STEULER | Linings

TI 225

Technical Information Surface Protection Linings
Issue 18.09.2019

OXYDUR BL

Laminate system for concrete and steel substrates

Base

Vinyl ester resin

Material Group

Sealing layer

Tank- / vessel linings - laminates

Description and use

Laminate system for chemically resistant and liquid-tight linings on concrete and steel substrates, even under thermal load, e.g. containers, columns, reactors or bleaching towers. To increase the durability, the system can be covered by tiles or bricks.

Properties

- high chemical resistance
- temperature resistant:
  up to 60 °C (as sealing layer on concrete);
  up to 100 °C (on steel substrates - depending on chemical stress);
  up to 120 °C (as sealing layer under tiles or bricks)

System Design

- Oxydur BL primer (may be sprinkled)

Only with concrete as substrate *or* if the laminate cannot be applied within the permissible waiting times, the primer should be spread!

- Oxydur BL Filler (only for sprinkled primer)
- Oxydur BL Laminate
- *If necessary* Oxydur BL Top Coat

Physical Data

Property (unit), Test method	Value
Density [g/cm³], DIN EN ISO 1183-1, ASTM D 792	1.43
Flexural strength [MPa], DIN EN ISO 178, ASTM C 580	170
Elongation at tear [%], DIN EN ISO 527, ASTM C 307	2.8
Tensile Strength [MPa], DIN EN ISO 527, ASTM C 307	170
The thermal coefficient of linear expansion [1/K], ISO 11359-2, ASTM C 531	2.8×10^{-5}
	Data are mean values

Chemical Resistance

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

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

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Substrate

Requirements

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

* Temperatures above 30 °C can be achieved by reducing the accelerator by 20 % (in consultation with the application engineers).

Concrete / screed

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

To attain a sufficient adhesive tensile strength, the substrate is generally to be pretreated in such a way that it is free of cement slurry, cement skin, loose and crumbly particles, structure imperfections 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 protocol 006 (concrete) or STEULER-KCH-Test protocol 007 (screed).

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).

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
Oxydur-VE-BL-Laminating-Solution	5032020001	Drum	25 kg	9 Months
Oxydur-Accelerator D	5032007023	Jug	2.5 kg	24 Months
Oxydur-Hardener E	5032016007	Bottle	1 kg	12 Months
Oxydur-WV-Powder	5011119002	Bag	20 kg	24 Months
SKC-Filler 16	5011203001	Bag	25 kg	24 Months
Glass-Fibre Mat 300 g/m²	9300900390	Roll 1.27 m wide		unlimited
Glass Fleece 30 g/m²	9300900089	Roll 1.00 m wide		unlimited

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

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Mixing Ratio / Consumption

Oxydur BL Primer

Component	kg/m² (concrete)	kg/m² (steel)	Part by weight	kg / batch	l / batch
Oxydur-VE-BL-Laminating-Solution	0.240	0.192	1.000	5.000	4.850
Oxydur-Accelerator D*	0.005	0.004	0.020	0.100	0.100
(at over 30 °C)	(0.004)	(0.003)	(0.016)	(0.080)	(0.080)
Oxydur-Hardener E	0.005	0.004	0.020	0.100	0.100
Total	**0.250**	**0.200**		**5.200**	
The primer must be **spread** with SKC-Filler 16 (approx. 2 kg/m²), for concrete substrates if the subsequent laminate cannot be applied within the permissible waiting times.					

Consumption on concrete in kg/m² (approx.):	0.250	Work steps:	1
Consumption on steel in kg/m² (approx.):	0.200	Batch creates in m² (approx.):	21/26

Variant 1 (with spread primer - mortar and laminate for concrete substrates)

Oxydur BL Filling

Component	kg/m²	Part by weight	kg / batch	l / batch
Oxydur-VE-BL-Laminating-Solution	0.871	1.000	5.000	4.850
Oxydur-Accelerator D*	0.017	0.020	0.100	0.100
(at over 30 °C)	(0.014)	(0.016)	(0.080)	(0.080)
Oxydur-Hardener E	0.017	0.020	0.100	0.100
Oxydur-WV-Powder	1.395	1.600	8.000	10.250
Total	**2.300**		**13.200**	

Total consumption in kg/m² (approx.):	2.300	Work steps:	1
		Batch creates in m² (approx.):	5.7

Oxydur BL laminate (with sprinkling/filler)

Component	kg/m²	Part by weight	kg / batch	l / batch
Oxydur-VE-BL-Laminating-Solution	1.346	1.000	5.000	4.850
Oxydur-Accelerator D*	0.027	0.020	0.100	0.100
(at over 30 °C)	(0.022)	(0.016)	(0.080)	(0.080)
Oxydur-Hardener E	0.027	0.020	0.100	0.100
Total	**1.400**		**5.200**	
Structure: 2 layers Glass-Fibre Mat 300 g/m² + 1 layer Glass Fleece 30 g/m²				
Consumption in kg/m² (approx.)			1.400	
Depending on the project-specific geometry, additional consumption of glass-fibre materials and lamination solution must be planned due to the that fact that the glass-fibre-materials are overlapped.				

Layer thickness (filler + laminate) in mm (approx.):		2.5–3.0	
Consumption in kg/m² (approx.):	1.400	Work steps:	1
Batch creates in m² (approx.):	3.7		

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Variant 2 (without spreader/filler - laminate for steel substrates)

Oxydur BL Laminate

Component	kg/m²	Part by weight	kg / batch	l / batch
Oxydur-VE-BL-Laminating-Solution	1.540	1.000	5.000	4.850
Oxydur-Accelerator D*	0.030	0.020	0.100	0.100
(at over 30 °C)	(0.024)	(0.016)	(0.080)	(0.080)
Oxydur-Hardener E	0.030	0.020	0.100	0.100
Total	**1.600**		**5.200**	
Structure: 2 layers Glass-Fibre Mat 300 g/m² + 1 layer Glass Fleece 30 g/m²				
Consumption in kg/m² (approx.)			1.600	
Depending on the project-specific geometry, additional consumption of glass-fibre materials and lamination solution must be planned due to the that fact that the glass-fibre-materials are overlapped.				

Layer thickness in mm (approx.):	1.5	Work steps:	1
Consumption in kg/m² (approx.):	1.600	Batch creates in m² (approx.):	3.3

If necessary Oxydur BL Top Coat

Component	kg/m²	Part by weight	kg / batch	l / batch
Oxydur-VE-BL-Laminating-Solution	0.192	1.000	5.000	4.850
Oxydur-Accelerator D*	0.004	0.020	0.100	0.100
(at over 30 °C)	(0.003)	(0.016)	(0.080)	(0.080)
Oxydur-Hardener E	0.004	0.020	0.100	0.100
Total	**0.200**		**5.200**	
For subsequent coating / tiling / brick lining: Spreading with SKC-Filler 16 (approx. 2.0 kg/m²)				

Total consumption in kg/m² (approx.):	0.200	Work steps:	1
		Batch creates in m² (approx.):	26

* Temperatures above 30 °C can be achieved by reducing the accelerator by 20 % (in consultation with the application engineers).

Pot Life

Pot life depends on temperature:

at 20°C in min (approx.)	30–50

Waiting and curing times

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

Temperature	Walkable after	Maximum waiting time
10 °C	8 h	144 h
20 °C	6 h	96 h
30 °C	4 h	48 h

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

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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.

GISCODE

Product	GISCODE
Oxydur BL Primer	SB-STY 20
Oxydur BL Laminate	SB-STY 20
Oxydur BL Top Coat	SB-STY 20

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.

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