TUDALIT® FINE CONCRETE

TF10 TUDALIT® FINE CONCRETE (0–1 mm)

TEST CERTIFICATES AND SUPPORTING DOCUMENTS

› General building authority approval of the DIBt for the reinforcement of reinforced concrete with TUDALIT® textile-reinforced fine concrete with the approval number Z-31.10-182
› High frost-deicing salt resistance - Verification by CDF procedure
› Non-combustible – Verification with a test for the classification according to building material class A1 according to DIN 13501-1
› Test acc. to DVGW Technical Rules, Work Sheets W 270, W 300, W 347
› Product acc. to EN 131813 "Cement-based screeds for wearing layers"
› Confirmation of the voluntary external monitoring by the Kiwa GmbH Polymer Institut
› Factory production control acc. to DIN EN 1504-3 and DIN EN 13813
› Company certification acc. to DIN EN ISO 9001:2015

With the trademark TUDALIT®, the production and application of textile concrete on the basis of specified quality standards for the components of the innovative composite, the methods of their production, the products developed from or manufactured with the composite and their production processes for reinforcement or repair are protected.

The company PAGEL® Spezial-Beton GmbH & Co. KG points to the fact that the product **TF10** PAGEL®/TUDALIT® FINE CONCRETE is one component of the general building authority approval "Verfahren zur Verstärkung von Stahlbeton mit TUDALIT® (textilbewehrter Beton)" (Method for strengthening reinforced concrete with TUDALIT® (textile-reinforced concrete)). If a strengthening measure shall be carried out as an application quality-assured by the TUDALIT® trademark, the proof of the TUDALIT® components, the TUDALIT® proof of suitability as well as the TUDALIT® licence must be submitted to the principal without request.

PROPERTIES

› Fine concrete especially matched to the TUDALIT® textile fabric
› Soft plastic thixotropic consistency
› Controlled swelling
› Low modulus of elasticity and high bending tensile strength
› Low w/c value
› Impermeable to water and largely resistant to mineral oils and fuels
› Pumpable and easy to pour using mono-transfer pumps with variable speed gearboxes (ask for machine suitability)

AREAS OF APPLICATION

› High performance fine concrete as a matrix for textile fabric
› Structural support in the tension zone of reinforced concrete components
› Reduction of layer thicknesses of concrete structures in structural engineering (production of building components and building elements)
› Reduction of layer thicknesses for structural repair work
› For the reinforcement of reinforced concrete components in the hand laminating method and in the MAWO-PAGEL® dense phase wet spraying application method

MOISTURE CLASSES BASED ON CONCRETE CORROSION FROM ALKALI-SILICIC ACID REACTIONS

Moisture class	WO	WF	WA	WS
TF10	•	•	•	•

The aggregates in PAGEL®'s products comply with the requirements of alkali sensitivity class E1 from non-hazardous sources specified under DIN EN 12620.

EXPOSURE CLASS ALLOCATION ACC. TO: DIN EN 206-1 / DIN 1045-2 / DIN 19573

	XO	XC				XD			XS			XF				XA			XM			XWW		
		1	2	3	4	1	2	3	1	2	3	1	2	3	4	1	2	3*	1	2	3	1	2	3
TF10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•			•	•	•

* Having sulfate attack up to 600 mg/l

TECHNICAL DATA

TYPE			TF10
Grain size		mm	0–1
Layer thickness		mm	3–30
Amount of water	max.	%	14
Consumption (dry mortar) approx.		kg/(m² · mm)	1.9
Fresh mortar raw density approx.		kg/m³	2,150
Processing time approx.	+ 20 °C	min	60
Measure of extension DIN EN 13395-1	5 min	mm	170–210
Swelling	24 h	Vol.-%	≥ 0.1
Compressive strength*	1 d	N/mm²	≥ 15
	7 d	N/mm²	≥ 40
	28 d	N/mm²	≥ 80
Bending tensile strength*	1 d	N/mm²	≥ 3
	7 d	N/mm²	≥ 6
	28 d	N/mm²	≥ 8
E-Module (static)	28 d	N/mm²	≥ 25,000

* Testing of bending tensile and compressive strength in accordance with DIN EN 196-1

Note: All fresh and solid mortars are tested at 20 °C ± 2 °C, storage of the test specimen after 24 hours until the strength test in water at 20 °C ± 2 °C. Higher or lower temperatures result in deviating properties of fresh respectively solid mortars and test results. Depending on the temperature, the consistency can be adapted with a slight reduction of the mixing water.

Storage: 12 months. Cool, dry, free from frost. Unopened in its original container.
Delivery form: 25-kg bag, Euro pallet 1,000 kg
Hazard class: Non-hazardous material, observe information on packaging.
GISCODE: ZP1

PAGEL PRODUCT COMPOSITION:
Cement: acc. to. DIN EN 197-1
Aggregate: acc. to. DIN EN 12620
Additions: acc. to. DIN EN 450, general building inspection approval (abZ), DIN EN 13263 (fly ash, microsilica, etc.)

APPLICATION

SUBSTRATE PREPARATION:
Clean thoroughly; remove loose and unsound material such as cement slurry and dirt etc. using, e.g. blasting with solid blasting abrasives, shot blasting, high pressure water spraying or similar until the underlying solid grain structure has been exposed. A sufficient average tear strength (1.5 N/mm_2) must be ensured.
(The mean surface roughness after the surface preparation procedure is Rt = 1 mm)
Blast all rust off exposed reinforcement bars until metallically bright (Sa 2 1/2 in accordance with DIN EN ISO 12944-4). Prewet the concrete substrate to capillary saturation 6-24 hours before coating.

REINFORCEMENTS:
Thoroughly coat all exposed and blasted reinforcing elements with **RM02** CORROSION PROTECTION without leaving any gaps (observe information of the technical data sheet **RM02** CORROSION PROTECTION).

EDGE FORMWORK: Attach in such a way that it is leak-proof and robust.

MIXING:
The mortar is supplied ready to use and only needs to be mixed with water. Measure out the quantity of water specified on the packaging and pour most of it into a clean and suitable mixing device (e.g. compulsory mixer).
Add the dry mortar and mix for at least 3 minutes; add the remaining water and mix for another 2 minutes until homogeneity.
Once ready mixed, apply immediately.

APPLICATION:
Manual application:
TF10 PAGEL/TUDALIT® FINE CONCRETE is applied onto the surface using a lamination process layer for layer, in the simplest case by the use of a trowel or a spatula.
The first layer is brush-applied as a bonding layer - with the same consistency.
Fine concrete matrix and textile reinforcement are alternately applied layer by layer. The respective textile reinforcement layer is immediately placed and lightly pressed. The final fine concrete layer is subsequently covered with a layer of fine concrete. The surface of the final layer of fine concrete is made according to requirements.

MECHANICAL APPLICATION:
TF10 PAGEL/TUDALIT Fine Concrete in the MAWO-PAGEL DENSE PHASE WET SPRAYING METHOD:
Hold the nozzle preferably at a right angle to the area to be coated. Distance approx. 50 cm. The first fine concrete layer is applied to support the bonding layer effect with the full air flow rate. Rebound has to bounce off or to be removed before placing the first textile reinforcement layer. After inserting the textile reinforcement layers, the air supply must be adjusted so that the textile structures are not damaged. The respective textile reinforcement layer is immediately placed and lightly pressed.
The final reinforcement insert is covered with a layer of fine concrete. The surface of the final layer of fine concrete is made according to requirements.

Air compressor:	5 m^3/min, 5 bar
Temperature range:	+ 5 °C to + 35 °C
Mixing water:	Drinking water quality

FOLLOW-UP TREATMENT:
The surfaces must be protected from premature water evaporation (from wind, draughts, direct exposure to sun, etc.) immediately on completion of the work for a period of 3-5 days.
Suitable curing methods:
Water spray, foil covers with jute sheets, thermofoils or moisture-retaining covering sheets, **O1** EVAPORATION PROTECTION.
If using **O1** EVAPORATION PROTECTION, observe the information on the technical data sheet for **O1** EVAPORATION PROTECTION.

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