

TI 226

Technical Information Surface Protection Linings
Issue 20.09.2023

OXYDUR VE LR

Laminate system with national technical approval by DIBt, Berlin: Z-59.12-262

Base

Epoxy Novolac Vinyl ester resin

Material Group

DIBt-approval – Secondary containments

Sealing layers

Description

Laminate system for producing chemically resistant and fluid-resistant linings on concrete and steel surfaces. For concrete built secondary containments application according to national technical approval is possible.

The cured coating system is particularly low-emission and suitable for indoor application. It fulfils the emission requirements of the AgBB scheme and Class A+ of the VOC regulation of the French Ministry of Environment (MEDDTL).

Use

Coating of concrete and screed surfaces; sealing of secondary containments which serve as structural facilities for the storage, filling and handling of water-polluting liquids. In case of increased chemical, thermal and mechanical stress, it is possible to cover tile and brick linings (not part of the DIBt approval).

Properties

- High chemical resistance
- Crack-bridging up to 0.3 mm (according to DIBt approval)
- Temperature resistant:
 - up to 60 °C (as a sealing layer on concrete);
 - up to 100 °C (on steel substrates - depending on chemical stress);
 - up to 120 °C (as a sealing layer under tiles or bricks)

Physical Data

Property [unit], Test method	Value
Shore D hardness, DIN ISO 7619, ASTM D 2240	85

Data are mean values

Chemical Resistance

For detailed information about the chemical resistance, please refer to Technical Information TI 210A resp. to the national technical approval.

Please contact our Application Technology Department for approval of the project-specific possible application.

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.

Concrete / screed

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

To achieve sufficient adhesive tensile strength, the substrate must generally be pre-treated in such a way that it is free of cement slurry, cement skin, loose and friable parts, structural defects 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-Record 006 (concrete) resp. STEULER-KCH-Test-Record 007 (screed).

NOTE! Only the concrete substrate is part of the DIBt approval.

Steel

Refer to DIN EN 14879-1 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).

Construction requirements

Basically, the specifications of the national technical approval apply. The limitation of the crack width to ≤ 0.3 mm must be verified.

For a functional installation of the coating system, the following points should also be noted:

- Keep construction joints open by appropriate measures and fill them with concrete only after the shrinking process is finished.
- Avoid expansion joints in secondary containments. If expansion joints are required due to the construction design, they must be installed according to the specifications of the national technical approval.
- Any tubular feed-through is not admissible.
- Internal edges are to be designed as concave fillets.
- The material must not come into contact with water until it has fully cured. Water exposure to the reverse side of the coating must be avoided. If groundwater, seepage or other water can penetrate into the structure from the reverse side, this must be sealed accordingly.

Project-specific deviations must be agreed with the Application Technology Department.

System Design

- Alkadur EPL Primer + Sprinkling with SKC-Filler 16
Alternative Oxydur VE-LR Primer
Alternative VE-LR/LF Primer
- Oxydur VE LR Laminate
- If necessary, adhesive layer for subsequent tile and brick linings (not part of DIBt approval)

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
Alkadur-HR-Solution	5035197001	Hobbock	25 kg	24 Months
Alkadur-HR-Solution	5035197020	Hobbock	16 kg	24 Months
Alkadur-HR-Hardener	5035198085	Drum	8.8 kg	24 Months
Alkadur-HR-Hardener	5035198001	Hobbock	25 kg	24 Months
Oxydur-VEU-Solution	5032042001	Hobbock	25 kg	6 Months
Oxydur-VEU-Solution RAL 7032 ^[1]	5032045001	Hobbock	25 kg	6 Months
Oxydur-Accelerator	5032010007	Bottle	1 kg	12 Months
Oxydur-Accelerator D	5032007023	Can	2.5 kg	24 Months
Oxydur-Hardener C	5032015007	Bottle	1 kg	12 Months
Oxydur-WV-Powder	5011119002	Bag	20 kg	24 Months
SKC-Filler 16	5011203001	Bag	25 kg	24 Months
SKC-Filler 4L	5011195017	Bag	12.5 kg	24 Months
Copper strip self-adhesive	9703301015	Roll 19-20 mm wide		unlimited
Glass-Roving-Fabric 580 g/m ²	9300090008	Roll 1.25 m wide		unlimited
Glass-Roving-Fabric 240 g/m ²	9300090208	Roll 1.25 m wide		unlimited

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

Mixing Ratio / Consumption

Alkadur HR Primer

	Part by weight	Part by volume
Alkadur-HR-Solution	1.8	1.6
Alkadur-HR-Hardener	1.0	1.0
Total consumption	approx. 0.250 kg/m ²	
Application steps	1	
Sprinkling with SKC-Filler 16; consumption: approx. 3.000 kg/m ²		

Alternative 1

Oxydur VE LR Primer

	Part by weight	Part by volume
Oxydur-VEU-Solution	1.000	0.917
Oxydur-Accelerator D	0.020	0.021
Oxydur-Hardener C	0.025	0.025
Total consumption	approx. 0.250 kg/m ² (on concrete) approx. 0.200 kg/m ² (on steel)	
Application steps	1	

^[1] The colours may differ slightly from the RAL colour template. Other colours on request.

Alternative 2

Oxydur VE-LR LF Primer

	Part by weight	Part by volume
Oxydur-VEU-Solution	1.000	0.917
Oxydur-Accelerator	0.018	0.020
Oxydur-Accelerator D	0.021	0.021
Oxydur-Hardener C	0.025	0.025
SKC-Filler 4L	0.783	1.112
Total consumption on concrete	0.800 kg/m ²	
Layer thickness	approx. 0.5mm	
Application steps	1	

Oxydur VE LR Laminating Scraper Coat

	Part by weight	Part by volume
Oxydur-VEU-Solution	1.000	0.917
Oxydur-Accelerator D	0.020	0.021
Oxydur-Hardener C	0.025	0.025
Oxydur-WV-Powder	2.000	2.584
Layer thickness (Laminating Scraper Coat)	1.0 mm	
Consumption (Laminating Scraper Coat)	1.700 kg/m ²	
Application steps	1	

Oxydur VE LR Laminating Solution

	Part by weight	Part by volume
Oxydur-VEU-Solution (clear or coloured)	1.000	0.917
Oxydur-Accelerator D	0.020	0.021
Oxydur-Hardener C	0.025	0.025
Total consumption on Oxydur VE Primer	approx. 0.550 kg/m ²	
Total consumption on Alkadur HR Primer	approx. 0.650 kg/m ²	
Glass-Roving-Fabric 580 g/m ² + Glass-Roving-Fabric 240 g/m ²		
Depending on the project-specific geometry, additional consumption for Glass-Roving-Fabric and laminating solution must be planned due to the necessary overlap.		

If necessary, adhesive layer for subsequent tile and brick linings (not part of DIBt approval)

	Part by weight	Part by volume
Oxydur-VEU-Solution	1.0	0.917
Oxydur-Accelerator D	0.020	0.021
Oxydur-Hardener C	0.025	0.025
Total consumption	approx. 0.250 kg/m ²	
Application steps	1	
Sprinkling with SKC-Filler 16; consumption: approx. 1.500 kg/m ²		

Waiting and curing times

The waiting times between the individual applications depend on temperature.

Alkadur HR Primer

Temperature	Until further processing
20 °C	approx. 24 h

For sprinkled layers, the maximum waiting time for next layers does not apply as long as the sprinkling is intact and clean.

Oxydur VE coatings

Temperature	Walkable after	Maximum waiting time
10 °C	10 h	72 h
20 °C	5 h	48 h
25 °C	3 h	30 h

The finished coating is fully mechanically and chemically resistant at 20 °C after 5 days.

Pot Life

Pot life depends on temperature.

Alkadur HR Primer

Temperature	Pot life
10 °C	approx. 70 min
20 °C	approx. 30 min
30 °C	approx. 20 min

Oxydur VE-mixtures

Temperature	Pot life
10 °C	approx. 70 min
20 °C	approx. 40 min
25 °C	approx. 15 min

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
Alkadur HR Primer	RE90
Oxydur VE LR Primer	SB-STY20
Oxydur VE-LR LF Primer	SB-STY20
Oxydur VE LR Laminating Scraper Coat	SB-STY20
Oxydur VE LR Laminating Solution	SB-STY20

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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This issue replaces all previous versions.