

TI 505K

Technical Information Surface Protection Linings
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KERAFLAKE 6H

Glass flake filled trowel coating based on epoxy novolak vinyl ester resin for chemically and thermally highly stressed steel surfaces

System Design

1. Substrate
2. Primer
3. Top Coat
In colour change
4. Sealing
If necessary



Description and use

Trowel-applied vinyl ester resin based coating system with glass flakes as barrier filler. The standard layer thickness is approx. 2 mm. Deviations are possible, depending on the stress.

The glass flakes consist of chemically resistant C-glass and align themselves parallel to the substrate during application. This extends the path of diffusible substances (such as water, oxygen or sulphur dioxide) by a multiple of the coating thickness.

The system is exceptionally resistant to permeation and therefore particularly suitable for components exposed to wet conditions.

Surface protection for steel components and structures continuously exposed to corrosive substances, even at high temperatures.

Mainly components of flue gas desulphurisation and other flue gas cleaning plants in the chemical industry. Especially clean gas ducts, chimneys, heat exchangers, tanks, absorption towers, transfer tanks and treatment plants.

Properties

- High diffusion tightness of the coating is achieved by the proportion of glass flakes (thickness 3 - 5 µm, diameter ≤ 3.2 mm)
- Very high chemical resistance
- Temperature resistant up to 180 °C

Physical Data

Physical property	Testing standard	Value	Unit
Density	DIN EN ISO 1183-1	1.5	g/cm ³
Flexural strength	ASTM C 580	40 ^[1]	MPa
Flexural modulus of elasticity	ASTM C 580	7500 ^[1]	MPa
Tensile strength	ASTM C 307	18 ^[1]	MPa
Compressive strength	ASTM C 579	100 ^[1]	MPa
The thermal coefficient of linear expansion	DIN 51045	2.0 x 10 ⁻⁵	1/K
Adhesive strength	DIN EN ISO 4624	> 4	MPa
Barcol hardness	DIN EN 59	> 35	

Data are mean values

Chemical Resistance

For detailed information about the chemical resistance please refer to Technical Information TI 210B.

Substrate

Requirements

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

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. A surface cleanliness of 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 surface roughness Rz = 70 µm. After blasting, the formation of new rust must be prevented by suitable measures, such as priming directly.

The condition of the substrate must be documented by STEULER-KCH-Test-Record 003 (Steel) resp. 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
KCH-VE-Solution 3	5032302001	Hobbock	25 kg	6 Months at 15 °C
KCH-VE-Paste 1	5032312001	Hobbock	25 kg	6 Months at 15 °C
KCH-VE-Solution 5 green	5032322001	Hobbock	25 kg	6 Months at 15 °C
KCH-UP-Hardener 3	5032213007	Bottle	1 kg	12 Months
KCH-Pigment 1	5032305007	Drum	1 kg	24 Months
Diluent M	5060006006	Canister	10 kg	12 Months
Steuler-Universal-Cleaner	5040023005	Canister	4 kg	24 Months

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

NOTE! Material stored in refrigerated containers must be brought to a application temperature of at least + 18 °C at least 3 days before application!

^[1] After heat treatment

Mixing Ratio / Consumption

KCH VE Primer 1

Component	Mix	Consumption kg/m ²
KCH-VE-Solution 3	5.00 kg	0.294
KCH-UP-Hardener 3	100 g	0.006
Total	5.10 kg	0.300
Area per mix approx.		17.0 m ²

KCH VE Top Coat 2

Component	Mix	Consumption kg/m ²
KCH-VE-Paste 1	5.00 kg	1.569
KCH-UP-Hardener 3	100 g	0.031
KCH-Pigment 1 ^[2]	(25 g)	(0.008)
Total	5.10 kg	1.600
Area per mix approx.		3.2 m ²
Application steps		2
Layer thickness approx.		1.0 mm per application step 2.0 mm total

If necessary

KCH VE Sealing 1

Component	Mix	Consumption kg/m ²
KCH-VE-Solution 5 green	5.00 kg	0.196
KCH-UP-Hardener 3	100 g	0.004
Total	5.10 kg	0.200
Area per mix approx.		25.5 m ²

Pot Life

Layer	Pot life
KCH VE Primer 1	40 min
KCH VE Top Coat 2 (white)	30 min
KCH VE Sealing 1	50 min

The times are approx. values at 20 °C

Waiting and curing times

The waiting times between the individual applications depend on temperature.

Temperature	Walkable after	Maximum waiting time
10 °C	8 h	120 h
20 °C	6 h	78 h
30 °C	4 h	24 h

The finished coating is fully mechanically and chemically resistant at 20 °C after 7 days.

^[2] Addition only to create the colour change in successive layers.

Testing

Testing is carried out in accordance with DIN EN 14879-2.

Visual Testing

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

Layer thickness test

Test instrument: Coating Thickness Gauge, 0 - 5 mm, Elcometer (on steel)

Testing on freedom from pores and cracks

Test instrument: Spark tester, Elmed, > 35 kV

Test voltage: 7.5 kV with 2 mm standard layer thickness

Requirement: No punctures

Test scope: 100 %, the test is carried out after hardening of the 2nd trowel-applied coat

Hardness testing

Test instrument: Hardness tester, Barcol

Prior to commissioning at least 25 Barcol, after complete hardening in unstressed condition at least 35 Barcol. The test is carried out on work samples (300 mm x 300 mm) produced during construction.

Adhesive strength test

Test instrument: Adhesive strength tester, e.g.: Erichsen, model 525-10

The adhesive strength shall be at least 4 N/mm² for a test surface of 20 mm diameter. The adhesion test is carried out at the earliest after 5 days of curing time (20 °C) on work samples produced during construction.

Repair and Connections

Faulty, damaged or connected areas

For repair work, observe the relevant information under "Application".

1. Grind damaged areas down to the substrate with a grinding machine.
2. Bevel the edge zones and roughen the surface of the old coating generously (with sandpaper or, for larger areas, by blasting).
3. Clean the surface with a cloth and Steuler-Universal-Cleaner.
4. Prime the substrate and completely rebuild the coating as described above, observing the waiting times. Apply the new material only to the roughened and ground areas.

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
KCH VE Primer 1	SB-STY10
KCH VE Top Coat 2 (white)	SB-STY10
KCH VE Sealing 1	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.

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This issue replaces all previous versions.

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