

3. Implementation of the general building approval abZ Z-31.10-182

The following section of this planner portfolio gives an overview of the application of General Building Inspectorate Approval.

This information does not replace the detailed knowledge of the overall legislative framework of abZ and the generally accepted rules of technology.

The General Building Inspectorate Approval abZ Z-31.10-182 consists of a text version and the following six attachments:

- Attachment 1
In-house production control and external monitoring – coating agents and reinforcement textile
- Attachment 2
In-house production control and external monitoring – Source material of fine concrete
- Attachment 3
Checking the properties of fine concrete on the construction site
- Attachment 4
MAWO jacket air stream nozzle
- Attachment 5
Basics of dimensioning
- Attachment 6
Expected value of surface tensile strength

The subject of approval was firstly generally approved by the building inspectorate on 01.06.2014. The provisions can be supplemented or amended subsequently. Please always use the approval in its most recent version! The validity period is specified on the cover page (see section 11).

Kindly also take into account the “Guideline for certification of suitability for reinforcing concrete components with textile concrete for kits with General Building Inspectorate Approval” in its most recent version.

Access to the aforementioned documents: refer to section 11.

Object of approval

Subject of approval is a kit for reinforcement of ferroconcrete components with textile concrete.

The kit consists of following components:

- Textile reinforcement TUDALIT-BZT1-TUDATEX or textile reinforcement TUDALIT-BZT2-V.FRAAS
- Fine concrete TUDALIT-TF10-PAGEL

The structure of reinforcement is as follows:

- A layer of fine concrete on the prepared concrete surface of ferroconcrete component to be reinforced,
- Incorporation of textile reinforcement,
- Next layer of fine concrete (final layer or further support layer of textile reinforcement layer),
- Maximum four layers of textile reinforcement are possible.



Fig. 3.1:
Kit components for textile reinforcement
TUDALIT-BZT2-V.FRAAS
(All photos of this series:
Ammar Al-Jamous)

Fig. 3.2:
Provision of a machine for executing
spray works, Co. Eska



Fig. 3.3:
“Light-weight” textile reinforcement,
25 m length / 1.25 m width



Fig. 3.4: Spreading of textile reinforcement up to crosscutting

Fig. 3.5: Incorporation of textile in the fine concrete layer



Fig. 3.6: Spraying of next fine concrete layer for preparation of applying next layer of textile reinforcement



Fig. 3.7:
Lamination of next fine concrete layer for preparation of applying next layer of textile reinforcement

Fig. 3.8
Demonstration of simultaneous work process: In the background on the left: 2 workers incorporating the reinforcement layer. In the background to the right: Splashing of fine concrete for preparation for the next layer or the final layer of fine concrete.



Fig. 3.9:
Final layer – unprocessed in the foreground and already smoothed in the background.

Conditions for application

The following conditions must be fulfilled for the application of General Building Inspectorate Approval abZ Z-31.10-182:

Case of validity of General Building Inspectorate Approval

- The abZ is applicable to the bending reinforcement in tension zones for dry inner components made of ferroconcrete with prepared surface under predominantly static load.

Requirements regarding the component to be reinforced

- The ferroconcrete component to be reinforced must be composed of normal concrete with strength class \leq C50/60.
- The prepared surface of ferroconcrete component in the tension zone must have a surface tensile strength with an expected value of at least 1.00 N/mm².
- In the flexural tension zone of ferroconcrete component, the diameter of the existing reinforcement must be \leq 20 mm.
- In reinforcement areas, the concrete cover should be at least 10 mm.

Permissible cases of loading

- The textile reinforcements may absorb only the tensile forces.
- Textile concrete layers may also be applied in the pressure zone; however, no forces should be allocated to these layers.
- Flexural tensile reinforcements with textile reinforcement should be applied only where no additional traverse force reinforcement is mathematically required.

Climatic conditions

- The reinforcement measures should be carried out only on inner components. Temperature on the completed reinforcements should not exceed 40°C. The relative moisture should not exceed 65% in the use phase.
- The reinforcement layers must not be subject to moisture penetration, alternating moisture penetration and alternating freeze-thaw.

Requirements with regard to executing company

- Reinforcement works with textile concrete should be executed only by a company with certified suitability.

Provisions for dimensioning and design

For the dimensioning, attachment 5 is applicable to General Building Inspectorate Approval. An introduction to engineering practice as well as two dimensioning examples are included in section 5 of this planner portfolio.

For design, section 1.2 of General Building Inspectorate Approval should be taken into account. In addition, following framework conditions must be fulfilled: The minimum concrete cover of a textile reinforcement layer for old concrete; it is 3mm between the textile reinforcement layers and the surface of reinforcement.

Requirements regarding fire protection are not included in General Building Inspectorate Approval. If there are requirements regarding fire resistance of components with textile concrete reinforcements, the requested fire resistance should be substantiated in each case.

Competence of executing company

Executing company should provide a certificate of suitability as per the „Guideline for certification of suitability for reinforcing concrete components with textile concrete“.

During the reinforcement measure, the qualified managers of the company should be available on construction site as per the “Guideline for certification of suitability for reinforcing concrete components with textile concrete”.

The reinforcement activity should be done only by the qualified personnel on the construction site as per the „Guideline for certification of suitability for reinforcing concrete components with textile concrete”.

The process of certification

Certificates of suitability for construction company is issued by a recognised inspection body.

Following inspection bodies are available:

- ❑ ÜG 010 (GÜB Berlin).

The certification of suitability contains the following:

- ❑ Proof of basic suitability of the company

The basic qualification of responsible construction personnel must be substantiated by a corresponding certificate. Currently, this certificate can be obtained only by the certification of education council “Processing of synthetic material in concrete construction” (SIVV certificate) in Deutschen Beton- und Bautechnik-Verein e.V. [German Concrete and Construction Engineering Association].

The company must have the necessary testing and measuring devices available as well as the required tools and mixing devices. Efficiency and measurement accuracy of devices is tested and documented regularly.

- ❑ Theoretical test

After an approximately 5-hour theoretical training, a theoretical test should be written as a half-an-hour Multiple-Choice-Test.

- ❑ Practical test – Suitability tests

As a practical test, the execution of a textile concrete reinforcement is applicable when the sections of General Building Inspectorate Approval relevant to execution are adhered to in their most recent version.

In addition, all necessary tests related to construction should be conducted, assessed and documented as a proof of attained material properties of fine concrete and bond material.

The suitability tests are accepted if a flawless execution of textile concrete reinforcement and conditional results as per abZ were obtained.

Place of execution of practical training: Hentschke Bau GmbH, Bautzen

The certificate of suitability is issued for three years (is revocable) and can be extended by three years upon application. The testing authority takes a decision in this regard.

Contact persons

Dipl.-Engineer (FH) Silke Grün,
Tel. +49 351 4047042-35, s.gruen@eipos.de

Melanie Kögler
Tel. +49 351 4047042-38, m.koegler@eipos.de