

## TI 301

Technical Information Surface Protection Linings  
Issue 18.09.2019

# OXYDUR A

Resin based mortar for corrosion resistant brick and tile linings

## Base

Polyester resin, unsaturated

## Material Group

Mortars, Jointing Materials

## Description and use

2-component synthetic polyester resin based mortar for laying and grouting tile coverings and masonry. Resistant against strong chemical exposure, such as higher concentrated acids and alkalis, oxidizing media as well as fats and oils.

## Properties

- thermal resistance up to 100 °C
- very good mechanical properties and chemical resistance
- cures at normal temperatures without subsequent heat treatment
- Workable with jointing injector

## Physical Data

Property (unit), Test method	Value
Density [g/cm <sup>3</sup> ], DIN EN ISO 1183-1, ASTM D 792	2.3
Compressive strength [MPa], DIN EN ISO 604, ASTM C 579	92.0
Modulus of elasticity [MPa], DIN EN ISO 178, ASTM C 580	5000
Tensile Strength [MPa], DIN EN ISO 527, ASTM C 307	15.0
Flexural strength [MPa], DIN EN ISO 178, ASTM C 580	35
The thermal coefficient of linear expansion [1/K], ISO 11359-2, ASTM C 531	3.2 x 10 <sup>-5</sup>
Thermal conductivity [W/mK], ISO DIS 22007	1.0
Temperature resistance [°C]	100
Data are mean values	

## Chemical Resistance

Resistant to higher concentrated acids and alkalis, oxidizing media as well as fats and oils.

For detailed information about the chemical resistance please refer to Technical Information TI 300.

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

## Substrate

Uneven spots should be levelled in the substrate already. Do not apply the mortar directly to the substrate! If the substrate is not provided with a surface protection system, apply with a suitable primer and sprinkle if necessary. Please contact our Application Technology Department for possible solutions.

Usually the mortar is applied onto STEULER-KCH's coating systems or rubber linings.

## Requirements

Processing temperature	approx. 15–30 °C*
Dew point distance	> 3 K
Dew point distance from 70% air humidity	> 5 K

\* At higher temperatures, retarders must be added to adjust the working time to 30-60 minutes.

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.

### 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  $R_z = 70 \mu\text{m}$ . 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 installation, the substrate must remain absolutely dry. No moisture (condensate, mist) may enter in open joints, onto the horizontal joint or the undersides and edges of tiles.

## Working Equipment

Measuring cup, balance, mixing vessels, drilling machine, mortar whisk

Cement mixing machine, trowel, toothed trowel, joint iron, joint syringe

Paint roller, brush

## 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-A-Solution	5036007001	Drum	25 kg	6 Months
Oxydur-Cement-Powder	5011111001	Bag	25 kg	12 Months
Oxydur-Inhibitor	5032037003	Canister	5 kg	12 Months
Hard wax solid	9300001146	Drum	10 kg	24 Months
SKC-Mortar-Smoothing-Agent	5045002003	PU-Canister	5 kg	24 Months
Steuler-Universal-Cleaner	5040023005	Canister	4 kg	24 Months

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

## Mixing Ratio / Consumption

### Oxydur A

Component	kg/liters	Part by weight	kg / batch	l / batch
Oxydur-A-Solution	0.383	1.00	5.300	5.000
Oxydur-Cement-Powder	1.917*	(4.50–)5.00	26.500	20.380
Oxydur-Inhibitor(if necessary)**	(0.008)**	0.02	(0.106)	0.116
<b>Total</b>	<b>2.300</b>		<b>31.800</b>	

The determined project requirement for bearing and butt joints is to be added 10 % as a reserve.

Consumption per mm thickness in kg/m<sup>2</sup> (approx.): 2.300      Mixture yield in l (approx.): 13.8

\* Depending on working temperature amount of Oxydur-cement-powder may vary between 1.725 und 1.917 kg.

\*\* The amount of Oxydur retarder must not exceed 2 % by weight of the Oxydur A solution (0.5 kg per 25 kg container), depending on the processing temperature. With a pot life of 30 to a maximum of 60 minutes.

### Mortar requirement per m<sup>2</sup> (approx.)

Split tiles 240 x 115 x 20 mm	7.5 l	17 kg
Split tiles 240 x 115 x 40 mm	9.5 l	21.5 kg
Bricks 240 x 115 x 65 mm	11.5 l	26 kg
Bricks 240 x 115 x 80 mm	13 l	30 kg

By filled-joint laying (bed joint 5 mm / butt joints 7 mm).

### Joint dimensions (in mm)

Bed joint thickness	4–7
Joint width	4–8
Depth of joints by hollow joint laying	min. 15

1 liter material spread over 1 m<sup>2</sup> is always 1 mm layer thickness.

## Application

- Application may only be started when the conditions specified in the chapter "Substrate" have been met.
- If the materials can not be handled at optimum working temperatures of approx. 15-30 °C, they must be cooled or heated to 20 °C.

### Mixing sequence

1. Stir the mortar solution well before use with the mastic paddle (also for partial removal). Then measure or weigh the solution and transfer to a mixing vessel.
2. The materials are mixed in a mixing vessel with a drill and mortar whisk at 300-500 rpm. Lead the whisk alongside wall and bottom of the vessel, until a homogeneous mixture is obtained.
3. The amount of Oxydur retarder added depends on the temperature. The quantity indicated under mixing ratios is a maximum value (corresponds to 0.5 kg retarder per 25 kg container of Oxydur-A solution). If necessary, prepare a small sample and check processing.
4. Solids are individually measured or weighed, added to the solution in portions and stirred in as described until a lump-free mixture is formed.

Small amounts can be mixed by hand. Do not use the mortar after the processing time has elapsed!

### Oxydur A

To achieve an optically perfect surface, the ceramic should be provided with a protective layer of hard wax or STEULER RELEASE LACQUER A (Technical Information TI 194). Clinker oil has proven itself for lower optical requirements. Please contact the application technology department for further information.

The mortar can be laid with filled joints and hollow joints. The horizontal joint should be 4-7 mm thick. With filled joints the mortar is applied on two sides of the tiles or bricks before they are applied. Remove the cement bulge with the trowel and smooth it down. With hollow joints the butt joint remains free and will be filled later. Here is to pay attention to cavity-free work.

For grouting, work the mortar into the dry and clean joint with the joint sprayer. Cut the tip of the joint syringe so that it fits into the joint and can be filled from below. To compact the joint, press excess material over the edge of the joint with the joint iron and then remove the remains with a trowel.

Smooth the joints before curing. For this purpose, a jointing iron is wetted with mortar smoothing agent or Universal Cleaner.

When applying ceramic tiles or bricks - especially on flexible (elastomeric) substrates such as rubber linings - installation areas of approx. 3 x 3 m should be observed. The joints between the fields are closed after termination of the first curing phase (usually after 1 - 2 days). Therefore, there will be no effect on site progress.

## Pot Life

The processing time depends on the temperature. Higher temperatures shorten them, lower temperatures prolong them. At 20 °C the working time is 30-60 minutes without the addition of the Oxydur retarder.

At higher temperatures, retarders must be added to adjust the working time to 30-60 minutes.

## Waiting and curing times

The waiting time until the product can be walked on depends on the temperature:

Temperature	Walkable after
15 °C	8 h
20 °C	4 h
25 °C	3 h

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

## Repairs

### Rejoining

When rejoining, the joint depth must be at least 5 mm. Press the mortar into the clean joints with a grout iron and smooth

### Replacement of hollow tiles or bricks

Cut with a separating disk straight through to the mortar bed into the joints and the bricks or tiles.

Where the lining consists of two brick layers chose the area to be removed big enough so that the bricks can be broken out from the upper brick layer down to the sealing layer in a stepped manner.

Take care when cutting in the mortar bed area near the sealing layer so that the latter is not damaged. Remove the bricks using a caulking tool. Take care that the sealing layer is neither mechanically damaged nor detached from the substrate.

After removal of the tiles or bricks the lining can be rebuilt (see "Application").

## 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 A	SB-STY 10

## 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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