STEULER | Linings

TI 221A

Technical Information Surface Protection Linings
Issue 18.10.2023

FURADUR LAMINAT A 93 PROTECT

Electrically conductive lining system consisting of a crack-bridging and highly chemically resistant laminate system with subsequent tile or brick lining. General type approval of the DIBt, Berlin Z-59.31-492

Base

Furan resin, free of aldehyde

Material Group

Secondary containments

Combined lining system

Description and use

Combined lining system consisting of a crack-bridging laminate system with subsequent tile or brick lining. The system is highly chemically resistant and electrically conductive.

For sealing structural installations such as secondary containments in which water-polluting liquids are stored, filled and handled.

Properties

- The temperature resistance can reach the resistance of the mortars used, depending on the thickness of the tile and brick layer and the duration of the load. The temperature resistance will be advised in individual cases by our Application Technology Department.
- High chemical resistance
- Slip-resistant surface (depending on the slabs and stones used)
- Fit for vehicles with pneumatic, solid rubber, Vulkollan or polyamide tyres
- sealing layer crack-bridging up to 0.4 mm
- Can be used for electrically conductive coverings

System Design

- Alkadur P 82 Primer
- Oxydur UP 82 F LF
- Furadur Laminate
- Furadur LF Thin Coating (sprinkled)
- Mortar bed und butt joints with FURADUR MORTAR (see TI/VA 322)
- Tiles or bricks (15 - 115 mm thick, acid-resistant bricks, red coloured ceramics or porcelain stoneware)

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Physical Data

Parameters for the sealing layer

Property [unit], Test method	Value
Density [g/cm³], DIN EN ISO 1183-1, ASTM D 792 (Oxydur UP 82 F LF)	1.25
Density [g/cm³], DIN EN ISO 1183-1, ASTM D 792 (Furadur Laminate)	1.20
Density [g/cm³], DIN EN ISO 1183-1, ASTM D 792 (Furadur LF Thin Coating)	1.20
Dissipation resistance [Ohm] to DIN EN 14879-6 at a relative humidity of > 70 %, ASTM F 150/98	≤ 10^6

Data are mean values

Please refer to the corresponding technical information for the physical data of the mortars.

Chemical Resistance

Extensive resistance to acids, alkalis, salts and salt solutions as well as to solvents, oils and fats.

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

Substrate

Requirements

Application temperature	approx. 15–30 °C
Dew point distance	> 3 K
Relative air humidity	≤ 60 %

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

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).

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Packaging / Shelf life

All components must be stored and transported dry. For some components special temperature limits for storage and transport apply (see note). 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-P82-Resin	5035233181	Drum	9.2 kg	24 Months
Alkadur-P82-Hardener	5035232003	Drum	5 kg	24 Months
Alkadur-P82-Additive	5035231045	Can	1.25 kg	12 Months
Oxydur-UP82-Solution 1 RAL 7031 [1]	5034128004	Drum	6 kg	24 Months
Oxydur-UP82-Solution 2 [2]	5034134058	Can	2.4 kg	6 Months
Furadur-L-Laminating-Solution	5033021001	Hobbock	25 kg	24 Months
Furadur-LF-Laminating-Solution	5033022001	Hobbock	25 kg	24 Months
Furadur-Liquid-Hardener [3]	5033017003	Canister	5 kg	24 Months
SKC-Filler 5L	5011196017	Bag	12.5 kg	24 Months
SKC-Filler 16	5011203001	Bag	25 kg	24 Months
Glass-Fibre-Mat 450 g/m²	9300900388	Roll 1.27 m wide		unlimited
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
Copper strip self-adhesive	9703301015	Roll 19-20 mm wide		unlimited
Steuler-Universal-Cleaner	5040023005	Canister	4 kg	24 Months

Plus the components for the mortar used.

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

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

[2] Frost-free storage and transport.

[3] Furadur-Liquid-Hardener must be stored and transported above 10 °C! In case of crystallisation, consultation with the laboratory / application technology is required. Do not sieve the crystals!

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Mixing Ratio / Consumption

Alkadur P 82 Primer

Component	kg/m²	Part by weight	kg / mix	l / mix
Alkadur-P82-Resin	0.149	7.36	9.20 [4]	8.07
Alkadur-P82-Hardener	0.081	4.00	5.00 [4]	4.76
Alkadur-P82-Additive	0.020	1.00	1.25 [4]	1.08
Total	**0.250**	**12.36**	**15.45**	

Total consumption approx.	0.25 kg/m²	Application steps	1
Mix yields approx.	61.8 m²		

Oxydur UP 82 F LF

Component	kg/m²	Part by weight	kg / mix	l / mix
Oxydur-UP82-Solution 1	0.818	2.50	6.00 [4]	5.90
Oxydur-UP82-Solution 2	0.327	1.00	2.40 [4]	2.04
SKC-Filler 5L	0.655	2.00	4.80	6.00
Total	**1.800**		**13.20**	
Glass-Fibre-Mat 300 g/m² for vertical or strongly inclined surfaces				

Total consumption approx.	1.80 kg/m²	Application steps:	1
Mix yields approx.	7.3 m²	Layer thickness approx.	1.5 mm

Furadur Laminate

Component	kg/m²	Part by weight	kg / mix	l / mix
Furadur-L-Laminating-Solution	1.238	20.00	5.00	4.20
Furadur-Liquid-Hardener	0.062	1.00	0.25	0.21
Total	**1.300**		**5.25**	
Consumption for a Glass-Fibre-Mat 450 g/m² + Glass-Fleece 30 g/m²				

Consumption laminating solution approx.	1.30 kg/m²	Application steps:	1
Mix yields approx.	4.0 m²		

Furadur LF Thin Coating

Component	kg/m²	Part by weight	kg / mix	l / mix
Furadur-LF-Laminating-Solution	0.200	20.00	5.00	4.20
Furadur-Liquid-Hardener	0.010	1.00	0.25	0.21
Total	**0.210**		**5.25**	
Sprinkling with SKC-Filler 16. Consumption approx. 2.0 kg/m²				

Total consumption approx.	0.21 kg/m²	Application steps:	1
Mix yields approx.	25 m²	Layer thickness approx.	0.2 mm

FURADUR MORTAR

For information on FURADUR MORTAR (electrically conductive) please refer to the Application Instruction VA 322.

[4] Pre-dosed package

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Pot Life

Pot life depends on temperature:

Alkadur P 82 Primer

Temperature	Pot life
15 °C	approx. 45 min
20 °C	approx. 30 min
30 °C	approx. 15 min

Oxydur UP 82 F LF

Temperature	Pot life
20 °C	approx. 40 min

Furadur Laminate and Furadur LF Thin Coating

Temperature	Pot life
15 °C	approx. 40 min
20 °C	approx. 30 min
30 °C	approx. 15 min

Waiting and curing times

The waiting times between the individual applications depend on temperature:

Alkadur P 82 Primer

Temperature	Until further processing
15 °C	12 h
20 °C	8 h
30 °C	6 h

The maximum waiting time between operations is 48 hours at 20 °C.

Oxydur UP 82 F LF

Temperature	Until further processing
20 °C	2–4 d

Furadur Laminate

Temperature	Until further processing
15 °C	24 h
20 °C	18 h
30 °C	12 h

With the sprinkled Furadur LF Thin Coating, the maximum waiting time to be observed for subsequent tile lining does not apply as long as the sprinkling is intact and clean.

The waiting time until walkability of tiles and bricks depends on mortar is used.

At 20 °C it is:

FURADUR MORTAR	5 h

For further data, please refer to the corresponding Application Instruction.

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

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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 Building 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 P 82	RE90
Oxydur UP 82 F LF	PU40
Furadur Laminate	SB-F40
Furadur LF Thin Coating	SB-F40
Furadur Mortar	SB-F10

Cleaning of Equipment

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

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This issue replaces all previous versions.