

TI 254A

Technical Information Surface Protection Linings
Issue 19.09.2019

STEULERFLAKE ESM N

Airless-spray applied lining with barrier fillers; High chemical and thermal resistance

Base

Epoxy resin

Material Group

Tank- / vessel linings – Flake coatings

Description

The material is a spray coating based on a special epoxy resin. In addition to good chemical and mechanical resistance (also against abrasion), the coating is resistant to water vapour permeation. These properties are achieved by the special combination of selected fillers.

The minimum thickness depends on the actual requirements.

The nominal thickness is usually 600 µm.

Use

Protection of steel structures, especially pipes and tanks in several industries.

Properties

- high diffusion resistance
- thermal resistance up to 80 °C (dry exposure), up to 70 °C (liquid splashes), up to 50 °C (wet exposure)

Physical Data

| Property (unit), Test method | Value |
|--|-----------------------|
| Density (g/cm ³), DIN EN ISO 1183-1, ASTM D 792 | 1.2 |
| Flexural strength (MPa), DIN EN ISO 178, ASTM C 580 | 40 |
| Compressive strength (MPa), DIN EN ISO 604, ASTM C 579 | 60 |
| The thermal coefficient of linear expansion (1/K), ISO 11359-2, ASTM C 531 | 22 x 10 ⁻⁶ |
| Tensile Strength (MPa), DIN EN ISO 527, ASTM C 307 | 30 |

Chemical Resistance

Extensive resistance to inorganic acids, alkalis, mineral oils and other diluted chemicals.

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

Substrate

Steel

Refer to DIN EN14879-1 as well as to STEULER-KCH-Formblatt 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. immediate application of a primer.

The substrate should have a temperature of approx. 12 – 25 °C.

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). Distance to dew point has to be at least 3 K, at a relative humidity of above 70 % at least 5 K.

System Design

- Steulerflake ESM N

Packaging / Shelf life

All components must be stored and transported dry and frost-free. Shelf life is specified for a storage temperature of 20 °C. Higher temperatures reduce, lower temperatures increase the shelf life.

| Components | Colour approx. | Item number | Package | Content | Shelf life |
|--------------------------------|----------------|-------------|---------|---------|------------|
| Steulerflake-ESM-Solution 1 N | RAL 9010* | 5035406002 | Hobbock | 20 kg | 12 Months |
| Steulerflake-ESM-Solution 2 N | | 5035409056 | Bucket | 6.25 kg | 24 Months |
| Steulerflake-Colour-Paste blue | Blue | 5011015007 | Bucket | 1 kg | 12 months |
| Steulerflake-Colour-Paste blue | Blue | 5011015003 | Bucket | 5 kg | 12 months |

* additional colours on request

Mixing Ratio / Consumption

Steulerflake EPM N Cover Layer

| | Part by weight | Part by volume |
|--------------------------------|--|----------------|
| Steulerflake-ESM-Solution 1 N | 3.200 | 2.700 |
| Steulerflake-ESM-Solution 2 N | 1.000 | 1.000 |
| Steulerflake-Colour-Paste blue | 0.016 | 0.008 |
| Consumption | approx. 0.350 kg / m ² per single spray application | |
| Total thickness | approx. 0.6 mm | |
| Work steps: | minimum 3 | |

Waiting Times

Waiting times between the layers depend on the temperature and are as follows:

| | | |
|-------|--------------|--------------|
| 10 °C | minimum 24 h | maximum 48 h |
| 20 °C | minimum 12 h | maximum 36 h |
| 25 °C | minimum 8 h | maximum 24 h |

Pot Life

The working times depend on the temperature and are as follows:

| | |
|-------|--------------------|
| 10 °C | approx. 60 minutes |
| 20 °C | approx. 30 minutes |
| 25 °C | approx. 20 minutes |

Curing times

To achieve full chemical resistance 7 days and mechanical resistance 5 days.

Safety measures

Mix and apply material only in well ventilated areas. Provide ventilation suited to the conditions when working in pits or tanks. Do not smoke!

Do not expose materials to heat or open flame. This applies in particular to welding works (weld beads). Avoid direct skin contact with the materials. Wash hands with soap and water; do not clean the skin with solvents. Use barrier soap and protective creams on exposed skin areas. In all other respects comply with the relevant regulations for prevention of accidents.

Refer to the Safety Data Sheets!

GISCODE

| Product | GISCODE |
|--------------------|---------|
| Steulerflake ESM N | RE 2 |

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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This issue replaces all previous versions.