pallets for a refund in the deposit system), returned to the building product manufacturers, and fed back into the production process.
The facade paints are packaged in 5-litre or 12.5-litre polypropylene buckets as standard.

The composition of the packaging per declared unit is as follows:

- Polypropylene: 0.001 kg
- Polyethylene: 0.008 kg
- Steel: 0.001 kg.

2.10 Condition of use

During the utilisation phase, dispersion-based paints are cured and essentially consist of an inert, three-dimensional network. They are durable products that protect and beautify buildings as coatings and contribute to their functionality and value retention.

2.11 Environment and health during use

Facade paints are formulated to be rainproof. It is possible that small quantities of water-soluble components (e.g. wetting and dispersing agents, thickeners, film preservatives) may be washed out. No hazards to water, soil and air are known when used as directed.

2.12 Reference service life

When used as intended in accordance with the rules of technology, there is no experience of limitations to the service life due to ageing. A service life of up to 50 years can be achieved. The manufacturer's instructions on maintenance and care must be observed where applicable. The anticipated reference service life depends on the specific installation situation and the associated exposure of the product.
It can be influenced by weathering as well as mechanical or chemical loads.

2.13 Extraordinary effects

Fire

Due to the low layer thickness and their composition, facade paints have no or only a minor influence on the fire properties of the building component to which they are applied. If necessary, further requirements must be observed for individual components and their utilisation.

Water

Dispersion-based products are only resistant to water to a limited extent and can lose strength when exposed to water for a longer period of time and, in unfavourable cases, peel off surfaces. The main components of the products are not hazardous to water or only slightly hazardous to water according to the Ordinance on Installations for Handling Substances Hazardous to Water (*AwSV*).
Due to the generally low quantities of dispersion-based products used on buildings, they are not expected to make a relevant contribution to environmental damage caused by the building in the event of exceptional water impacts.

Mechanical destruction

The mechanical destruction of hardened, dispersion-based facade paints does not lead to decomposition products that are hazardous to the environment or health.

2.14 Re-use phase

According to the current state of knowledge, no environmentally harmful effects are known from the dismantling and recycling of components to which cured dispersion-based facade paints adhere.

2.15 Disposal

Only a small proportion of facade paints is produced during the disposal of building components on which they were used. The low adhesion to the components does not interfere with the disposal/recycling of the usual components/building materials. The respective waste code of the substrate/component remains unchanged.
Hardened product residues that are mechanically removed from substrates must be disposed of as mixed construction site waste (*waste code* 170904).

2.16 Further information

The various product types, along with many other terms, are explained in the *Technical Lexicon* of the VdL's sector group Putz & Dekor (plasters & decorative coatings).
Further information can be obtained from the manufacturer's product or safety data sheets and is available either on the manufacturer's website or on request.

3. LCA: Calculation rules

3.1 Declared Unit

The Association EPD refers to the declared unit of production of 1 kg of dispersion-based facade paint. The consumption of products that are applied over a large area can be between 100 and 500 g/m². The product with the highest environmental impact is used as the representative product for calculating the LCA results.

Declared unit

Name	Value	Unit
Declared unit	1	kg
Gross density	1000 - 1700	kg/m^3

3.2 System boundary

Modules A1, A2, A3, A4, A5, C1, C2, C3, C4 and D are taken into account in the LCA:

- A1 - Production of primary products
- A2 - Transport to the factory
- A3 - Production incl. energy supply, production of packaging, auxiliary and operating materials, and waste treatment
- A4 - Transport to the warehouse and building site
- A5 - Installation (disposal of packaging and product residues as well as emissions during installation)
- C1 - Manual removal
- C2 - Transport for disposal (50 km)
- C3 - No expenses
- C4 - Disposal of the product
- D Credits from the incineration of packaging materials and the recycling of the steel components in the

packaging.

This is therefore a Declaration from the cradle to the factory gate with options, modules C1-C4 and module D (A1-A3 + C + D and additional modules A4 and A5).

3.3 Estimates and assumptions

If no specific *Sphera MLC processes* are available, the individual components of the formulations are estimated according to the manufacturer or literature references.

3.4 Cut-off criteria

No cut-off criteria were applied for the calculation of the LCA. All raw materials sent by the Association for the formulations were taken into account.
The manufacture of the machinery, equipment and other infrastructure required to produce the products analysed was not taken into account in the LCAs.

3.5 Background data

Sphera's *Life Cycle Assessment for Experts (LCA FE)* software system developed by Sphera GmbH is used to model the life cycle of the declared product. The backround database is the *Sphera Managed Lifecycle Content (MLC) modelling database*.

3.6 Data quality

The data quality can be described as good. The primary data was collected in full, taking into account all relevant flows. The backround data was taken from the *Sphera MLC databases*. The databases were last updated in 2023.

3.7 Period under review

The formulation data corresponds to the practical mass data that was drawn up with the members of the VdL sector group for architectural coatings in spring 2024. The production data refers to the year 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

Primary data:
No allocations are used for production. When incinerating the packaging, a multi-input allocation with a credit for electricity and thermal energy is used according to the simple credit method. The credits from packaging disposal are recognised in module D.
Backround data:
The data sets used are listed in the background report. The allocation methods used in backround data (materials and energy), which originates from the *Sphera MLC 2023 databases*, are available online at https://lcadatabase.sphera.com/.

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. The backround data comes from the *Sphera MLC database CUP 2023.2*.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Information describing the biogenic carbon content at the factory gate

Name	Value	Unit
Biogenic carbon content in product	0.002	kg C
Biogenic carbon content in accompanying packaging	-	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).

Transport to the building site (A4)

Transport to the building site is divided into two routes: from the factory to an interim storage facility or a distribution centre (route 1) and from the interim storage facility to the building site (route 2). Delivery to the building site is made at short notice on call, for which a capacity utilisation of 3 % is assumed.

Name	Value	Unit
Litres of fuel to the warehouse (Diesel)	0.0016	l/100km
Transport distance - Route 1	250	km
Capacity utilisation (including empty runs) - Route 1	85	%
Litres of fuel to the building site (Diesel)	0.1238	l/100km
Transport distance - Route 2	50	km
Capacity utilisation (including empty runs) - Route 2	3	%

Installation in the building (A5)

Name	Value	Unit
Material loss (water vapour)	0.057	kg
Output substances following waste treatment on site (product residues during installation)	0.01	kg
Dust in the air	-	kg
NMVOC in the air	0,037	kg
Polypropylene (packaging)	0,001	kg
Polyethylene (packaging)	0,008	kg
Steel (packaging)	0,001	kg

Reference service life

Name	Value	Unit
Life Span (average according to BBSR)	25	a

End of Life (C1-C4)

Name	Value	Unit
Collected as mixed construction waste	0.89	kg
Landfilling	0.89	kg

Reuse, recovery and recycling potential (D), relevant

scenario information
Module D contains the credits from incineration processes and recycling from A5 (packaging waste).
A waste incineration plant with an R1 value of > 0.6 was assumed.

5. LCA: Results

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 Fassadenfarbe auf Dispersionsbasis

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	2.78E+00	6.71E-02	3.79E-02	0	3.3E-03	0	2.05E-02	-5.72E-02
GWP-fossil	kg CO_2 eq	2.74E+00	6.65E-02	3.31E-02	0	3.27E-03	0	1.33E-02	-5.69E-02
GWP-biogenic	kg CO_2 eq	4.1E-02	1.88E-04	4.8E-03	0	9.28E-06	0	7.15E-03	-3.2E-04
GWP-luluc	kg CO_2 eq	2.71E-03	4.01E-04	-4.43E-08	0	1.98E-05	0	4.18E-05	-9.71E-06
ODP	kg CFC11 eq	1.88E-11	1.65E-14	6.12E-15	0	8.15E-16	0	3.46E-14	-5.48E-13
AP	mol H^+ eq	9.92E-03	8.9E-05	9.41E-06	0	3.89E-06	0	9.54E-05	-7.58E-05
EP-freshwater	kg P eq	7.48E-06	1.58E-07	1.64E-09	0	7.79E-09	0	2.72E-08	-1.31E-07
EP-marine	kg N eq	2.19E-03	3.29E-05	2.63E-06	0	1.38E-06	0	2.47E-05	-2.4E-05
EP-terrestrial	mol N eq	2.5E-02	3.92E-04	4.5E-05	0	1.65E-05	0	2.71E-04	-2.56E-04
POCP	kg NMVOC eq	7.15E-03	7.86E-05	3.7E-02	0	3.41E-06	0	7.44E-05	-6.68E-05
ADPE	kg Sb eq	2.6E-04	4.85E-09	2.46E-11	0	2.39E-10	0	6.24E-10	-4.27E-09
ADPF	MJ	4.48E+01	9.11E-01	9.31E-03	0	4.49E-02	0	1.79E-01	-7.81E-01
WDP	m^3 world eq deprived	5.14E-01	3.52E-04	4.2E-03	0	1.73E-05	0	1.47E-03	-8.18E-04

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 Fassadenfarbe auf Dispersionsbasis

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.73E+01	6.11E-02	2.91E-03	0	3.01E-03	0	2.93E-02	-2.69E-01
PERM	MJ	6.78E-02	0	0	0	0	0	0	0
PERT	MJ	1.74E+01	6.11E-02	2.91E-03	0	3.01E-03	0	2.93E-02	-2.69E-01
PENRE	MJ	4.34E+01	9.13E-01	4.3E-01	0	4.5E-02	0	1.79E-01	-7.83E-01
PENRM	MJ	1.41E+00	0	-4.21E-01	0	0	0	0	0
PENRT	MJ	4.48E+01	9.13E-01	9.3E-03	0	4.5E-02	0	1.79E-01	-7.83E-01
SM	kg	0	0	0	0	0	0	0	1.2E-03
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	2.16E-02	5.43E-05	9.85E-05	0	2.68E-06	0	4.52E-05	-1.1E-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 Fassadenfarbe auf Dispersionsbasis

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	3.38E-06	1.54E-12	1.16E-13	0	7.59E-14	0	3.86E-12	-3.08E-11
NHWD	kg	1.36E+00	1.37E-04	7.09E-04	0	6.74E-06	0	8.96E-01	-2.34E-04
RWD	kg	1.74E-03	1.2E-06	3.03E-07	0	5.92E-08	0	2.01E-06	-2.78E-05
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	5.72E-03	0	1.2E-03	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	6.39E-02	0	0	0	0	0
EET	MJ	0	0	1.48E-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 Fassadenfarbe auf Dispersionsbasis

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.17E-07	6.21E-10	5.63E-11	0	2.73E-11	0	1.17E-09	-7.72E-10
IR	kBq U235 eq	2.28E-01	1.29E-04	3.22E-05	0	6.35E-06	0	2.29E-04	-2.93E-03
ETP-fw	CTUe	4.04E+01	6.65E-01	6.46E-03	0	3.28E-02	0	9.69E-02	-1.32E-01
HTP-c	CTUh	1.07E-08	1.33E-11	4.03E-13	0	6.54E-13	0	1.5E-11	-2.89E-11
HTP-nc	CTUh	1.2E-06	5.56E-10	5.17E-11	0	2.74E-11	0	1.59E-09	-2.04E-10
SQP	SQP	4.95E+01	3.24E-01	3E-03	0	1.6E-02	0	4.52E-02	-1.89E-01

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 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.
Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

Production (A1-A3)
As shown in the figure, the majority of the environmental impacts for all impact categories comes from the production phase. The impacts in this phase are mainly caused by the upstream chains of the raw materials (raw materials within modules A1-A3 with a share of > 90 %).
One exception is the POCP impact category, which is completely dominated by the pH stabiliser (zinc oxide).
Transport (module A2) is not relevant within the impact categories, as the impact is less than 1 % for most impact categories.

Transport to the building site (A4)
Due to the assumed distribution chain of the declared product (factory - warehouse - building site with a transport utilisation of 3 % from the warehouse to the building site), the transport of the products to the building site is very important for the GWP luluc (13 %).

Installation (A5)
Module A5 takes into account the emissions of the solvents contained in the product as well as the treatment of the packaging and the product residue remaining in the bucket. The environmental impacts in this module play a rather subordinate role in the LCA results. An exception is represented by the POCP category (formation potential for tropospheric ozone). The VOC emissions were calculated for module A5, i.e. 0.037 kg VOC emissions per kg product. The contribution to the other impact categories is negligible.

Deconstruction and demolition (C1)
Module C1 is 0, as the product is deconstructed manually.

Transport to waste recycling plants (C2)
The contribution of transport to waste recycling plants is important for the GWP luluc (approx. 1 %).

Waste process (C3)
Module C3 is 0, as the product is disposed of at the end of its service life.

Disposal (C4)
Disposal of the declared product plays a negligible role for all impact categories.

Credits (D)
Module D contains the credits from the energy or secondary material production from the disposal of the packaging buckets (i.e. thermal utilisation and recovery of the steel).

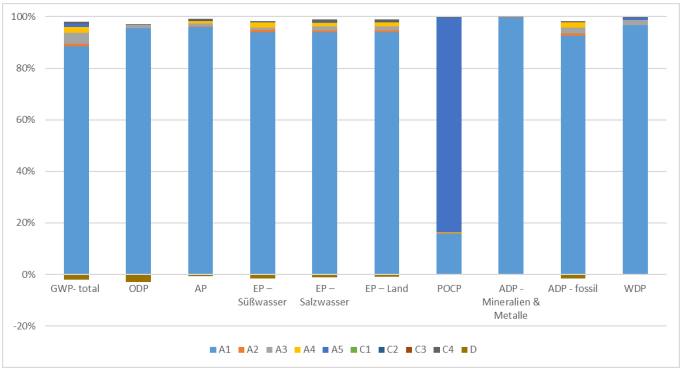


Figure: Impact categories as a percentage for the product

GWP-total	GWP total
ODP	ODP
AP	AP
EP-Süßwasser	EP fresh water
EP-Salzwasser	EP marine water
EP-Land	EP land
POCP	POCP
ADP - Mineralien & Metalle	ADP - minerals & metals
ADP-fossil	ADP fossil
WDP	WDP

7. Requisite evidence

VOC evidence
The facade paints covered by this EPD contain less than 3 % solvents, which is required for proper filming of the binder. A VOC test (e.g. *AgBB* scheme) is not provided for outdoor products.
If the products are used in an area of application where testing/verification of VOC emissions is required, the individual verifications should always be submitted by the manufacturers.

Leaching
Dispersion-based products are not used outdoors in areas in contact with soil and groundwater. There are currently no European or national assessment criteria or emission scenarios for a scenario involving sprinklered components. A technical test verification analogous to the indoor area (*AgBB* scheme) is therefore not possible.

Fire gas toxicity
The fire gases from organic products contain hazardous substances, but no particularly dangerous emissions. Testing the toxicity of fire gases is particularly useful in the system structure of the products and is not carried out for individual coatings for this reason, as the fire gases are significantly influenced by the type of substrate.

8. References

Standards

EN 1062-1
DIN EN 10621:2004, Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete – Part 1: Classification

EN 16402
DIN EN 16402:2019-08, Paints and varnishes – Assessment of emissions of substances from coatings into indoor air – Sampling, conditioning and testing; German version EN 16402:2019

EN 16516
DIN EN 16516:2020-10, Construction products: Assessment of release of dangerous substances – Determination of emissions into indoor air; German version EN 16516:2017+A1:2020

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

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 9001
DIN EN ISO 9001:2015, Quality management systems – Requirements

Further references

Waste code
Ordinance on the European Waste Catalogue (AVV), 2001-12

AgBB
Committee for Health Evaluation of Construction Products, 2021-06

AwSV
Ordinance on installations for handling substances hazardous to water, 2017-04

Building regulations of the federal states
http://www.bauordnungen.de/html/deutschland.html (status: 2025-05)

BetrSichV
German industrial safety ordinance; Ordinance on safety and health protection in the provision of work equipment, 2021-07

BImSchG
Federal Immission Control Act; Act on protection against harmful environmental impacts from air pollution, noise, vibrations and similar processes, 2023-07

Biocidal Products Regulation
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, 2012-05

ChemVOCFarbV
Solvent-based paints and varnishes ordinance; Chemicals Ordinance on the limitation of emissions of volatile organic compounds (VOC) by restricting the placing on the market of solvent-based paints and varnishes, 2020-06

Decopaint Directive
Directive 2004/42/EC of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC, 2004-04

ECHA Candidate List
European Chemicals Agency (ECHA): List of substances of very high concern for authorisation, Helsinki: European Chemicals Agency, 21 January 2025; https://echa.europa.eu/de/candidate-list-table

Technical Lexicon
Fachgruppe Putz & Dekor (sector group for plaster and decorative coatings) in the Verband der deutschen Lack-- und Druckfarbenindustrie e.V. (Association of the German Paint and Printing Ink Industry): Technical lexicon for plasters and coatings, Frankfurt: Verband der deutschen Lack- und Druckfarbenindustrie e.V., 2019; https://www.putz.de/fachlexikon/alphabetisch

GISCODE
Classifications according to the GISCODE for coating materials (painters and varnishers) of GISBAU as the hazardous substance information system of the German Social Accident Insurance Institution for the construction industry;https://www.bgbau.de/themen/sicherheit-und-gesundheit/gefahrstoffe/gisbau/, 2018-10

IBU 2021
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., 2021 http://www.ibu-epd.com.

PCR, Part A
Product category rules for building-related products and services. Part A: Calculation rules for the Life Cycle Assessment and requirements for the project report, Berlin: Institut Bauen und Umwelt e.V. (ed.), Version 1.3, 08/2022

(www.ibuepd.com)

PCR: Coatings with organic binders
Product category rules for building-related products and services. Part B: Requirements for the EPD for coatings with organic binders, Institut Bauen und Umwelt e.V., www.ibuepd.com, Version 7, 07/2023

REACH Regulation
Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 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, Commission Regulation (EC) No. 1488/94, Council Directive 76/769/EEC, and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, 2006-12

Sphera's LCA software and database
Sphera LCA For Experts (formerly GaBi Software System) with the associated databases Managed LCA Content MLC (formerly GaBi databases), Sphera Solutions GmbH. CUP version: 2023.2. University of Stuttgart, Leinfelden Echterdingen, MLC data documentation at https://sphera.com/productsustainabilitygabidatasearch/ (March 2024)

VdL-RL 01
VdL Guideline 01: Guideline for the declaration of varnishes, paints, glazes, plasters, fillers, primers and related products (VdL-RL 01), Verband der deutschen Lack und Druckfarbenindustrie e.V., 2024-06

In my capacity as a public translator for the English language, duly registered, commissioned and sworn by the President of the Landgericht (Regional Court) Saarbrücken, I hereby certify the foregoing to be a true and complete translation of the copy which has been submitted to me.
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