ENVIRONMENTAL PRODUCT DECLARATION

in accordance with */ISO 14025/* and */EN 15804+A1/*

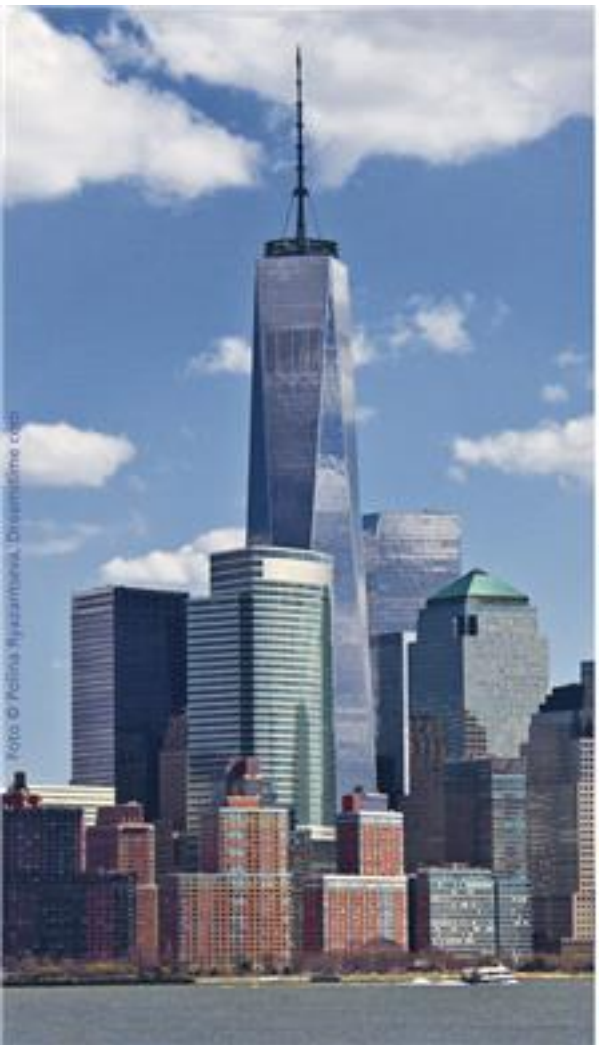
Owner of the declaration	**Deutsche Bauchemie e.V.**
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DBC-KEM-20200148-IBE1-DE
Issue date	25/03/2020
Valid to	24/03/2025

KEMPERDUR AC Park
KEMPERDUR AC Park +
KEMPERDUR AC Coating System

KEMPER SYSTEM GmbH & Co. KG

Institut Bauen und Umwelt e.V.

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



KEMPER SYSTEM

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Beschichtungssysteme

1. General Information

KEMPER SYSTEM GmbH & Co. KG

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Panoramastrasse 1
10178 Berlin
Germany

Declaration number
EPD-DBC-KEM-20200148-IBE1-DE

This declaration is based on the following product category rules:
Reaction resin products, 07/2014
(PCR tested and approved by the independent advisory board (SVR))

Issue date
25/03/2020

Valid to
24/03/2025

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

Dr. Alexander Röder
(Executive Director Institut Bauen und Umwelt e.V.)

Methacrylic resin products, highly filled, flow coatings

Owner of the declaration
KEMPER SYSTEM GmbH & Co.KG
Holländische Strasse 32 - 36
D-34246 Vellmar

Declared product/declared unit
Density:

KEMPERDUR AC Park /AC Coating
- 1kg/1kg; Density 0.96 to 0.99 kg/m³

KEMPER AC Park+
- 1kg/1kg; Density 1.1 to 1.5 kg/m³

Scope:
This declaration is exclusively valid for the specified product groups (methacrylic resin products, highly filled, flow coatings) for works in Germany and Belgium for five years after the date of issue.

This is a model EPD based on model declaration EPD-DBC-20190116-IBE1-DE in which the product which exhibits the highest environmental impact in a particular group was selected from the group to calculate the LCA. The members of the association are listed on the association website.

The owner of the declaration is liable for the basic information and supporting evidence; any liability of the IBU in relation to manufacturer's information, LCA data and supporting evidence is excluded.

This EPD was compiled in accordance with the requirements of *EN 15804+A1*. This standard is described in simplified form as */EN 15804/* in the following.

Verification

European standard */EN 15804/* serves as the core PCR
Independent verification of the declaration and statements by an independent body in accordance with */ISO 14025:2010/*
☐ internal ☒ external

Matthias Schulz,
Independent verifier appointed by SVR

2. Product

2.1 Product description/Product definition
KEMPERDUR AC Park; AC Park+ reaction resins and the AC coating system are manufactured as multiple components using methacrylic formulations, hardeners and fillers.

They fulfil a wide variety of often specialised tasks in the production, equipping, renovation and sealing of buildings. The serviceability of buildings can be significantly improved and their service life considerably extended through the use of methacrylic-based reaction resins.

EU regulation no. /305/2011/ (CPR) applies for putting the product on the market in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance including

- /EN 1504/, Part 2, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity. The respective national regulations apply to use.

The respective national regulations apply to use of the product outside of EU Regulation No. 305/2011 (CPR) at the use location, in Germany for example the /building regulations of the federal states/ and the technical regulations based on these regulations.

2.2 Application

Methacrylic resin products, highly filled, are used for the following applications:

Reaction resins to protect and repair concrete building components
Surface protection products for concrete, to improve the durability of concrete and reinforced concrete structures as well as for new concrete and for maintenance and repair work
Polyester resins for sealing buildings.
Reaction resins for sealing concrete or masonry components and for pre-treating mineral subsurfaces such as screeds or concrete floors or for optical design
Applications in accordance with the manufacturer's technical documentation (declaration of performance/conformity).

2.3 Technical data

Information on building product performance in relation to its technical properties is contained in the declaration of performance in accordance with EU Directive No. 305/2011 (Building Products Directive).
Building products with declaration of performance in accordance with the building products directive.
Reaction resins to protect and repair concrete building components
The minimum requirements according to /EN 1504/ are to be complied with. They are as follows:

Surface protection for concrete - requirements regarding characteristics for all intended uses in accordance with /EN 1504-2/, Tables 1 and 5:

- CO_2 permeability/EN 1062-6/
- Water vapour permeability /ISO 7783-1/ and /ISO 7783-2/
- Capillary water absorption and water permeability /EN 1062-3/
- Pull-off test to test adhesive strength /EN 1542/

Further major characteristics in accordance with the manufacturer's technical documentation/declaration of performance.

Polyester resins for sealing buildings
The minimum requirements of the Test principles for granting general building authority test certificates for polyester resins for sealing buildings (/PG-FLK/) must be complied with.
The characteristics for the proof of usability are to be specified according to the Test principles for granting general building authority test certificates for polyester resins for sealing buildings.

Reaction resins for sealing concrete or masonry components and for pre-treating mineral subsurfaces such as screeds or concrete floors or for optical design

The following requirements must be fulfilled as a minimum:

Name	Value	Unit
Viscosity /ISO 3219/	< 200	Pa·s
Shore hardness D /ISO 7619-1/	> 25	-
Density /ISO 2811-1/	1.2 - 2.2	kg/dm³

Note: Specification of the tensile shear strength and the tensile adhesive strength in accordance with /DIN EN 14239/ are not typical properties of MMA resins.

Further performance characteristics are in accordance with the manufacturer's technical documentation/declaration of performance.

Product performance values in accordance with the declaration of performance and its main characteristics in accordance with:

- /EN 1504/, Part 2 Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity.

2.4 Delivery status

2.4.1 Reaction resins: Liquid or paste-like in white tinplate containers
Typical container sizes contain between 10 and 25 kg of material. A tin container was modelled for the LCA.

2.4.2 Hardener (Initiator): Generally a powder in cardboard containers with PE foil lining
The typical container size contains between 0.5 kg and 25 kg. Smaller packages, ready-made to size, are also available.

2.5 Base materials/ancillary materials

Methyl acrylate reaction resins for mortar, coating mortar and fluid coatings consist of a resin and a hardening component. In most cases, the resin component contains methyl methacrylate as a main reactive ingredient and further co-monomers from the methyl acrylate or acrylate group. Hardening takes place in an installed state on-site with the hardening component. Radical-forming initiators which are added as a powdery hardener are used for hardening. Polymers may be dissolved in the components and they may also contain further additives such as accelerators, wetting agents, foam regulators and viscosity regulators to configure the required application properties.

The mixing ratio for resin and hardener is set according to the specifications depending on the temperature. Product hardening begins directly after the components have been mixed. On average,

products covered by this EPD contain the basic and ancillary materials listed within the following margins:

For flow coatings:
Filler: 65 - 80 %
Acrylate: < 35 %
Others: < 5 %

The margins specified are average values and the composition of products which comply with the EPD may deviate from the specified concentration margins in individual cases.

More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).

1) Does the product contain materials from the ECHA list of materials which are especially problematic for approval (dated 16/01/2020) at a mass % concentration of above 0.1: yes.

This is dicyclohexyl phthalate (DHCP). A number of products which are covered by this model EPD still contain DHCP in concentrations above 0.1%. It is to be anticipated that DHCP will be completely substituted by the beginning of 2021 and no longer used in the products.*

Insofar as products contain other REACH candidate list substances (list as per Article 59 Paragraph 1 of the REACH directive), these are listed as from a concentration of 0.1% together with other ingredients which must be declared in Section 3 of the safety data sheet for the respective product.

2) Does the product contain further Category 1A or 1B CMR materials which are not on the candidate list at a mass % concentration of above 0.1 in at least one partial product: no.

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

3) Were biocidal products added to this building product or was it treated with biocidal products (is this therefore a processed product in terms of EU Biocide Product Directive no. 528/2012): no.

2.6 Manufacturing

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 Emissions Protection Act are complied with.

2.7 Environment and health during manufacture

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

2.8 Product processing/installation

Methyl acrylate resin products, highly filled, are applied by means of spatulas/scrapers or rollers or casting.

Work safety measures (hand and eye protection and ventilation) are to be taken in accordance with the specifications in the safety data sheet and the conditions on-site and consistently complied with. Methacrylic resin products, highly filled, are generally assigned to the RMA 10 GISCODE/GISBAU product code due to their composition.

Methacrylic resin products, highly filled, react after mixing resin and hardener such that heat is generated (exothermics). The mixed components should therefore be processed rapidly within the specified pot life. Larger quantities of the mixture remaining in the container can lead to intense heating and decomposition.

2.9 Packaging

Containers which are empty of residue and non-contaminated cartons with polyethylene foil are recyclable.
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, methylacrylic resin products are hardened and consist mainly of an inert three-dimensional network.
They are long-life products which protect buildings as mortar, coating mortar, or flow coatings and make a large contribution to their functionality and value retention.

2.11 Environment and health during use

Products for use outside of common rooms
During the use phase, methacrylic resin products, highly filled, have lost their reactivity and behave inertly.
No hazards for water, the air/atmosphere and soil are known of if used appropriately.

No further influences on the environment or health from substances emitted are known of.

2.12 Reference period of use

Methacrylic resin products, highly filled, fulfil a wide variety of frequently specialised tasks in constructing or renovating buildings. The usability of buildings can be improved accordingly and their original service life significantly extended by their use. The reference period of use to be expected depends on the specific installation situation and the associated exposure of the product. It can be influenced by the weather and also mechanical or chemical impacts.

2.13 Extraordinary influences

Fire

Even without special fire protection equipment, methacrylic resin products, highly filled, fulfil the requirements of /EN 13501-1/ for fire classes E and E_{fl} as a minimum. Interlaced methacrylic resins do not melt and drip down so that the resins do not contribute in any way to the spread of a fire. In addition to the normal main products of carbon monoxide and carbon dioxide the combustion gases can contain traces of methyl methacrylate, esters, alcohols and hydrocarbons. In addition, due to the quantities in

which they are used, they have only a minor influence on the fire properties of the buildings in which they are installed.

Water
Methacrylic resin products, highly filled, are chemically inert and non-soluble in water. They are often used to protect buildings against damaging water ingress.

Mechanical destruction
The mechanical destruction of methacrylate-based reaction resins does not produce degradation products which are hazardous to the environment or health.

2.14 End-of-life phase
According to the current state of knowledge, no environmentally harmful effects are to be expected from dismantling and recycling components to which hardened methyl methacrylate-based products still adhere, for example by placing in landfill.
Due to their energy content, thermal recycling is a viable recycling variant if methyl methacrylate systems can be removed from the building components without appreciable time and effort.
The small amounts which still adhere are not significant for disposal. They do not disrupt the disposal or recycling of the remaining components/building materials.

2.15 Disposal
Individual components which can no longer be recycled must be mixed together at the prescribed ratio and hardened.
Hardened product remains are not hazardous waste.
Non-hardened product remains are hazardous waste.
Completely empty, dried containers (free of drops and spatula-clean) are recycled. Residual quantities are to be disposed of in accordance with the local regulations.

The following /EWC waste codes/ may be appropriate:

Non-hardened product residues:
- 080409.

Hardened product remains:
- 080410

2.16 Further information
Further information is available in the manufacturers' product or safety data sheets and can also be found on the KEMPER SYSTEM GmbH& Co. KG website under this link: www.kemperol.de

3. LCA: Calculation rules

3.1 Declared unit
This model EPD is based on the declared unit of 1 kg of methacrylic resin products, highly filled in accordance with /PCR Part B/ for reaction resins. An LCA for highly filled methacrylic products for flow coatings has been calculated in this EPD.
The product which has the highest environmental impact within the product group has been declared.

Specification of the declared unit

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg	1	-
Density	1,200 - 2,200	kg/m³

Consumption per unit of area of products which are applied to flat surfaces can lie between a few hundred grams and more than 1 kg per m^2. The mixing ratio of resin and hardener is included in the LCA with 0.66% hardener.
The quantity of hardener is measured according to the processing temperature and can range from 1% at 30°C to 6% at <0°C.
The density ranges from 1,200 to 2,200 kg/m³.

3.2 System boundary
Modules A1-A3, A4, A5 and D are included in the LCA:
- A1 Manufacture of pre-products
- 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 (burning of packaging materials (wooden pallets) and product residues, emissions during installation)
- D Credits from the burning of the packaging materials and product residues and from recycling the metal containers

This is a cradle to factory gate declaration with options.

3.3 Estimations and assumptions
If no specific /GaBi 8/ processes were available, the individual component ingredients of the formulations were estimated based on manufacturer specifications or literature.

3.4 Cut-off rules
No cut-off rules were applied in calculating the LCA. All raw materials which were sent 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 /GaBi 8B/ 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 which has 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.

3.7 Period under review

Representative formulations from Deutsche Bauchemie e.V. from 2018 were compiled for the formulations. The production data relates to a primary data collection from 2017.

3.8 Allocation

No allocations were applied for production. However, production waste was sent to a waste incineration plant for disposal. Potential credits for electrical and thermal energy were calculated after incineration. 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. The potential credits from disposal of the packaging are credited in Module D.

3.9 Comparability

In principle, a comparison or the evaluation of EPD data is only possible if all data to be compared was compiled in accordance with */EN 15804/* and the building context or product-specific performance characteristics have been included.

EPDs for building products are possibly not comparable if they are not based on /EN 15804/. The /GaBi 8B/ background database was used for modelling.

4. LCA: Scenarios and further technical information

The following 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)

Name	Value	Unit
Litres of fuel	0.0016	l/100km
Transport distance	500	km
Capacity utilisation (including empty runs)	85	%
Bulk density of the products transported	1200 - 2200	kg/m^3
Volume utilisation factor	100	-

Installation into the building (A5)

Name	Value	Unit
Auxiliary material	0	kg
Water consumption	0	m^3
Other resources	0	kg
Electricity consumption	0.0033	kWh
Other energy carriers	0	MJ
Material loss (product residues in packaging)	0.01	kg
Output materials as a result of waste treatment on the building site	-	kg
Dust in the atmosphere	-	kg
VOC in the atmosphere	0.004	kg

5. LCA: Results

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

Production stage			Construction process stage		Use stage							End of life stage				Credits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport	Waste processing	Disposal	Reuse, recovery or 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	MND	MND	MND	MND	X

RESULTS OF THE LCA – ENVIRONMENTAL IMPACT in accordance with EN 15804+A1: 1 kg Methacrylate resin products, highly filled, flow coatings

Parameter	Unit	A1-A3	A4	A5	D
Global warming potential	[kg CO_2 eq.]	1.82E+0	2.77E-2	1.76E-1	-2.78E-1
Depletion potential of the stratospheric ozone layer	[kg CFC11 eq.]	1.75E-14	9.43E-18	1.34E-16	-1.84E-15
Acidification potential of land and water	[kg SO_2 eq.]	5.56E-3	5.73E-5	2.64E-5	-5.47E-4
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	4.42E-4	1.43E-5	5.60E-6	-5.84E-5
Formation potential for tropospheric ozone photochemical oxidants	[kg Ethene eq.]	5.88E-4	-1.97E-5	6.84E-4	-6.54E-5
Abiotic depletion potential for non-fossil resources	[kg Sb eq.]	1.84E-5	2.61E-9	3.53E-9	-1.53E-5
Abiotic depletion potential for fossil resources	[MJ]	4.07E+1	3.69E-1	5.88E-2	-2.81E+0

RESULTS OF THE LCA – ENVIRONMENTAL IMPACT in accordance with EN 15804+A1: 1 kg Methacrylate resin products, highly filled, flow coatings

Parameter	Unit	A1-A3	A4	A5	D
Renewable primary energy as energy carrier	[MJ]	3.12E+0	2.25E-2	1.19E+0	-3.79E-1
Renewable primary energy resources as material utilisation	[MJ]	1.16E+0	0.00E+0	-1.16E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	4.29E+0	2.25E-2	2.22E-2	-3.79E-1
Non-renewable primary energy as energy carrier	[MJ]	3.25E+1	3.70E-1	6.86E-2	-2.99E+0
Non-renewable primary energy resources as material utilisation	[MJ]	9.55E+0	0.00E+0	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	4.21E+1	3.70E-1	6.86E-2	-2.99E+0
Use of secondary materials	[kg]	0.00E+0	0.00E+0	0.00E+0	8.63E-2
Use of renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m^3]	7.93E-3	2.58E-5	4.40E-4	-3.60E-4

RESULTS OF THE LCA: OUTPUT FLOWS AND WASTE CATEGORIES in accordance with EN 15804-A1: 1 kg Methacrylate resin products, highly filled, flow coatings

Parameter	Unit	A1-A3	A4	A5	D
Hazardous waste disposal	[kg]	3.33E-8	2.11E-8	7.94E-11	-1.84E-9
Non-hazardous waste disposal	[kg]	7.48E-2	2.49E-5	1.67E-3	-3.48E-3
Radioactive waste disposal	[kg]	5.40E-4	4.40E-7	3.87E-6	-7.12E-5
Components for reuse	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	8.63E-2	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	1.00E-1	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	2.11E-1	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	4.95E-1	0.00E+0

6. LCA: Interpretation

Overall, the results are dominated by the environmental impacts of the pre-products (Module A1) in all important impact categories. The methyl methacrylate (MMA) used plays a particularly large role here. Acrylic copolymer is the second significant pre-product, followed by 2-ethylhexyl acrylate and also quartz and the inorganic pigment.

Global warming potential (GWP), **eutrophication potential** (EP) and **photochemical ozone creation potential** (POCP) are dominated approximately equally by MMA (35 - 40 %) , followed by 2-ethylhexyl acrylate (approx. 25 %) and acrylic copolymer (approx. 20 %).

Acidification potential (AP) is dominated to approximately 35 % by MMA, followed by inorganic pigment (approx. 30 %) and acrylic copolymer (approx. 20 %).

Only the **photochemical ozone creation potential** (POCP) is not dominated by the manufacture of the pre-products: these contribute just approximately 30 % to POCP. The main share (approximately 45%) results from the installation of the MMA product through

emissions from non-polymerised MMA. The characterisation factor for NMVOC was used since no specific characterisation factor was available for methyl methacrylate. At approximately 10%, the manufacture of the product also shows a significant influence.

7. Requisite evidence

7.1 VOC evidence

No special tests and verifications have been done or provided as part of compiling this model EPD. Verification should be sought from the manufacturer insofar as products are deployed in any application area (e.g. common rooms) in which the verification/detection of VOC emissions in the common rooms are demanded.

Measurement procedure: GEV test method to determine emissions of volatile organic compounds from building products in accordance with /ISO 16000/ Part 3, Part 6, Part 9 and Part 11 in a test chamber. Test for CMR substances and also TVOC/TSVOC after 3 and 28 days.

The corresponding test certificate serves as **verification**. The results may be given in the form of an emissions class.

The following threshold values apply for products which are used in common rooms:

Name	Value	Unit
TVOC (C6 - C16) after 3 / 28 days	10,000 / 1,000	µg/m^3
Total SVOC (C16 - C22) after 28 days	100	µg/m^3
C1, C2 substances after 3 and 28 days	10 / 1 **	µg/m³
Total formaldehyde / acetaldehyde after 3 days	- / -	ppb
VOC without NIK after 28 days	-	µg/m^3
R (dimensionless) after 28 days	1	-

* Total after 3 days
** per individual substance after 28 days

8. References

Standards

EN 15804
/EN 15804:2012-04+A1 2013/, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 15804
/EN 15804:2019-04+A2 (in press)/, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

ISO 14025
DIN EN /ISO 14025:2011-10/, Environmental labels and declarations – Type III Environmental declarations – Principles and procedures.

Further literature

IBU 2016
Institut Bauen und Umwelt e.V.: General EPD programme instructions from Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Institut Bauen und Umwelt e.V., Berlin, 2016.
www.ibu-epd.com

Software/database title
Software/database title. Addendum to title, version. Place: publisher, date of publication [access on access date].

/EWC waste code/
European Waste Catalogue regulation (EWC)

/EN 1015-17/
DIN EN 1015-17:2005-01
Methods of test for mortar for masonry - Part 17: Determination of water-soluble chloride content of fresh mortars

/EN 1062-3/
DIN EN 1062-3:2008-04
Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete – Part 3: Determination of liquid water permeability

/EN 1062-6/
DIN EN 1062-1:2004-08
Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete – Part 6: Determination of carbon dioxide permeability

/EN 1542/
DIN EN 1542:1999-07
Products and systems for the protection and repair of concrete structures – Test methods – Measurement of bond strength by pull-off

/EN 1504-2/
DIN EN 1504-2:2005-01
Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 2: Surface protection systems for concrete

/EN 12614/
DIN EN 12614:2005-01
Products and systems for the protection and repair of concrete structures – Test methods – Determination of glass transition temperatures of polymers;

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

/EN 13813/
DIN EN 13813:2003-01
Screed material and floor screeds – Screed material – Properties and requirements

/EN 13892-8/
DIN EN 13892-8:2003-02
Methods of test for screed materials – Part 8: Determination of bond strength

/GaBi 8/
GaBi Version 8.7: Software and database for integrated lifecycle assessment, 1992-2018, thinkstep AG, Leinfelden-Echterdingen, with recognition from the University of Stuttgart Institute for Acoustics and Building Physics (IABP)

/GaBi 8B/
Documentation of the GaBi 8 database data for integrated lifecycle assessment. University of Stuttgart Institute for Acoustics and Building Physics (IABP) and thinkstep AG, Leinfelden-Echterdingen, 2018 (http://www.gabi-software.com/international/support/gabi/gabi-database-2018-lci-documentation/)

/ISO 2811-1/
DIN EN ISO 2811-1:2016-08
Paints and varnishes - Determination of density - Part 1: Pycnometer method (ISO 2811-1:2016)

/ISO 3219/
DIN EN ISO 3219:1994-10
Plastics – polymers/resins in the liquid state or as emulsions or dispersions – Determination of viscosity using a rotational viscometer with defined shear rate (ISO 3219:1993)

/ISO 7619-1/
DIN ISO 7619-1:2012-02
Rubber, vulcanised or thermoplastic - Determination of indentation hardness - Part 1: Durometer method (Shore hardness) (ISO 7619-1:2010)

/ISO 9001/
DIN EN ISO 9001:2015-11
Quality management systems - Requirements (ISO 9001:2015)

/PCR Part A/
Product category rules for building products Part A: Calculation rules for the LCA and requirements of the project report, Version 1.7, Institut Bauen und Umwelt e.V. (IBU), www.bau-umwelt.com, 2018-03

/PCR Part B/
Product category rules for building products Part B: Requirements of the EPD for reaction resin products, Institut Bauen und Umwelt e.V. (IBU), 2017-11

/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, 2006-12

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