

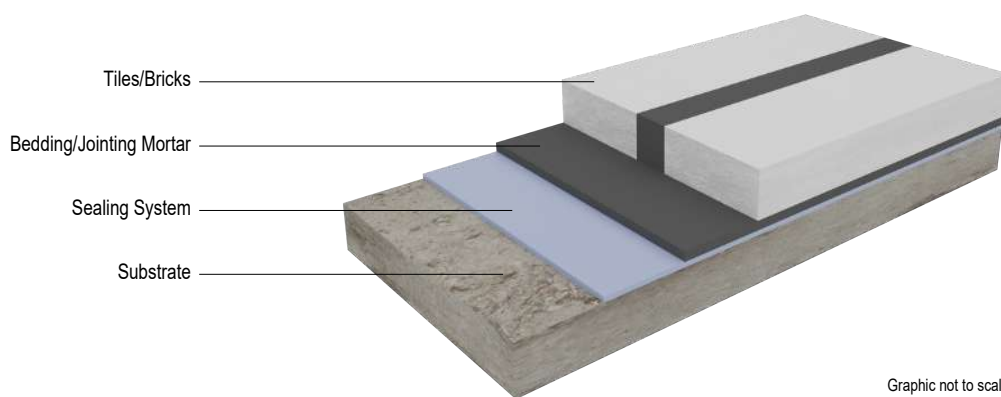
TI 317

Technical Information Surface Protection Linings
Issue 03.02.2025

OXYDUR VEC

Hydrofluoric acid-resistant, electrically conductive synthetic resin mortar based on epoxy-novolac-vinyl ester resin for bedding and jointing corrosion-resistant tile linings and bricks under high chemical loads

System Design



Description and Use

4-component synthetic resin mortar based on epoxy-novolac-vinyl ester resin for bedding and jointing tile linings and bricks under high chemical stress.

The mortar is used for tile linings in the chemical industry and in production areas where particularly comprehensive and universal chemical resistance is required.

For the electrically conductivity of the system, the information in the chapter "Testing the Electrostatic Conductivity" must be observed.

Properties

- Good mechanical properties and outstanding chemical resistance (also against hydrofluoric acid when using suitable bricks or plates)
- Temperature resistant up to 120 °C
- Curing at normal temperatures without post heat treatment
- Can be used for electrically conductive coverings
- Can be applied with jointing injector
- Colour black

Physical Data

Physical Property	Testing Standard	Value	Unit
Density	DIN EN ISO 1183-1	2.05	g/cm ³
Flexural strength	ASTM C 580	35 ^[1]	MPa
Flexural modulus of elasticity	ASTM C 580	8,500 ^[1]	MPa
Tensile strength	ASTM C 307	15 ^[1]	MPa
Compressive strength	ASTM C 579	130 ^[1]	MPa
The thermal coefficient of linear expansion	DIN 51045	3.0 x 10 ⁻⁵	1/K
Temperature resistance		120	°C
Thermal conductivity	DIN EN ISO 22007-2	1.80	W/mK
Dissipation resistance	DIN EN 14879-6	≤ 10 ⁶ ^[2]	Ohm

Data are mean values

Chemical Resistance

Resistant to higher concentrated acids, including hydrofluoric acid, alkalis, oxidising substances as well as fats, oils and solvents.

For detailed information on chemical resistance, please refer to the Technical Information TI 300.

Please contact our Application Technology Department for approval of the project-specific possible application.

Substrate

Uneven spots should be levelled in the substrate already. Do not apply the mortar directly to the substrate! If the substrate is not provided with a surface protection system, apply with a suitable primer and sprinkle if necessary. Please contact our Application Technology Department for possible solutions.

Usually the mortar is applied onto STEULER-KCH-range coating systems.

Requirements

Application temperature approx.	10 - 30 °C
Dew point distance	> 3 K
Dew point distance from 70 % humidity	> 5 K

Optimal temperature is 20 °C. Higher and lower temperatures influence the pot life and consistency of the mixtures.

Avoid draughts and solar radiation.

During application, the substrate must be kept dry. No moisture (condensate, mist, etc.) must get onto the material.

Concrete / Screed

Refer to DIN EN 14879-1 as well as to STEULER-KCH-Formsheet 010.

To achieve sufficient adhesive tensile strength, the substrate must generally be pre-treated in such a way that it is free of cement slurry, cement skin, loose and friable parts, structural defects and separating substances.

The residual moisture of cementitious substrates must not exceed 4 %.

The condition of the substrate must be documented by STEULER-KCH-Test-Record 006 (Concrete) resp. STEULER-KCH-Test-Record 007 (Screed).

^[1] After heat treatment

^[2] At a relative humidity of > 70 %.

Steel

Refer to DIN EN14879-1 as well as to STEULER-KCH-Formsheet 020 and 030.

The steel surface is blasted to near white blast cleaning. The degree of preparation Sa 2½ according to DIN EN ISO 12944-4 and the roughness grade "Medium (G)" according to DIN EN ISO 8503-1 must be achieved; minimum roughness depth $R_z = 70 \mu\text{m}$. After blasting, the formation of new rust must be prevented by suitable measures, such as priming directly.

The condition of the substrate is documented using STEULER-KCH-Test-Record 003 (Steel) or STEULER-KCH-Test-Record 004 (Inspection of Grit Blasting Works).

Packaging / Shelf Life

All components must be stored and transported dry. The minimum shelf life applies to a storage temperature of 20 °C, unless otherwise specified. Higher temperatures reduce, lower temperatures increase the minimum shelf life.

Component	Item Number	Package	Content	Shelf Life
Oxydur-VEC-Solution	5032022001	Hobbock	25 kg	6 months
Oxydur-Accelerator D	5032007023	Canister	2.5 kg	24 months
Oxydur-Hardener C	5032015007	Bottle	1 kg	12 months
Oxydur-VEC-Powder	5011115002	Bag	20 kg	24 months
Steuler-Separating-Varnish Primer	5045014026	Canister	2 kg	24 months
Steuler-Separating-Varnish A	5045013006	Drum	10 kg	24 months
Hard wax solid	9300001146	Drum	10 kg	24 months
SKC-Mortar-Smoothing-Agent	5045002003	Canister	5 kg	24 months
Steuler-Universal-Cleaner	5040023005	Canister	4 kg	24 months
Copper tape self-adhesive	9703301015	Roll 19 - 20 mm wide		unlimited

For handling, transport and storage observe the relevant safety data sheets.

Mixing Ratio / Consumption

Oxydur VEC

Component	Mix	Consumption kg/l
Oxydur-VEC-Solution	2.00 kg	0.441
Oxydur-Accelerator D	50 g	0.011
Oxydur-Hardener C	50 g	0.011
Oxydur-VEC-Powder	7.20 kg	1.587
Total	9.30 kg	2.050
Mix yields approx.		4.5 l

A reserve of 10 % is to be added to the calculated project requirements for bedding and butt joints.

1 liter material spread over 1 m² is always 1 mm thick.

Mortar Requirement per m² Approx.

Split tiles 240 x 115 x 20 mm	7.5 l	15.4 kg
Split tiles 240 x 115 x 40 mm	9.5 l	19.5 kg
Bricks 240 x 115 x 65 mm	11.5 l	23.6 kg
Bricks 240 x 115 x 80 mm	13.0 l	26.7 kg
By filled-joint installation (bedding joints 5 mm / butt joints 7 mm)		

Joint Dimensions

Bed joint thickness	4 - 7 mm
Joint width	4 - 8 mm
Depth of joints by hollow joint installation	at least 15 mm

Pot Life

The pot life at a material temperature of 20 °C approx. 30 - 60 minutes.

Higher temperatures reduce, lower temperatures extend the pot life.

Waiting and Curing Times

Waiting time until walkability depends on temperature.

Temperature	Walkable After
15 °C	6 h
20 °C	4 h
25 °C	3 h

The waiting time until full chemical and mechanical resistance is reached is 5 days at a temperature of 20 °C.

Testing

Visual Testing

The lining is checked for visible defects such as bubbles, inclusions, inequalities, cracks or mechanical damage.

Testing the Electrostatic Conductivity

The measurement of the earth leakage resistance R_A is carried out with a commercially available resistance measuring device up to 10^8 Ohm with 100 volts DC as measuring voltage. A circular electrode with a diameter of 50 mm is used as the measuring electrode. Placed a 50 mm diameter piece of absorbent paper slightly moistened with tap water on the surface of the tile lining to be measured. The electrode is placed flush on this and pressed onto the surface with a force of about 10 N during the measurement.

The test takes place on site and is carried out at the earliest 8 days after bedding the tile lining (for non-electrically conductive ceramic tiles on the joint). The tile lining is cleaned before the test. There must be no insulating layers.

For non-conductive tiles, the tile size must not exceed the following dimensions to ensure conductivity across the joint material:

- For rectangular tiles: 115 mm x 240 mm
- For square tiles: 150 mm x 150 mm

The test specification PV 016 ELECTROSTATIC CONDUCTIVITY must be observed.

Repair

Rejointing

When rejointing, the joint depth must be at least 5 mm. Press the mortar into the clean joints with a joint trowel and smooth.

Replacement of Hollow Tiles or Bricks

Cut with a separating disk straight through to the mortar bed into the joint and the bricks or tiles.

Where the lining consists of two brick layers chose the area to be removed big enough so that the bricks can be broken out from the upper brick layer down to the sealing layer in a stepped manner.

Cut carefully in the area of the mortar bed so that the sealing layer is not damaged. Remove the bricks using a caulking tool. Take care that the sealing layer is neither mechanically damaged nor detached from the substrate.

Reconstruction

After removal of the tiles or bricks the lining can be rebuilt (see "Application").

Safety and Disposal

The following points should be observed:

- Sufficient ventilation and venting (especially in pits and tanks)
- No smoking and no fire
- Safety Data Sheets
- Observe hazard warnings and safety instructions on labels
- Wear required personal protective equipment (avoid skin contact with materials)
- Clean and protect hands with skin protection soap (no solvents!) and skin protection cream
- Wear a dust mask when grinding (e.g. for repairs)
- Operating instructions as per § 14 of GefahrstoffV (Toxic Substances Act) and TRGS 507 (Technical regulations for Hazardous Substances - Germany)
- Accident prevention regulations by the Liability Insurance Association for the Chemical Industries (Germany)
- Avoid direct contact of the materials with the flame, especially during welding work (welding beads) on site

Preferably consume residual quantities. Do not pour into a spout or dustbin! Collect separately for disposal in durable, lockable and labelled containers.

GISCODE

Product	GISCODE
Oxydur VEC	SB-STY20

Cleaning of Equipment

Tools that are soiled with uncured materials can be cleaned with Steuler-Universal-Cleaner. Only clean in well ventilated areas.

All information contained in this Technical Information is based on the present state of our knowledge and practical experience. All data are approximate values for guidance only. A legally binding warranty of certain characteristics or the suitability for a certain purpose of use cannot be derived from this.

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This issue replaces all previous versions.