

## TI 222A

Technical Information Surface Protection Linings  
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# OXYDUR iVE L

Monostyrene-free, crack-bridging and highly chemically resistant laminate system based on vinyl ester resin

## Base

Epoxy Novolac Vinyl ester resin, solvent-free

## Material Group

Secondary containments

Sealing layers

## Description and use

**Monostyrene-free**, crack-bridging and highly chemically resistant laminate system based on vinyl ester resin to protect concrete and steel substrates. Jointless, plain coloured and optional with slip-resistant surface.

Compare OXYDUR iVE LC (TI/VA 222) with regard to the emission requirements of the AgBB scheme and Class A+ of the VOC regulation of the French Ministry of Environment (MEDDTL).

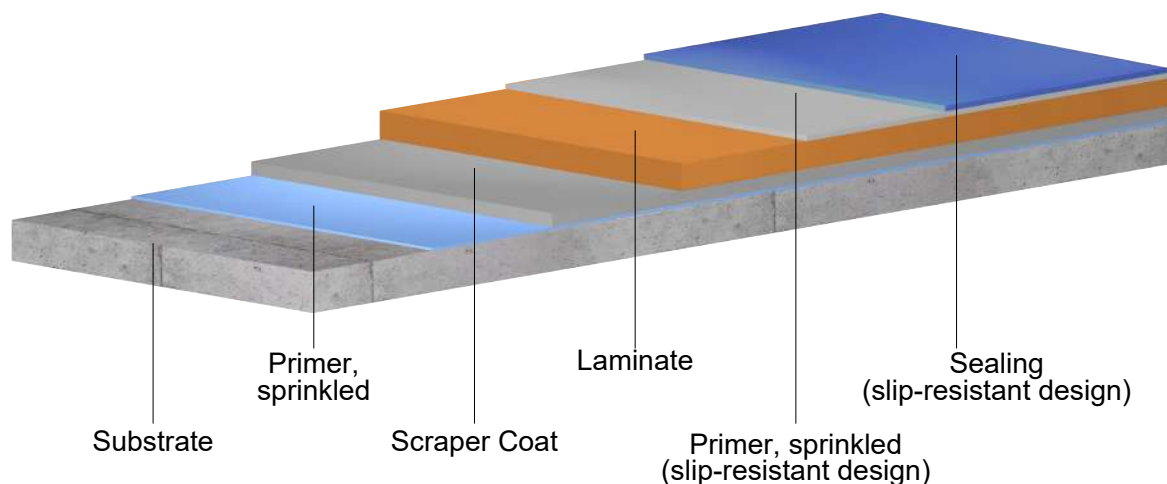
## Properties

- Temperature resistant up to 60 °C as a sealing layer on concrete substrates
- Crack-bridging 0.3 mm (variant 3) or 0.4 mm (variants 1 and 2)
- „Total solid“ (complies with the test method of Deutsche Bauchemie)
- Fit for vehicles with pneumatic, solid rubber, Vulkollan or polyamide tyres
- Slip-resistant design possible

If the coating is to be electrically conductive, use OXYDUR iVE LC (see TI/VA 222).

## System Design

- Alkadur HR Primer, sprinkled
- Oxydur iVE Scraper Coat
- Variant 1: Hand Laminate (Glass-Fibre-Mat)
- Variant 2: Chopped Laminate floor surfaces (Spray-Roving)
- Variant 3: Hand Laminate (Glass-Roving-Fabric)
- *If necessary (slip-resistant design):* Oxydur iVE Primer with Sprinkling and Sealing



Graphic not true to scale

## Physical Data

Property [unit], Test method	Value
Density [g/cm <sup>3</sup> ], DIN EN ISO 1183-1, ASTM D 792 (Of the cured solution)	1.2
Modulus of elasticity [MPa], DIN EN ISO 178, ASTM C 580 Bend test (Variant 1 Glass-Fibre-Mat)	6,000*
Elongation at tear [%], DIN EN ISO 527 (Variant 1 Glass-Fibre-Mat)	2*
Tensile strength [MPa], DIN EN ISO 527 (Variant 1 Glass-Fibre-Mat)	90*
Shore D hardness, DIN ISO 7619, ASTM D 2240	80
Temperature resistance [°C] for a short time (e.g. with high-pressure cleaners)	60 100
Data are mean values. *after heat treatment	

## Chemical Resistance

+ = resistant at 20 °C

(+) = short time resistant

- = not resistant

Although the system is solvent resistant, it is recommended to use the electrically conductive OXYDUR iVE LC (TI/VA 222) for flammable solvents.

## Media

Acetic acid conc.	+	Chromic acid 40 %	+	Nitric acid 65 %	+
Acetone	+	Conc. hydrochloric acid	+	Petrol	+
Alcohols (Methanole)	+	Ester / Ketones	+	Phosphoric acid. conc.	+
Aldehyde	+	Formic acid 100 %	+	Plant / animal oils and fats	+
Alkaline solutions 50 %	+	Hydrofluoric acid 40 %	+	Sulfuric acid 80 %	+
Ammonia 25 %	+	Hydrogen peroxide 50 %	+	Trichlorethylene	+
Benzene / Toluene / Xylene	+	Lactic acid	+		
Chlorine bleaching 13 % active chlorine	+	Mineral oils	+		

## 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.

### 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).

### 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).

### Moisture

During application, the substrate must be kept dry. No moisture (condensate, mist, etc.) must get onto the material.

### 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-Hardener	5035198001	Hobbock	25 kg	24 Months
Oxydur-iVE-Solution	5032186001	Hobbock	25 kg	24 Months
Oxydur-iVE-Sealing-Solution grey*	5032198001	Hobbock	25 kg	24 Months
Oxydur-iVE-Accelerator 1	5032192023	Canister	2.5 kg	24 Months
Oxydur-iVE-Accelerator 2	5032193023	Canister	2.5 kg	24 Months
Oxydur-iVE-Hardener	5032189007	PE Bottle	1 kg	12 Months
SKC-Filler 11	5011198002	Bag	20 kg	24 Months
SKC-Filler 15	5011202001	Bag	25 kg	24 Months
SKC-Filler 16	5011203001	Bag	25 kg	24 Months
Oxydur-WV-Powder	5011119002	Bag	20 kg	24 Months
Spray-Roving 2400tex	5019004002	Coil	20 kg	unlimited
Glass-Fibre-Mat 300 g/m <sup>2</sup>	9300900390	Roll 1.27 m wide		unlimited
Glass-Roving-Fabric 580 g/m <sup>2</sup>	9300090008	Roll 1.25 m wide		unlimited
Glass-Roving-Fabric 240 g/m <sup>2</sup>	9300090208	Roll 1.25 m wide		unlimited

\* Other colours on request.

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

## Mixing Ratio / Consumption

### Premix for an easier application

To simplify the application mix Oxydur-iVE-Accelerator 1 and 2 in 25 kg of each of the various Oxydur-iVE-Solutions. The Accelerator quantities are dependent on temperature. For further processing, remove 5 kg of each of the pre-accelerated solutions.

### Pre-accelerated Oxydur-iVE-Solutions depending on substrate temperature

Component	Mix	kg / mix
Oxydur-iVE-Solution or Oxydur-iVE-Sealing-Solution	pre-dosed package (25 kg)	25.00
<b>from 24 to 30 °C:</b> Oxydur-iVE-Accelerator 1	60 ml	0.06
<b>from 17 to 25 °C:</b> Oxydur-iVE-Accelerator 1	100 ml	0.10
<b>from 12 to 18 °C:</b> Oxydur-iVE-Accelerator 1	180 ml	0.18
<b>from 8 to 13 °C:</b> Oxydur-iVE-Accelerator 1	250 ml	0.25
<b>Total</b>		<b>25.06–25.25</b>
<b>At low temperatures and for faster curing for all variants, especially for the application of roving:</b>		
Oxydur-iVE-Accelerator 1	150 ml	0.15
Oxydur-iVE-Accelerator 2	150 ml	0.15

The temperature of the components must be adapted to the substrate temperature, otherwise the reactivities in the mix and on the surface will differ. For substrate temperatures below 15 °C, the difference may not exceed 5 K. At temperatures above 30 °C, the material should be cooled.

**NOTE! The pre-accelerated solutions must be used within one day.**

### Alkadur HR Primer

Component	l / mix	kg / mix	kg / m <sup>2</sup>
Alkadur-HR-Solution	1.6	1.80	0.161
Alkadur-HR-Hardener	1.0	1.00	0.089
<b>Total</b>		<b>2.80</b>	<b>0.250</b>
Sprinkling with SKC-Filler 16. Consumption approx. 2.0 kg/m <sup>2</sup>			

Total consumption (approx.): 0.25 kg/m<sup>2</sup>      Mix yields (approx.): 11.2 m<sup>2</sup>

## Variant 1: Oxydur iVE Scraper Coat + Hand Laminate (Glass-Fibre-Mat)

### Oxydur iVE Scraper Coat

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	0.990
Oxydur-iVE-Hardener	85 ml	0.10	0.020
Oxydur-WV-Powder	6.3 l	5.00	0.990
<b>Total</b>		<b>10.10</b>	<b>2.000</b>

Total consumption (approx.): 2.00 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 5 m<sup>2</sup>

### Oxydur iVE Hand Laminate (Glass-Fibre-Mat)

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	1.275
Oxydur-iVE-Hardener	85 ml	0.10	0.025
<b>Total</b>		<b>5.10</b>	<b>1.300</b>

2 layers Glass-Fibre-Mat 300 g/m<sup>2</sup>

Depending on the project-specific geometry, additional consumption for Glass-Fibre-Mats and laminating solution must be planned due to the overlapping of the glass-fibre materials.

Consumption laminating solution (approx.): 1.30 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 3.9 m<sup>2</sup>

## Variant 2: Oxydur iVE Scraper Coat + Chopped Laminate (Spray-Roving)

### Oxydur iVE Scraper Coat

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	0.676
Oxydur-iVE-Hardener	85 ml	0.10	0.014
Oxydur-WV-Powder	7.5 l	6.00	0.810
<b>Total</b>		<b>11.10</b>	<b>1.500</b>

Total consumption (approx.): 1.50 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 7.4 m<sup>2</sup>

### Oxydur iVE Chopped Laminate (Spray-Roving)

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	1.275
Oxydur-iVE-Hardener	85 ml	0.10	0.025
<b>Total</b>		<b>5.10</b>	<b>1.300</b>
Spray-Roving 2400tex			0.600

Consumption laminating solution (approx.): 1.30 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 3.9 m<sup>2</sup>

## Variant 3: Oxydur iVE Scraper Coat + Hand Laminate (Glass-Roving-Fabric)

### Oxydur iVE Scraper Coat

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	0.891
Oxydur-iVE-Hardener	85 ml	0.10	0.018
Oxydur-WV-Powder	6.3 l	5.00	0.891
<b>Total</b>		<b>10.10</b>	<b>1.800</b>

Total consumption (approx.): 1.80 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 5.6 m<sup>2</sup>

### Oxydur iVE Hand Laminate (Glass-Roving-Fabric)

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	0.686
Oxydur-iVE-Hardener	85 ml	0.10	0.014
<b>Total</b>		<b>5.10</b>	<b>0.700</b>

1 layer Glass-Roving-Fabric 580 g/m<sup>2</sup> + 1 layer Glass-Roving-Fabric 240 g/m<sup>2</sup>

Depending on the project-specific geometry, additional consumption for Glass-Roving-Fabric and laminating solution must be planned due to the necessary overlap.

Consumption laminating solution (approx.): 0.70 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 7.3 m<sup>2</sup>

### If necessary: Sprinkling with Sealing

#### Oxydur iVE Primer

Component	Mix	kg / mix	kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Solution	4.5 l	5.00	0.245
Oxydur-iVE-Hardener	85 ml	0.10	0.005
<b>Total</b>		<b>5.10</b>	<b>0.250</b>

Sprinkling with SKC-Filler 15 (fine) or 16 (rough). Consumption approx. 2.0 kg/m<sup>2</sup>

Total consumption (approx.): 0.25 kg/m<sup>2</sup>      Application steps: 1  
 Mix yields (approx.): 20.4 m<sup>2</sup>

### Oxydur iVE Sealing when sprinkling with SKC-Filler 16

Component	Mix	kg / mix	Sealing 1 kg / m <sup>2</sup>	Sealing 2 kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Sealing-Solu- tion	4.2 l	5.00	0.490	0.230
Oxydur-iVE-Hardener	85 ml	0.10	0.010	0.005
SKC-Filler 11 (2. Sealing)	(2.0 l)	(2.50)	-	0.115
<b>Total</b>		<b>5.10 (7.60)</b>	<b>0.500</b>	<b>0.350</b>

Consumption 1. Sealing: 0.50 kg/m<sup>2</sup>      Application steps: 2  
 Consumption 2. Sealing: 0.35 kg/m<sup>2</sup>      Mix yields (approx.): 10/22 m<sup>2</sup>

### Oxydur iVE Sealing when sprinkling with SKC-Filler 15

Component	Mix	kg / mix	Sealing 1 kg / m <sup>2</sup>	Sealing 2 kg / m <sup>2</sup>
pre-accelerated Oxydur-iVE-Sealing-Solu- tion	4.2 l	5.00	0.343	0.131
Oxydur-iVE-Hardener	85 ml	0.10	0.007	0.003
SKC-Filler 11 (2. Sealing)	(2.0 l)	(2.50)	-	0.066
<b>Total</b>		<b>5.10 (7.60)</b>	<b>0.350</b>	<b>0.200</b>

Consumption 1. Sealing: 0.35 kg/m<sup>2</sup>      Application steps: 2  
 Consumption 2. Sealing: 0.20 kg/m<sup>2</sup>      Mix yields (approx.): 14.5/38 m<sup>2</sup>

## Pot Life

Pot life depends on temperature. The waiting time until further processing of the Oxydur-iVE-Components is included in the pot life.

### Alkadur HR Primer

Temperature	Pot life
20 °C	approx. 40 minutes

### Oxydur iVE components

Temperature	Pot life
10 °C (Accelerator 1 + 2, Hardener)	approx. 50 minutes (including 15 minutes waiting time)
10 °C (Accelerator 1, Hardener)	approx. 120 minutes (including 25 minutes waiting time)
15 °C (Accelerator 1, Hardener)	approx. 90 minutes (including 15 minutes waiting time)
20 °C (Accelerator 1, Hardener)	approx. 70 minutes (including 10 minutes waiting time)
25 °C (Accelerator 1, Hardener)	approx. 60 minutes (including 5 minutes waiting time)
30 °C (Accelerator 1, Hardener)	approx. 35 minutes (including 2 minutes waiting time)

## Waiting and curing times

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

Temperature	Walkable after	Maximum waiting time
10 °C	24 h	96 h
15 °C	17 h	96 h
20 °C	12 h	72 h
25 °C	8 h	72 h
30 °C	5 h	48 h

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

## 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

## 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.