

TI 508K

Technical Information Surface Protection Linings
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KORROPLAST VE 310

Glass flake filled spray 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



Description and use

Vinyl ester resin based coating system with glass flakes as barrier filler, to be applied by airless spraying. The standard layer thickness is approx. 1.2 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.

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

Main applications are ducts, chimneys and heat exchangers in flue gas desulphurisation plants of power plants and flue gas cleaning plants in the chemical industry and other branches of industry.

Properties

- High diffusion tightness of the coating is achieved by the proportion of glass flakes (thickness 3 - 5 μm , diameter $\leq 0.4 \text{ mm}$)
- Very high chemical resistance
- High thermal shock resistance
- Temperature resistant up to 200 °C (dry stress), up to 80 °C (wet stress), up to 100 °C (liquid splashes)

Physical Data

Physical property	Testing standard	Value	Unit
Density	DIN EN ISO 1183-1	1.4	g/cm ³
Flexural strength	ASTM C 580	45 ^[1]	MPa
Flexural modulus of elasticity	ASTM C 580	5300 ^[1]	MPa
Tensile strength	ASTM C 307	16 ^[1]	MPa
Compressive strength	ASTM C 579	130 ^[1]	MPa
The thermal coefficient of linear expansion	DIN 51045	20 x 10 ⁻⁶	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 - 25 °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 9	5032504001	Hobbock	25 kg	6 Months at 15 °C
KCH-VE-Solution 10 red	5032499001	Hobbock	25 kg	6 Months at 15 °C
KCH-VE-Solution 10 grey	5032502001	Hobbock	25 kg	6 Months at 15 °C
KCH-UP-Hardener 3	5032213007	Bottle	1 kg	12 Months
KCH-Diluent 12	5060019006	Canister	10 kg	24 Months
Steuler-Universal-Cleaner	5040023005	Canister	4 kg	24 Months
Steulerflake-Cleaner A	5040026005	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 4

Component	Mix	Consumption kg/m ²
KCH-VE-Solution 9	25.00 kg	0.294
KCH-UP-Hardener 3	0.50 kg	0.006
Total	25.50 kg	0.300
Area per mix approx.		85.0 m ²

KCH VE Top Coat 9

Component	Mix	Consumption kg/m ²
KCH-VE-Solution 10 grey or red	25.00 kg	0.686
KCH-UP-Hardener 3	0.50 kg	0.014
Total	25.50 kg	0.700
Area per mix approx.		36.4 m ²
Application steps		3
Layer thickness approx.		0.4 mm per application step 1.2 mm total

Pot Life

Layer	15 °C	20 °C	30 °C
KCH VE Primer 4	50 min	40 min	20 min
KCH VE Top Coat 9	60 min	45 min	15 min

The times given are approximate temperature-dependent values

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

To achieve mechanical resistance 3 days and full chemical resistance 7 days at 20 °C.

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: Erichsen Modell 333/II, wet film thickness up to 600 µm

Requirement: Wet film layer thickness per spray-applied layer approx. 400 µm (spot-check measurement)

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

Requirement: Layer thickness 1.0 mm up to 2.0 mm (differing values shall be agreed)

Testing on freedom from pores and cracks

Test instrument: Spark tester, Elmed, > 35 kV

Test voltage: 5 kV with 1.2 mm standard layer thickness

Requirement: No punctures

Test scope: 100 %

Hardness testing

Test instrument: Hardness tester, Barcol

Prior to commissioning 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

Requirement: Adhesive strength $\geq 4 \text{ N/mm}^2$ with a test area of 20 mm in diameter.

The adhesion test is carried out at the earliest 5 days after complete hardening (20 °C) at samples produced simultaneously to the work.

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 4	SB-STY10
KCH VE Top Coat 9	SB-STY10

Cleaning of Equipment

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

Steulerflake-Cleaner A to clean the spray equipment.

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This issue replaces all previous versions.