STEULER | Linings

TI 229A

Technical Information Surface Protection Linings
Issue 06.11.2019

STEULERFLAKE SPG HT

Airless-spray applied lining; High chemical, thermal and wear resistance

Base

Epoxy Novolac Vinyl ester resin

Material Group

Tank-/vessel linings – Flake coatings

Description

Glass flake filled system based on special Novolac vinyl ester resin with excellent resistance against high temperatures and aggressive chemicals. Due to its high content of platelet-shaped barrier fillers which align themselves parallel to the substrate, very good diffusion and permeation resistance to water vapour is achieved.

The Top Coat avails an enhanced resistance against condensed sulphuric acid.

The system still has good mechanical and wear resistance.

Use

Lining for ducts and tanks and chimneys of raw gas cleaning plants and other equipment based on steel structures in several industries.

Properties

- high chemical resistance
- high diffusion resistance
- thermal resistance up to 220 °C (dry exposure), up to 80 °C (wet exposure), up to 100 °C (liquid splashes)
- standard thickness approx. 1.2 mm

Physical Data

Property (unit), Test method	Value
Density [g/cm³], DIN EN ISO 1183-1, ASTM D 792	1.35
Flexural strength [MPa], DIN EN ISO 178, ASTM C 580	60
Compressive strength [MPa], DIN EN ISO 604, ASTM C 579	80
The thermal coefficient of linear expansion [1/K], ISO 11359-2, ASTM C 531	2.2×10^{-5}
Tensile Strength [MPa], DIN EN ISO 527, ASTM C 307	40
	Data are mean values

Chemical Resistance

Extensive resistance to acids (in particular condensing sulphuric acid), alkalis, solvents, oils and other, also oxidizing chemicals.

Please contact our application engineering for approval of the project-specific possible application.

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Substrate

Requirements

Processing 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 processing time and consistency of the compounds and can change consumption, coating thickness and properties.

Steel

Refer to DIN EN 14879-1 as well as to STEULER-KCH-Formsheet 020.

The steel surface shall be sandblasted to a metallic bright finish. A preparation degree of Sa 2 ½ as specified in DIN EN ISO 12944-4 and a roughness grade “medium (G)” as specified in DIN EN ISO 8503-1 must be achieved; minimum surface roughness R_z = 70 µm. After blasting, the formation of new rust must be prevented by suitable measures, e. g. priming directly.

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

Moisture

During application, the substrate must be kept absolutely dry. Uncured material has to be protected from any kind of moisture (condensation, fog, precipitation or other water source).

System Design

- Steulerflake Primer HT
- Steulerflake SPG (intermediate layer)
- Steulerflake SPG HT (Top Coat)

Nominal thickness is 1.2 mm.

Packaging / Shelf life

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

Components	Item number	Package	Content	Shelf life
Steulerflake-Priming-Solution HT	5032063001	Hobbock	25 kg	3 Months
Steulerflake SPG	5032065001	Hobbock	25 kg	3 Months
Oxydur-Hardener C	5032015007	Bottle	1 kg	12 Months
Steulerflake SPG-HT	5032101001	Hobbock	25 kg	3 Months
Steulerflake-Colour-Paste blue	5011015007	Drum	1 kg	12 Months
Steulerflake-Colour-Paste blue	5011015003	Drum	5 kg	12 Months

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

Mixing Ratio / Consumption

Steulerflake Primer HT

Component	kg/m²	Part by weight	kg / batch	l / batch
Steulerflake-Priming-Solution HT	0.147	1.000	25.00	22.50
Oxydur-Hardener C	0.003	0.020	0.50	0.50
Total	**0.150**		**25.50**	

Total consumption in kg/m² (approx.): 0.150

Work steps: 1

Batch creates in m² (approx.): 170

Steulerflake SPG

Component	kg/m²	Part by weight	kg / batch	l / batch
Steulerflake SPG	0.686	1.000	25.000	20.80

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Component	kg/m²	Part by weight	kg / batch	l / batch
Oxydur-Hardener C	0.014	0.020	0.500	0.50
Total	**0.700**		**25.500**	
Steulerflake-Colour-Paste blue*	(0.003)	(0.005)	(0.125)	(0.06)
* for a color change in every second layer				

Consumption per application in kg/m² (approx.):	0.700	Work steps (min.):	2
		Batch creates the following quantity in m² per layer (approx.):	36

Steulerflake SPG-HT

Component	kg/m²	Part by weight	kg / batch	l / batch
Steulerflake SPG-HT	0.686	1.000	25.00	20.00
Oxydur-Hardener C	0.014	0.020	0.50	0.50
Total	**0.700**		**25.50**	

Consumption in kg/m² (approx.):	0.700	Work steps	1
Total thickness in mm (approx.) (2x SPG + 1x SPG-HT)	1.2	Batch creates in m² (approx.):	36

Pot Life

Pot life depends on temperature:

Temperature	Primer	Steulerflake SPG	Steulerflake SPG HT
10 °C	approx. 75 minutes	approx. 90 minutes	approx. 80 minutes
20 °C	approx. 60 minutes	approx. 60 minutes	approx. 50 minutes
25 °C	approx. 35 minutes	approx. 40 minutes	approx. 30 minutes

Waiting and curing times

The minimum waiting time until further processing and the maximum waiting time between operations are as follows (approx.):

10 °C	8 h	120 h
20 °C	6 h	78 h
30 °C	4 h	24 h

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

Testing

After curing, the coating is tested for leaks with a high voltage tester (eg Elmed inspect 35) under a test voltage of 5 kV per millimeter layer thickness (see TI 379). Max. relative humidity is 70 %.

Safety and Disposal

- Sufficient aeration and de-aeration (especially in tanks and pits).
- No smoking/no fire
- Refer to the Safety Data Sheets
- Observe danger references and safety recommendation labels.
- Wear required personal protective equipment (avoid skin contact with materials)
- Clean and protect hands with skin protective soap and skin protection cream (no solvents)
- Wear a dust mask when sanding (e.g. for repairs).
- Instructions as per § 14 of GefahrstoffV (Toxic Substances Act) and TRGS 507 (Technical regulations for Hazardous Substances - Germany)
- Accident precautions issued by the Liability Insurance Association for the Chemical Industries (Germany)

Do not expose materials to heat or open flame, this applies in particular to welding works (weld beads).

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

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GISCODE

Product	GISCODE
Steulerflake Primer HT	SB-STY 10
Steulerflake SPG	SB-STY 10
Steulerflake SPG HT	SB-STY 10

Cleaning of Equipment

Tools soiled with uncured materials can be cleaned with STEULER UNIVERSAL CLEANER (Technical Information TI 190). Only clean in well ventilated areas.

Steulerflake-Cleaner A to clean the spray equipment.

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