SENTINEL HOLDING
INSTITUT

SHI-PRODUKTPASS

Produkte finden - Gebäude zertifizieren

SHI-Produktpass-Nr.:

2765-10-1017

Chemische Befestigungen - Hochleistungsmörtel

Warengruppe: Rohbau / Keller - Putze / Mörtel

fischer

fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1
72178 Waldachtal

Produktqualitäten:

- SHI-Produkt bewertung 2024
- QNG Qualitätssiegel Nachhaltiges Gebäude
- DGNB NEUBAU 2023
- DGNB NEUBAU 2018
- BNB-BN NEUBAU V2015
- EU-TAXONOMIE
- BREEAM DE NEUBAU 2018
- LEED v4.1 (outside US)

GEPRÜFT NACHHALTIGES PRODUKT
SHI PRODUKT PASS
SENTINEL HOLDING INSTITUT
www.sentinel-holding.eu/pruefkriterien

Köttner

Helmut Köttner
Wissenschaftlicher Leiter
Freiburg, den 03.08.2026

Produkt:
Chemische Befestigungen - Hochleistungsmörtel

SHI Produktpass-Nr.:
2765-10-1017

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Wir sind stolz darauf, dass die SHI-Datenbank, die erste und einzige Datenbank für Bauprodukte ist, die ihre umfassenden Prozesse sowie die Aktualität regelmäßig von dem unabhängigen Prüfunternehmen SGS-TÜV Saar überprüfen lässt.

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SHI-Produktbewertung 2024

Seit 2008 etabliert die Sentinel Holding Institut GmbH (SHI) einen einzigartigen Standard für schadstoffgeprüfte Produkte. Experten führen unabhängige Produktprüfungen nach klaren und transparenten Kriterien durch. Zusätzlich überprüft das unabhängige Prüfunternehmen SGS-TÜV Saar regelmäßig die Prozesse und Aktualität.

Kriterium	Produktkategorie	Bewertung
SHI-Produktbewertung		Schadstoffgeprüft
Gültig bis: 07.04.2027		

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QNG - Qualitätssiegel Nachhaltiges Gebäude

Das Qualitätssiegel Nachhaltiges Gebäude, entwickelt durch das Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen (BMWSB), legt Anforderungen an die ökologische, soziokulturelle und ökonomische Qualität von Gebäuden fest. Das Sentinel Holding Institut prüft Bauprodukte gemäß den QNG-Anforderungen für eine Zertifizierung und vergibt das QNG-ready Siegel. Das Einhalten des QNG-Standards ist Voraussetzung für den KfW-Förderkredit. Für bestimmte Produktgruppen hat das QNG derzeit keine spezifischen Anforderungen definiert. Diese Produkte sind als nicht bewertungsrelevant eingestuft, können jedoch in QNG-Projekten genutzt werden.

Kriterium	Pos. / Bauproduktgruppe	Betrachtete Stoffe	QNG Freigabe
3.1.3 Schadstoffvermeidung in Baumaterialien			QNG-ready nicht bewertungsrelevant

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DGNB Neubau 2023

Das DGNB-System (Deutsche Gesellschaft für Nachhaltiges Bauen) bewertet die Nachhaltigkeit von Gebäuden verschiedener Art. Das System ist sowohl anwendbar für private und gewerbliche Großprojekte als auch für kleinere Wohngebäude. Die Version 2023 setzt hohe Standards für ökologische, ökonomische, soziokulturelle und funktionale Aspekte während des gesamten Lebenszyklus eines Gebäudes.

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt, 03.05.2024 (3. Auflage)	nicht zutreffend		nicht bewertungsrelevant

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt, 29.05.2025 (4. Auflage)	nicht zutreffend		nicht bewertungsrelevant

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DGNB Neubau 2018

Das DGNB-System (Deutsche Gesellschaft für Nachhaltiges Bauen) bewertet die Nachhaltigkeit von Gebäuden verschiedener Art. Das System ist sowohl anwendbar für private und gewerbliche Großprojekte als auch für kleinere Wohngebäude.

Kriterium	Pos. / Relevante Bauteile / Bau-Materialien / Flächen	Betrachtete Stoffe / Aspekte	Qualitätsstufe
ENV 1.2 Risiken für die lokale Umwelt	nicht zutreffend	nicht zutreffend	nicht bewertungsrelevant

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BNB-BN Neubau V2015

Das Bewertungssystem Nachhaltiges Bauen ist ein Instrument zur Bewertung von Büro- und Verwaltungsgebäuden, Unterrichtsgebäuden, Laborgebäuden sowie Außenanlagen in Deutschland. Das BNB wurde vom damaligen Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) entwickelt und unterliegt heute dem Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen.

Kriterium	Pos. / Bauprodukttyp	Betrachtete Schadstoffgruppe	Qualitätsniveau
1.1.6 Risiken für die lokale Umwelt			nicht bewertungsrelevant

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EU-Taxonomie

Die EU-Taxonomie klassifiziert wirtschaftliche Aktivitäten und Produkte nach ihren Umweltauswirkungen. Auf der Produktebene gibt es gemäß der EU-Verordnung klare Anforderungen zu Formaldehyd und flüchtigen organischen Verbindungen (VOC). Die Sentinel Holding Institut GmbH kennzeichnet qualifizierte Produkte, die diesen Standard erfüllen.

Kriterium	Produkttyp	Betrachtete Stoffe	Bewertung
DNSH - Vermeidung und Verminderung der Umweltverschmutzung		Stoffe nach Anlage C	Erfüllt
Nachweis: EPD EPD-DBC-FIW-20220088-IBE2-DE, Konformitätserklärung 07.07.2025			

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BREEAM DE Neubau 2018

BREEAM (Building Research Establishment Environmental Assessment Methodology) ist ein britisches Gebäudebewertungssystem, welches die Nachhaltigkeit von Neubauten, Sanierungsprojekten und Umbauten einstuft. Das Bewertungssystem wurde vom Building Research Establishment (BRE) entwickelt und zielt darauf ab, ökologische, ökonomische und soziale Auswirkungen von Gebäuden zu bewerten und zu verbessern.

Kriterium	Produktkategorie	Betrachtete Stoffe	Qualitätsstufe
Hea 02 Qualität der Innenraumluft			nicht bewertungsrelevant

SENTINEL HOLDING
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Produkt:
Chemische Befestigungen - Hochleistungsmörtel

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LEED v4.1

LEED (Leadership in Energy and Environmental Design) ist ein international anerkanntes Gebäudezertifizierungssystem des U.S. Green Building Council. Es zählt zu den weltweit am weitesten verbreiteten Nachhaltigkeitsstandards für Gebäude und wird insbesondere bei international ausgerichteten Projekten eingesetzt. LEED bewertet Gebäude ganzheitlich in Kategorien wie Energieeffizienz, Ressourcenschonung, Materialauswahl, Innenraumqualität und Standortqualität. Je nach erreichter Punktzahl werden die Zertifizierungsstufen LEED Certified, Silver, Gold oder Platinum vergeben.

Kriterium	Produktkategorie	Betrachtete Stoffe	Bewertung
EQ Credit: Low-Emitting Materials			nicht bewertungsrelevant

Produkt:
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Produktsiegel

In der Baubranche spielt die Auswahl qualitativ hochwertiger Materialien eine zentrale Rolle für die Gesundheit in Gebäuden und deren Nachhaltigkeit. Produktlabels und Zertifikate bieten Orientierung, um diesen Anforderungen gerecht zu werden. Allerdings besitzt jedes Zertifikat und Label eigene Prüfkriterien, die genau betrachtet werden sollten, um sicherzustellen, dass sie den spezifischen Bedürfnissen eines Bauvorhabens entsprechen.

Produkte mit dem QNG-ready Siegel des Sentinel Holding Instituts eignen sich für Projekte, für welche das Qualitätssiegel Nachhaltiges Gebäude (QNG) angestrebt wird. QNG-ready Produkte erfüllen die Anforderungen des QNG Anhangdokument 3.1.3 "Schadstoffvermeidung in Baumaterialien". Das KfW-Kreditprogramm Klimafreundlicher Neubau mit QNG kann eine höhere Fördersumme ermöglichen.

Dieses Produkt ist schadstoffgeprüft und wird vom Sentinel Holding Institut empfohlen. Gesundes Bauen, Modernisieren und Betreiben von Immobilien erfolgt dank des Sentinel Holding Konzepts nach transparenten und nachvollziehbaren Kriterien.

Die Kiwa-Ecobility Experts (Kiwa-EE) sind ein international ausgerichteter Typ-III-Umweltdeklarations-Programmbetreiber, der Umweltproduktdeklarationen (EPDs) gemäß den Anforderungen der ISO 14025 sowie ergänzender Standards wie EN 15804 und weiterer branchenspezifischer Regeln validiert, verifiziert und veröffentlicht.

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Rechtliche Hinweise

(*) Die Kriterien dieses Steckbriefs beziehen sich auf das gesamte Bauobjekt. Die Bewertung erfolgt auf der Ebene des Gebäudes. Im Rahmen einer sachgemäßen Planung und fachgerechten Installation können einzelne Produkte einen positiven Beitrag zum Gesamtergebnis der Bewertung leisten. Das Sentinel Holding Institut stützt sich einzig auf die Angaben des Herstellers.

Alle Kriterien finden Sie unter:
https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte

Wir sind stolz darauf, dass die SHI-Datenbank, die erste und einzige Datenbank für Bauprodukte ist, die ihre umfassenden Prozesse sowie die Aktualität regelmäßig von dem unabhängigen Prüfunternehmen SGS-TÜV Saar überprüfen lässt.

SGS TÜV SAAR

Herausgeber

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Bötzinger Str. 38
79111 Freiburg im Breisgau
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info@sentinel-holding.eu
www.sentinel-holding.eu

Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2

fischer injection mortars based on vinyl ester resin

FIS V Plus, FIS VW Plus, FIS VS Plus, FIS VL, T-Bond Pro.1, FIS AB, FIS C 700 HP Pro.1, FIS HT II, FIS HB, FIS SB, FIS RC II, FIS RC II Low Speed



Registration number:	EPD-Kiwa-EE-000431-EN
Issue date:	23.05.2025
Valid until:	23.05.2030
Declaration owner:	fischerwerke GmbH & Co. KG
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

fischer injection mortars based on vinyl ester resin (FIS V Plus, FIS VW Plus, FIS VS Plus, FIS VL, T-Bond Pro.1, FIS AB, FIS C 700 HP Pro.1, FIS HT II, FIS HB, FIS SB, FIS RC II, FIS RC II Low Speed). This is an average EPD that applies to several different products with chemically similar formulations.

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-000430-EN

1.3 VALIDITY

Issue date: 23.05.2025

Valid until: 23.05.2030

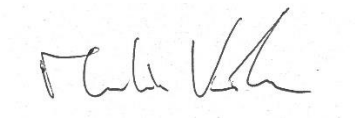
1.4 PROGRAM OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
Germany



Raoul Mancke

(Head of program operations, Kiwa-Ecobility Experts)



Martin Köhrer

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Declaration owner: fischerwerke GmbH & Co.KG

Address: Klaus-Fischer-Strasse 1, 72178 Waldachtal, GERMANY

E-mail: info@fischer.de

Website: fischer-international.com

Production location: fischerwerke GmbH &.Co. KG

Address production location: Otto-Hahn-Strasse 15, 79211 Denzlingen, GERMANY

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal ☒ External



Dr. -Ing. Morteza Nikravan
(Third party verifier)

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The program operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.2.0

Kiwa-EE GPI R.2.0 Annex B1

Insititut Bauen und Umwelt e. V. – PCR Part A Version 1.4: Calculation rules for the life cycle assessment and requirements for the project report according to EN 15804+A2:2022-11. [IBU, 2024]

Insititut Bauen und Umwelt e. V. – PCR Part B: Requirements for the EPD for reactive resin products [IBU, 2021b]

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method R<THiNK: Ecobility Experts | EN15804+A2

LCA software: Sphera database

Characterization method: EN 15804 +A2 Method with characterization factors based on the EF Reference Package 3.1 (EN 15804 XLS file)

LCA database profiles: Managed LCA Content MLC database

Version database: Version 2024.2

1.11 LCA BACKGROUND REPORT

This EPD is generated based on the following report: Life cycle assessment for the creation of two environmental product declarations (EPDs) for injection mortar filled in 2-component plastic cartridges. Report creator: SKZ - KFE gGmbH.

2 Product

2.1 PRODUCT DESCRIPTION

The declared products are 2-component injection mortars in plastic cartridges which consist of a component A and a hardener component B. Component A consists of a vinyl ester resin mixture. Dibenzoyl peroxide is generally used as hardener in component B. In addition, the product may contain fillers, ancillary materials and additives.

The injection mortar with product designation FIS V Plus, FIS VW Plus, FIS VS Plus, FIS VL, T-Bond Pro.1, FIS AB, FIS C 700 HP Pro.1, FIS HT II, FIS HB, FIS SB, FIS RC II, FIS RC II Low Speed are products in 150 ml, 300 ml, 360 ml, 390 ml, 410 ml, 585 ml, 825 ml and 1500 ml cartridge sizes. EU regulation no. 305/2011/ (CPR) applies for placing the product on the market in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account the ETA, CE and respective national standards which can be accessed on the single product websites.

Product specification

All products share the same raw material feedstock but differ from each other in their composition. The following are average specifications that apply to all products.

The composition of the product is described in the following table:

Materials Component A	**Weight [m-%]**
Vinyl ester resin mixture	30 – 40
Inorganic fillers	55 - 70
Others	< 5
Materials Component B	**Weight [m-%]**
Dibenzoyl peroxide	5 – 25
Pasting agent (e. g. water or organic liquid)	20 – 30
Inorganic fillers	40 – 70
Others	< 5

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

Vinyl ester based mortars are for example recommended for anchorings with the highest load-bearing capacity in cracked and non-cracked concrete and for applications of seismic performance categories C1 and C2. They are also suitable for applications in masonry, high-rise racks and heavy indoor or outdoor steel constructions. The injection mortar is processed with approved system components and also with reinforcing steel bars. It can also be used for diamond-drilled and water-filled drill holes.

2.3 REFERENCE SERVICE LIFE (RSL)

No modules from the use phase have been declared. No reference service life is stated for this reason.

USED RSL (YR) IN THIS CALCULATION

The use phase was not considered, which is why no information on the RSL is required.

2.4 TECHNICAL DATA

This is an average EPD that applies to two different products with the same chemical formulations filled in 2 cartridge sizes. This is an average EPD that applies to several different products with chemically similar formulations:

FIS V Plus, FIS VW Plus, FIS VS Plus, FIS VL, T-Bond Pro.1, FIS AB, FIS C 700 HP Pro.1, FIS HT II, FIS HB, FIS SB, FIS RC II, FIS RC II Low Speed are products in 150 ml, 300 ml, 360 ml, 390 ml, 410 ml, 585 ml, 825 ml and 1500 ml cartridge sizes.

Description	**Unit**	**Value**
Density	Kg/m³	1,75
Tensile shear strength DIN EN 14293	N/mm²	-
Tensile bond strength DIN EN 14293	N/mm²	-

Shear strength and adhesive tensile strength in accordance with DIN EN 14293 are not relevant for this product.

2.5 SUBSTANCES OF VERY HIGH CONCERN

The product contains no substances on the Candidate List of substances of very high concern for authorization (Substances of Very High Concern – SVHC) at a concentration of above 0.1 % mass.

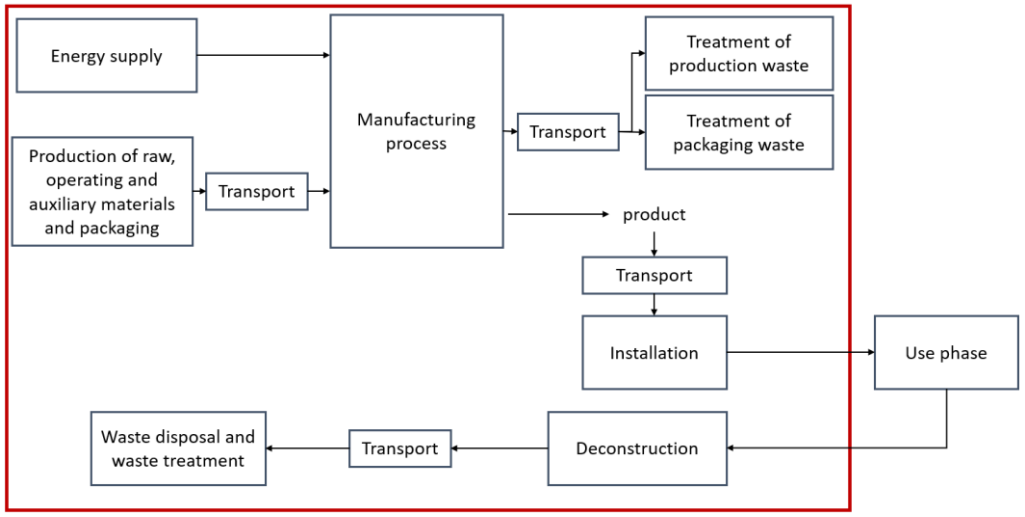
2.6 DESCRIPTION PRODUCTION PROCESS

The products to be declared are 2-component reaction resin systems, which consist of a hardener and a mortar mass. The two components are produced in separate processes: the respective raw materials, operating and auxiliary materials are weighed gravimetrically into a mixer, homogenized by mixing and then made available for the filling process. After a successful quality control, both components are automatically filled into a previously injection-moulded and labelled cartridge.

fischerwerke GmbH & Co. KG has a high level of vertical integration. Not only all plastic parts such as cartridges, pistons and static mixers, but also the labels for the cartridges and outer packaging are produced in-house.

Product Flow Diagram

The LCA considers the product stage (A1-A3), the construction stage (A4-A5), the disposal stage (C1-C4) and benefits and loads outside the system boundary (Module D). Modules A1 (provision of raw materials), A2 (transportation) and A3 (production) are aggregated in the assessment as modules A1-A3.



Modules A1 - A3 comprise the following activities:

- Provision of energy
- Provision of raw, operating and auxiliary materials and packaging
- Transportation to the plant
- Production of injection mortar
- Treatment of production waste
- Treatment of packaging waste from raw materials

Module A4 includes:

- Transportation to the construction site

Module A5 includes:

- Installation process/ disposal of product packaging

Module C1 includes:

- Dismantling

Module C2 includes:

- Transportation to the waste disposal site

Module C3 – C4 includes:

- End-of-life scenarios
  - Scenario 0: Landfill of the product
  - Scenario 1: thermal treatment of the product

Module D includes:

- Benefits and loads outside the system boundary

2.7 CONSTRUCTION DESCRIPTION

The products are installed manually. Once the mortar material has been fully used, the cartridge (in module A5) is disposed to waste.

3 Calculation rules

3.1 DECLARED UNIT

The declared unit is 1 kg injection mortar mass. The assessed production volume is based on information provided by the manufacturer. Overall, it is assumed that the data is representative and consistent. The product to be declared is an injection mortar filled in 2-component plastic cartridges, each consisting of a component A (mortar), a hardener component B (hardener), a plastic cartridge and a static mixer. Usually, 2 static mixers are supplied with each product cartridge.

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	kg
Weight per reference unit	1	kg

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

The system boundary was chosen “from the cradle to the factory gate with options”. Accordingly, the consideration includes the production stage (A1-A3), transportation to the place of use (A4), installation (A5) and the disposal stages (C1-C4) as well as benefits and loads outside the system boundary (D). The life cycle is modular in accordance with EN 15804.

The life cycle stages included are as shown below:

(X = module declared, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN15804+A2 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction, treatment of packaging waste	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for injection mortarts which consists of a vinyl ester resin mixture, a product of fischerwerke GmbH & Co. KG.

Information on modules A1-A3 comes directly from the manufacturer. The geographical representativeness of modules A1-A3 can be classified as very good.

The manufacturer distributes its products throughout Europe. European data sets were used for modules A4-A5 and EoL modules C1-C4 and D. The geographical representativeness of these modules can be classified as good.

3.5 CUT-OFF CRITERIA

Due to their very low relevance, the following processes were not considered:

- In the case of multiple-use packaging, the manufacturing and waste treatment processes were not considered. The resulting emissions would have been allocated to all products that were packaged with it during their lifetime, which leads to a low relevance of this aspect.

Based on the detailed data collection of the manufacturer's data, it can be assumed that no significant mass or energy flows have been neglected. The total cut-off percentage is < 1.0% of the mass fraction in relation to the declared unit.

3.6 ALLOCATION

No co-products are produced during the manufacture of plastic insulation materials (modules A1-A3). Therefore, no co-product allocation was necessary for foreground processes.

Energy, auxiliary and operating materials and waste during the production of injection mortar (modules A1-A3) were recorded at plant level. Electricity consumption is recorded on a plant or machine-specific basis but must be allocated to the products. Allocation is based on the produced mass.

In addition, various operating and auxiliary materials are used, i.e. lubricants and cleaning agents, for which there is no product-specific recording of consumption. These are also allocated by mass.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Primary data including all raw materials, packaging materials, energy consumption and ancillary materials was comprehensively collected for the reference year from 2024.01.01 to 2024.12.31.

3.8 ESTIMATES AND ASSUMPTIONS

3.8.1. TRANSPORT TO CONSTRUCTION SITE (A4)

No manufacturer-specific data is available for transportation to the construction site (Module A4). Transportation to construction sites takes place over a distance of 434 km, based on statistical back-ground data for the average truck transport of plastic products [Ecoinvent, 2019].

3.8.2. ASSEMBLY (A5)

The products are installed manually. For this reason, in Module A5 only the transportation and waste treatment of packaging waste and cartridge to the waste treatment are considered. Transport by truck with a total weight of 32 t over a transport distance of 77 km are assumed. This corresponds to the Ecoinvent background data for transportation of non-hazardous waste [Ecoinvent, 2019]. The benefits resulting from the incineration of packaging waste were considered in Module D in accordance with PCR Part A Version 1.4 (Institute Bauen und Umwelt e. V. IBU). It is assumed that 100 % of the product packaging waste and the cartridge are thermally treated. The thermal and electrical energy generated and exported are declared outside the system boundary in Module D as a benefit of subsequent use.

3.8.3. DE-CONSTRUCTION, DEMOLITION (C1)

The information in the previously published EPD EPD-FIS-20130268-IBG1-EN was used for the life cycle assessment of dismantling. An energy consumption of 0,0033 kWh/d. U. during disassembly was considered.

3.8.4. TRANSPORT END-OF-LIFE (C2)

The dismantled products are transported to a waste incineration plant for thermal recycling or to were disposed on a landfill. The transportation distance corresponds with the Ecoinvent background data for transportation of non-hazardous waste and is 77 km [Ecoinvent, 2019].

3.9 DATA QUALITY

Background data was taken exclusively from the Sphera database Version 2024.2 with the database MLC (Managed LCA Content).

Quality requirement	Specific requirement	Data quality level	Notes
Time-related coverage	Age of data and minimum time period for data collection.	The collected data is from the year 2024. The temporal representativeness is less than 3 years	Very good
Geographical coverage	Upstream: Unit process for raw material should be collected for respective geographic region	Supplier data was collected and considered geographically in the model.	Very good
	Core: Unit process for production should represent the real site.	Specific data from the corresponding production site where the injection mortar and the cartridges are manufactured was used.	Very good
	Downstream: End-of-life disposal should represent the region of disposal.	Two EoL scenarios (thermal treatment and landfill) were compared. European data sets were used.	good
Technical representa-tiveness	Qualitative assessment of the degree to which the data set reflects the true population of interest (technology)	The specific data on the manufacture of the considered injection mortar and cartridges were provided by the company fischerwerke. They were determined on the actual systems and processes used for production.	Very good

3.10 POWER MIX

According to the manufacturer, in 2024 green electricity from hydropower with guarantee of origin, own PV systems, energy from CHP as well as purchased electricity are used to produce the injection mortars and cartridges. Purchased electricity were considered with the use of residual mix of 2023. The composition of the residual mix for Germany was based on data from the Association of Issuing Bodies (AIB). The GWP value of the electricity mix amounts about 0.193 kg CO_2 per kWh. A location-based approach is used for the electricity data.

The average German electricity mix from the “Managed LCA Content” (MLC) database is used for processes that affect the following modules (A5, C1, C3, C4, D).

4 Scenarios and additional technical information

4.1 END OF LIFE (C3, C4)

Two end of life scenarios are considered during this study:

- Scenario 0: Landfill (module C3 and C4) - It is assumed that 100 % of the product is disposed at the landfill.
- Scenario 1: thermal treatment (module C3/1 and C4/1) - It is assumed that 100 % of the products are disposed thermally. For this reason, incineration of the end-of-life product is considered.

4.2 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

Scenario 0: In module D the benefits outside the system boundary are considered, through the incineration of packaging waste and cartridges in module A5.

Scenario 1: In module D/1 the benefits outside the system boundary are considered, through the incineration of packaging waste and cartridges in module A5 and the incineration of the product at in module C3/1.

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v1.0 are used. Long-term emissions (>100 years) are not considered in the impact assessment. The results of the impact assessment are only relative statements that do not make any statements about endpoints of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER [enter reference unit (e.g. kilogram)]

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C3/1	C4	C4/1	D	D/1
AP	mol H^+ eqv.	3.64E-03	4.94E-05	1.23E-04	1.91E-06	1.14E-05	1.33E-05	2.40E-04	1.02E-04	0.00E+00	-2.92E-04	-3.76E-04
GWP-total	kg CO_2 eqv.	2.22E+00	4.22E-02	7.20E-01	9.95E-04	6.92E-03	2.69E-03	1.01E+00	1.45E-02	0.00E+00	-3.01E-01	-3.56E-01
GWP-b	kg CO_2 eqv.	-9.03E-02	2.35E-04	9.03E-02	8.87E-06	3.86E-05	0.00E+00	1.41E-04	0.00E+00	0.00E+00	-1.18E-03	-1.55E-03
GWP-f	kg CO_2 eqv.	2.31E+00	4.11E-02	6.29E-01	9.86E-04	6.75E-03	2.65E-03	1.01E+00	1.44E-02	0.00E+00	-3.00E-01	-3.54E-01
GWP-luluc	kg CO_2 eqv.	2.67E-03	7.91E-04	3.20E-05	1.50E-07	1.30E-04	3.59E-05	1.69E-04	8.62E-05	0.00E+00	-2.57E-05	-3.24E-05
EP-m	kg N eqv.	1.11E-03	1.78E-05	2.49E-05	4.76E-07	4.51E-06	6.11E-06	8.49E-05	2.63E-05	0.00E+00	-9.20E-05	-1.14E-04
EP-fw	kg P eqv.	8.22E-06	1.12E-07	2.19E-08	4.09E-09	1.84E-08	1.03E-08	2.93E-07	3.27E-08	0.00E+00	-4.35E-07	-6.00E-07
EP-T	mol N eqv.	1.25E-02	2.12E-04	5.76E-04	4.98E-06	5.32E-05	6.76E-05	1.11E-03	2.89E-04	0.00E+00	-9.90E-04	-1.23E-03
ODP	kg CFC 11 eqv.	6.56E-12	1.30E-14	7.77E-14	2.24E-14	2.13E-15	4.79E-15	7.31E-13	3.88E-14	0.00E+00	-2.32E-12	-3.22E+02
POCP	kg NMVOC eqv	4.07E-03	4.96E-05	6.69E-05	1.26E-06	1.10E-05	1.69E-05	2.32E-04	8.04E-05	0.00E+00	-2.63E-04	-3.23E-04
ADP-f	MJ	5.40E+01	5.40E-01	1.38E-01	2.07E-02	8.87E-02	4.97E-02	1.12E+00	1.90E-01	0.00E+00	-5.28E+00	-6.34E+00
ADP-mm	kg Sb-eqv.	2.04E-06	7.00E-09	8.93E-10	1.85E-10	1.15E-09	2.78E-09	1.01E-08	9.31E-10	0.00E+00	-2.35E-08	-3.12E-08
WDP	m^3 world eqv.	8.69E-02	2.95E-04	6.70E-02	2.73E-04	4.84E-05	5.08E-04	1.62E-01	1.65E-03	0.00E+00	-2.85E-02	-3.94E-02

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C3/1	C4	C4/1	D	D/1
ETP-fw	CTUe	2,17E+01	4,19E-01	6,04E-02	6,00E-03	6,88E-02	3,46E-02	3,68E-01	1,09E-01	0,00E+00	-6,65E-01	-9,09E-01
PM	Disease incidence	3.28E-08	4.73E-10	7.69E-10	1.59E-11	9.57E-11	2.61E-10	4.78E-09	1.28E-09	0.00E+00	-2.39E-09	-3.08E-09
HTP-c	CTUh	6,21E-10	8,36E-12	5,19E-12	3,37E-13	1,37E-12	7,57E-13	2,03E-11	2,58E-12	0,00E+00	-5,79E-11	-7,31E-11
HTP-nc	CTUh	2,58E-08	3,52E-10	8,31E-11	5,16E-12	5,78E-11	2,77E-11	4,68E-10	9,96E-11	0,00E+00	-1,43E-09	-1,70E-09
IR	kBq U-235 eqv.	5,12E-02	9,07E-05	3,57E-04	5,45E-04	1,49E-05	9,93E-05	1,13E-02	2,30E-04	0,00E+00	-5,65E-02	-7,84E-02
SQP	Pt	5,39E+00	3,59E-01	5,11E-02	8,72E-03	5,90E-02	1,55E-02	3,80E-01	5,22E-02	0,00E+00	-9,09E-01	-1,26E+00

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C3/1	C4	C4/1	D	D/1
PERE	MJ	6,32E+00	5,98E-02	8,99E-01	1,50E-02	9,82E-03	5,30E-03	4,38E-01	3,31E-02	0,00E+00	-1,55E+00	-2,15E+00
PERM	MJ	8,59E-01	0,00E+00	-8,59E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,18E+00	5,98E-02	3,94E-02	1,50E-02	9,82E-03	5,30E-03	4,38E-01	3,31E-02	0,00E+00	-1,55E+00	-2,15E+00
PENRE	MJ	5,40E+01	5,40E-01	8,68E+00	2,07E-02	8,87E-02	4,97E-02	1,31E+01	1,90E-01	0,00E+00	-5,28E+00	-6,34E+00
PENRM	MJ	2,06E+01	0,00E+00	-8,54E+00	0,00E+00	0,00E+00	-1,20E+01	-1,20E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,46E+01	5,40E-01	1,38E-01	2,07E-02	8,87E-02	-1,20E+01	1,12E+00	1,90E-01	0,00E+00	-5,28E+00	-6,34E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,09E-02	5,58E-05	1,57E-03	1,14E-05	9,17E-06	1,48E-05	3,92E-03	5,02E-05	0,00E+00	-1,19E-03	-1,65E-03

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C3/1	C4	C4/1	D	D/1
HWD	kg	2,95E-08	2,63E-11	8,75E-11	2,99E-11	4,32E-12	7,19E-12	9,12E-10	4,72E-11	0,00E+00	-3,15E-09	-4,36E-09
NHWD	kg	4,65E-02	9,13E-05	4,50E-03	1,71E-05	1,50E-05	1,37E-05	8,41E-02	9,61E-01	0,00E+00	-2,58E-03	-3,33E-03
RWD	kg	4,16E-04	8,59E-07	3,36E-06	3,31E-06	1,41E-07	6,25E-07	7,37E-05	1,99E-06	0,00E+00	-3,43E-04	-4,76E-04

HWD=hazardous waste disposed | **NHWD**=non-hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C3/1	C4	C4/1	D	D/1
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	4,67E-02	0,00E+00	1,23E+00	0,00E+00	0,00E+00	0,00E+00	1,71E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	1,08E-01	0,00E+00	2,84E+00	0,00E+00	0,00E+00	0,00E+00	3,05E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER KILOGRAM

BIOGENIC CARBON CONTENT

The following information describes the biogenic carbon content in (the main parts of) the product at the factory gate per kilogram:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	-	kg C
Biogenic carbon content in accompanying packaging	0,025	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

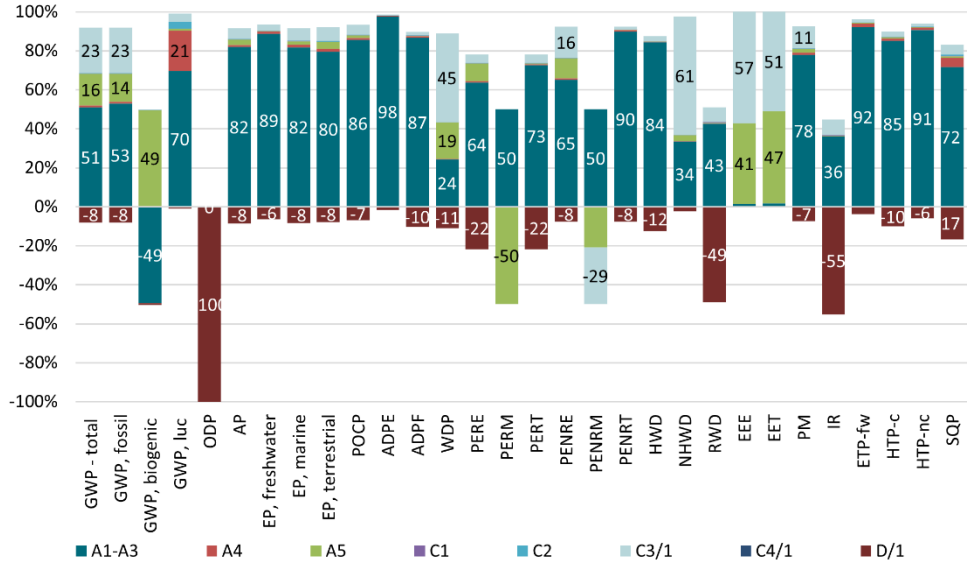
Uptake biogenic carbon dioxide	Amount	Unit
Product	-	kg CO_2 (biogenic)
Packaging	0,090	kg CO_2 (biogenic)

6 Interpretation of results

6.1 Contribution analysis

Many of the indicators on environmental impact and resource use are dominated by the production phase A1-A3. In addition, waste treatment (Module C3/1) has a significant share in the indicators. Furthermore, recovery potentials result in benefits outside the system boundaries (Module D/).

The following graph shows the relative shares of the modules in the indicator results the declared product (based on 1 kg injection mortar with cartridge). The values are scaled in such a way that all bars are the same height. Impact categories with a value of zero show no bar. Values below 10 % are not shown in the graph The graph shows an incineration at the End of Life.



7 References

ISO 14040

ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044

ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14044:2006

ISO 14025

ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2

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

Kiwa-EE GPI R.2.0

Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R.2.0 (27.02.2025)

Kiwa-EE GPI R.2.0 Annex B1

Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R.2.0 (27.02.2025)

Background database

LCA for Experts, Version 2024.2 Leinfelden-Echterdingen: Sphera Solutions Inc.

Ecoinvent, 2019

Ecoinvent Centre, "Background data for transport," 2019.

EPD-FIW-20230531-CBA1-DE

IBU-EPD; FIS V Zero - fischerwerke GmbH & Co. KG; 18th April 2024

EPD-FIW-20230530-CBA1-DE

IBU-EPD; FIS EM Plus - fischerwerke GmbH & Co. KG; 18th April 2024

IBU 2021a

Institut Bauen und Umwelt e.V.: General EPD Program Guide of the Institut Bauen und Umwelt e.V. (IBU). Version 2.0, 2021

IBU 2021b

PCR Part B: Requirements for the EPD for reactive resin products

IBU 2024

Institut Bauen und Umwelt e.V.: Product category rules for building products Part A: Calculation rules for the life cycle assessment and re-quirements for the project report according to EN 15804+A2:2022-11, Version 1.4, 2024

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Kiwa-Ecobility Experts is an established member of the ECO PLATFORM

Technisches Datenblatt

Injektionsmörtel FIS HB 360 S/ FIS HB 150 C

Erstellt: 28.04.2009 **Überarbeitet:** 17.03.2022 **Druckdatum:** 17.03.2022
Version: 3.0 **Seite:** 1 von 1

Produktbeschreibung: Organischer Hochleistungsreaktionsharzmörtel
Farbe: grau

Technische Daten:

Eigenschaft	Prüfverfahren	Ergebnis
Allgemeine Beständigkeit		
UV-Einwirkung (Sonnenlicht)		beständig
Temperaturbeständigkeit		100 °C
Einfluss von Wasser		beständig
Wasseraufnahme		nach 14 d: 0,35 %
Reinigungsmittel		1 % Tensidlösung ohne Einfluss
Langzeitverhalten (Frost-Tau-Wechsel)	EOTA/ETAG Teil 5	für Außenanwendung geeignet Dauerhaftigkeit durch Gutachten/Zulassung bestätigt
Materialkennwerte		
Schrumpf		< 0,8 %
Shore- Härte A	ISO 868	nach 45 min: 91
Wärmeleitfähigkeit	DIN 52612	0,78 W/mK
Spezifischer Durchgangswiderstand	IEC 60093	8,39 ± 9,26 x 10^{15} Ωcm
pH-Wert		nach 24 h: 7 - 8 (22 °C)
Dichte		1,7 – 1,8 g/cm^3
Verarbeitungseigenschaften		
Viskosität bei 20 °C	Brookfield (Sp.7) 10 U/min	250 – 300 Pas
Verarbeitungszeit bei 10-20 °C		6 min
Aushärtezeit 20 °C		35 min
Lagerfähigkeit		24 Monate