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Institute of Building Materials, Concrete Construction and Fire Safety | Civil Engineering Materials Testing Institute

General building supervisory test certificate

Test certificate number:	P-6101/9650 MPA-BS
Article:	SynkoElast sealing tape and SynkoElast crack control joints for use as joint sealing concrete components with high water penetration resistance in accordance with administrative regulation on technical construction regulations no. C 3.30
Applicant:	B.T. innovation GmbH Sudenburger Wuhne 60 39116 Magdeburg
Initial date of issue:	20/09/2000
Date of issue:	04/08/2021
Valid to:	03/08/2026

This general building supervisory test certificate contains 7 pages and 6 appendices.

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Notified body (0761-CPR) - recognised as regards building supervisory regulations and notified for examination, monitoring, inspection and certification.

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A General Regulations

(1) With these building supervisory general regulations the useability of the construction product is proven in terms of regional construction laws.

(2) The general building supervisory approval certificate does not replace the legally prescribed approvals, agreements and certificates for the performance of construction projects.

(3) The general building supervisory test certificate is issued regardless of the rights of third parties, in particular private property rights.

(4) Regardless of further regulations in the Special Provisions, the manufacturer and distributor of the building product must make copies of the general building supervisory test certificate available to users of the building product and point out that the general building supervisory test certificate must be available for inspection at the location of use. Copies of the general building supervisory test certificate are to be made available to the relevant public bodies on demand.

(5) The general building supervisory test certificate may only be duplicated in full. Publication of extracts requires permission from the Civil Engineering Materials Testing Institute in Brunswick (MPA-Braunschweig). Texts and drawings of advertising brochures may not contradict the general building supervisory test certificate. Translations of the general building supervisory test certificate must contain the remark "Translation of the original German version not checked by MPA Braunschweig".

(6) The general building supervisory test certificate is issued revocably. The provisions may be supplemented or modified subsequently, especially if new technical knowledge makes this necessary.

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B Special Provisions

1 Purpose and scope of application

1.1 Purpose

This general building supervisory test certificate applies to the manufacture and use of B.T. innovation GmbH's SynkoElast sealing tape, SynkoElast crack control section and if appropriate SynkoElast primer as joint sealing concrete components for construction joints, crack control joints in element walls and crack sections in in-situ concrete constructions with high water penetration resistance in accordance with administrative regulation on technical construction regulations no. C 3.30.

1.2 Scope of application

SynkoElast sealing tape may be used internally for construction joints in in-situ concrete construction in concrete elements with high water penetration resistance with a maximum opening width of 0.25 mm against:

- Pressing water up to a maximum water pressure of 2.0 bar (20 m WS) on installation exclusively in fresh concrete
- Pressing water up to a maximum water pressure of 1.0 bar (10 m WS) on one-sided installation exclusively in set concrete
- Ground dampness and non-pressing water.

SynkoElast crack control joints may be used internally for crack control joints in element walls and crack control sections in in-situ concrete construction in concrete elements with high water penetration resistance with a maximum opening width of 1.0 mm against:

- Pressing water up to a maximum water pressure of 0.8 bar (8 m WS)
- Ground dampness and non-pressing water.

The seals are suitable for use in areas with fluctuating water levels. The seals fulfil use class A for stress classes 1 and 2 in accordance with the WU guideline[1].

The seals are fundamentally to be installed in accordance with the specifications in 4 (execution).

2. Provisions for the building product

2.1 Composition, characteristic values and properties

SynkoElast sealing tape is a modified bitumen-based sealing tape. The sealing tape is manufactured with a right-angle profile with the approximate dimensions of 31 mm x 20 mm (width x height) and extruded in strips between easily detachable protective layers and packaged.

[1] Deutscher Ausschuss für Stahlbeton guideline entitled "Waterproof concrete structures", June 2017 edition

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SynkoElast crack control joints are made of hot-dip galvanised steel sheet which is held together in the centre on both sides with SynkoElast sealing tape with the approximate dimensions of 25 mm x 10 mm or 50 mm x 12 mm (width x height). SynkoElast sealing tape is also extruded with easily detachable protective strips.

SynkoElast primer is a solvent-based bitumen primer.

The building products possess the characteristic values listed in Table 1 in Appendices 1 and 2 and must comply with them. Verification of the usability of the building products as sealant for construction joints, crack control joints in element walls and crack control sections in in-situ concrete construction with high water penetration resistance was provided in the testing principles for granting general building supervisory test certificates for joint sealing in concrete construction components with high water penetration resistance with soil contact (PG-FBB), Part 1, September 2017 edition.

Construction joints sealed using the sealing system are sufficient for the application areas listed in Section 1.2.

- stable
- adhesive
- waterproof
- non-ageing

The sealing system fulfils the requirements of building material class B2 "normally flammable" in accordance with DIN 4102-1.

2.2 Manufacture, packaging, transport, storage and labelling

2.2.1 Manufacture

The building products are factory-manufactured.

2.2.2 Packaging, transport and storage

Packaging, transport and storage must be carried out so that the sealant is not impaired in its mode of functioning. The material should be protected against frost and weather. The sealing tape may not be exposed to high temperatures over a longer period (e.g. direct sunlight in the summer).

The information on requirements from other legal areas on the packaging (e.g. hazardous substance or transport law) must be observed.

2.2.3 Product labelling

2.2.3.1 Conformity mark

The building product must be labelled with the conformity mark by the manufacturer in accordance with national conformity mark regulations. Labelling is only permitted if the requirements in Section 3 are fulfilled.

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The conformity mark is to be attached with the following prescribed information:

- Manufacturer's name
- Number of the general building supervisory test certificate on the packaging or the enclosed package insert.

2.2.3.2 Additional information

The packaging of the building product or the package insert must also contain the following information:

- Product name
- Batch number
- Designated use
- Reference to the associated processing specification

3 Certificate of conformity

3.1 General

The conformity of the sealing system described, SynkoElast sealing tape and SynkoElast crack control section compliance with the provisions in this general building supervisory test certificate must be confirmed with a manufacturer's declaration of conformity in accordance with Section 3.4 based on internal works production control and an initial test of the product by an approved test facility.

3.2 Initial test of the building product by an approved test facility

The initial test of the product is not necessary as the samples for the tests for the proof of usability were taken from current production in the manufacturing plant.

A renewed initial test must be performed if the production conditions change.

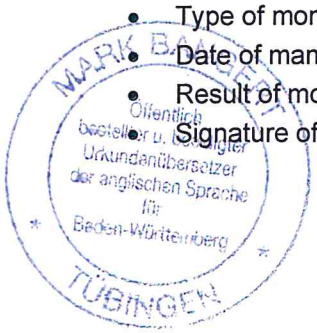
3.3 Internal works production control

Internal works production controls are to be set up and performed in the manufacturing plant in accordance with DIN 18200.

Internal works production controls must follow the provisions stated in Table 1 adapted to the product and its manufacturing conditions. The requirements to be met are based on the results of the basic test.

The results of the internal works production control are recorded and analysed by the manufacturer. The recordings must contain at least the following information:

- Product designation
- Type of monitoring
- Date of manufacture and test
- Result of monitoring and comparison with the requirements
- Signature of the person responsible for the internal works production control.



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The recordings must be kept for at least five years and are to be presented on demand.

In case of inadequate monitoring results the manufacturer must take the necessary measures to remedy the defect immediately. Building products which do not meet requirements must be handled in such a manner that they cannot be mistaken for compliant, defect-free building products. The relevant test is repeated after remedying the defect insofar as verification of the remedy is required.

Table 1: Type and frequency of test performed as part of the internal works production control

SynkoElast sealing tape			
Properties	**Test conditions**	**Requirements**	**Frequency**
Check of raw materials	Manufacturer's declarations or appropriate tests	No indication of changes	Per supply batch
General quality	(visual)	No indication of changes	Per batch
Width Height		30 mm ± 10 % 20 mm ± 10 %	Per batch
Density	DIN EN ISO 1183-1 (dipping treatment)	1.31 g/cm³ ± 3 %	Per batch
Infrared spectrum	See Appendix 2	No indication of changes	Per batch
Thermogravimetric Analysis	See Appendix 2	No indication of changes in weight loss: 67.7 M.-% ± 3 %	Per batch
SynkoElast crack control section			
Check of raw materials	Manufacturer's declarations or appropriate tests	No indication of changes	Per supply batch
General Quality	(visual)	No indication of changes	Per batch
Sheet metal thickness		0.90 mm ± 10 %	Per batch
SynkoElast sealing tape (crack control joint)			
Width Height		25 mm or 50 mm ± 10 % 10 mm or 12 mm ± 10 %	Per batch

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3.4 Certificate of conformity

Conformity of the building product with the provisions of this general building supervisory test certificate must be confirmed by every manufacturing plant with a manufacturer's certificate of conformity based on the initial test and the internal works production control in accordance with 3.2 and 3.3. The manufacturer must make the declaration of conformity by labelling the building product with the conformity mark in accordance with 2.2.3.1.

4 Construction

Manufacturer's specifications on construction are contained in Appendices 3 to 6 and should be observed. Manufacturer's specifications were checked for plausibility and with regard to freedom from contradictions to the results of the initial test.

5 Legal basis

This general building supervisory test certificate is issued on the basis of Section 19 of the Lower Saxony Building Code in conjunction with administrative regulation on technical construction no. C 3.30.

6 Advice on legal remedies

An objection to this general building supervisory test certificate can be lodged within one month of issue. The objection is to be submitted in writing or orally for transcription to the directorate of the Civil Engineering Materials Testing Institute in Brunswick (MPA-Braunschweig), Beethovenstrasse 52, 38106 Brunswick. The time of receipt of the letter of objection by the test facility is decisive in judging the timeliness of the objection.

[Signature]

Dipl.-Min. F. Ehrenberg
Deputy Head of the test facility

p.p.

[Signature]

M. Pankalla Clerical assistant

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Properties of SynkoElast sealing tape

• Outer quality:	Black, sticky, kneadable, homogeneous	
• Density (DIN 53479):	1.31 g/cm³	
• Weight loss: (TGA, 25°C to 897°C)	67.7 M.-% (See Appendix 2)	
• Infrared spectrum:	See Appendix 2	
• Behaviour after		
- 28 d water immersion:	1.2 % weight gain; free of cracks and bubbles	
- 28 d SO_4^{2} immersion (pH4.5):	1.5 % weight gain; free of cracks and bubbles	
- 28 d $Ca(OH)_2$ immersion (pH12):	1.2 % weight gain; free of cracks and bubbles	
- 28 d 60 °C immersion:	No changes in weight or size discernable; free of cracks and bubbles	
• Behaviour during tensile test		
	Tensile strength	Elongation at tensile strength
- condition as delivered:	0.018 N/mm²	24.4 %
- 28 d $Ca(OH)_2$ immersion:	0.019 N/mm²	17.0 %
- 28 d 60 °C immersion:	0.023 N/mm²	23.3 %
• Adhesive properties		
- on fresh concrete:	>0.02 N/mm²	100 % cohesion failure in the sealing tape
• Fire behaviour: (in accordance with DIN 4102-1)	Building material class B2 on solid mineral-based subsurfaces	

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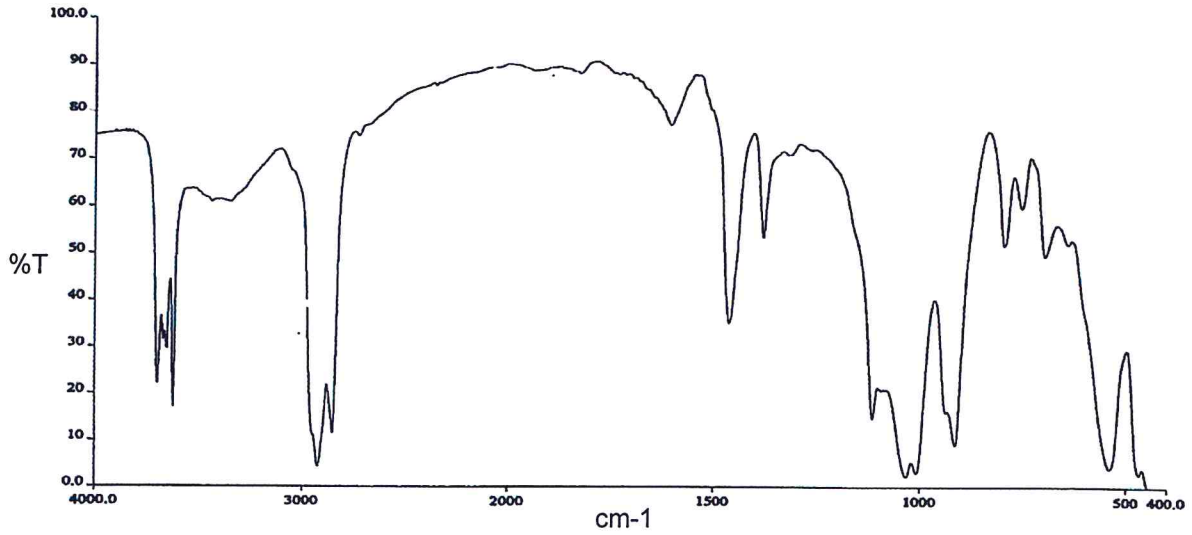
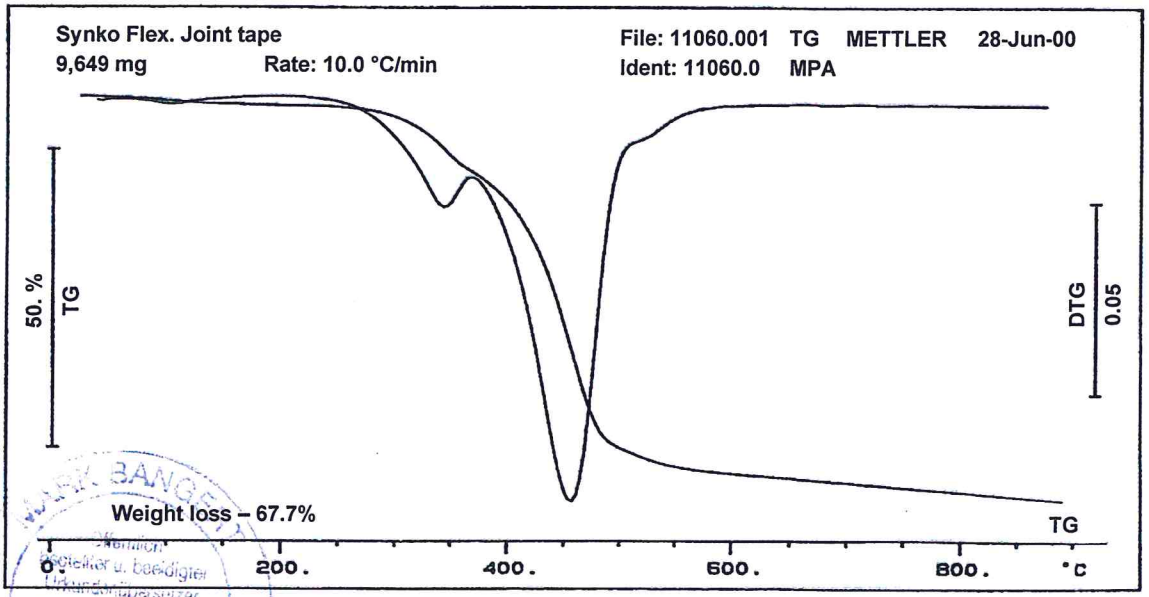
IR spectrum

The infrared spectrum was recorded on a Spectrum 2000 Explorer type Perkin-Elmer FTIR device in the wave number range from 4000 cm^{-1} to 400 cm^{-1} The layer thickness was selected so that the requirements of DIN 51 451 with regard to extinction ratios were complied with.



Thermogravimetric analysis

The thermogravimetric analysis was performed according to ISO 7111. The heating-up rate was 10K/min. The measurement was taken with a TA 3000 thermo-analysis station in a nitrogen atmosphere. The weight loss was determined in the temperature range from 25° to 897°C.



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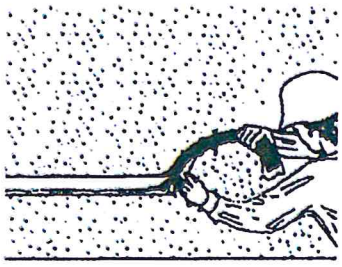
SynkoElast® sealing tape

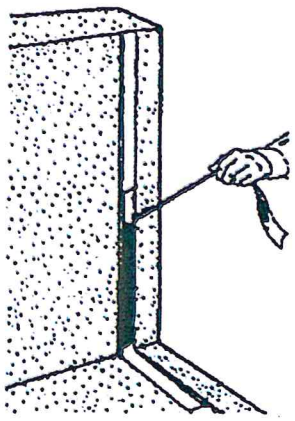
General instructions

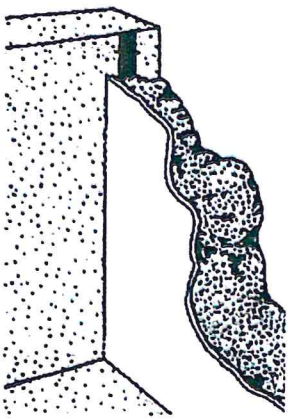
- Do not expose SynkoElast® to storage at high temperatures (e.g. direct sunlight in the summer) for a longer period of time.
- A maximum stacking height 6 original packaging cartons can be stacked on top of one another.
- At low temperatures the SynkoElast® should be stored in a warm place until directly before it is installed (room temperature, minimum 15°C) so that the material is easy to roll out, form and knead in the vicinity of joints.

Laying in fresh concrete

- After the complete installation of fresh concrete, SynkoElast® sealing tape is laid out with the unprotected side directly on the fresh concrete before the curing process begins and pressed in approximately halfway. Care should be taken that the sealing tape in the lower area is completely encircled by fresh concrete and that it stands about halfway out of the concrete.
- At low temperatures the SynkoElast® should be stored in a warm place until directly before installation (room temperature, minimum 15°C).
- SynkoElast® sealing tapes are to be kneaded with approximately 5 cm side overlap in the vicinity of joints (end of tape and start of the new roll). The side overlapping of the tape ends must be done without air bubbles by firmly pressing the tapes together.
- The protective foil should be removed from the sealing tape as shortly before the next concrete section as possible. After removing the sealing strip care should be taken that the joint sealing tape does not become dirty before the second section is concreted.







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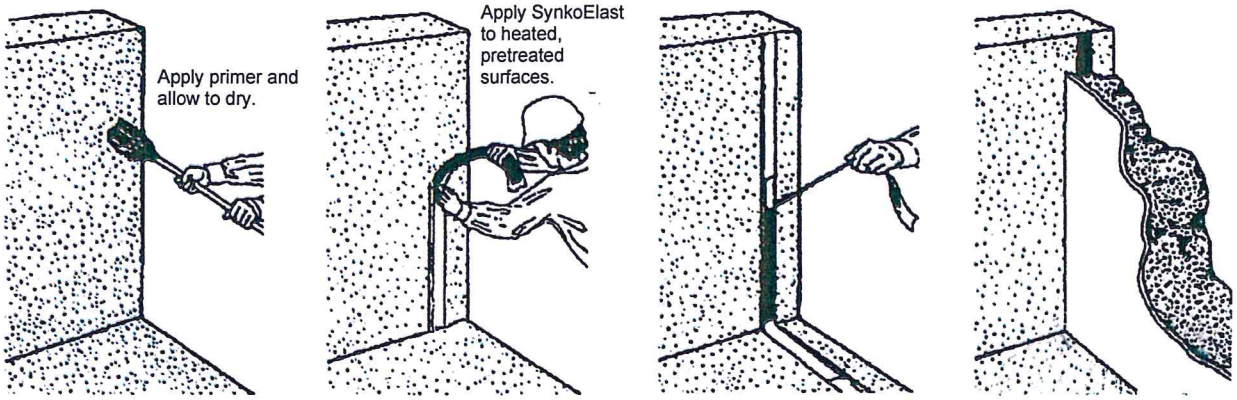
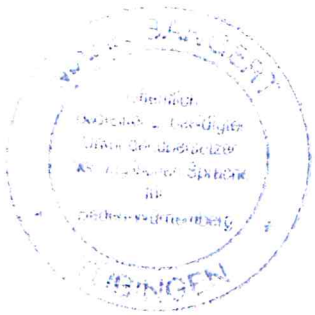
Laying on set concrete

- The concrete surface in the vicinity of the joint must be solid and capable of load-bearing and also free of grease, oils and other separative materials in order achieve perfect adhesion of the SynkoElast® sealing tape. The subsurface must be dry before installation. Any loosely cemented sinter layer on the concrete surface must also be removed by sanding before SynkoElast® is installed.
- The primer for SynkoElast® is applied with a brush in the vicinity of the subsequent location of the sealing strip. The pretreated surface must then evaporate and dry at 20°C for some 2-3 hours.
- Sealing tape can be laid on the pretreated surface after the solvent has evaporated. The primed surface must be heated with a gas burner until the SynkoElast® melts on to the surface subsequently when laid. In addition, the strip is pressed on at every location on the pretreated concrete.
- SynkoElast® sealing tapes are to be kneaded with approximately 5 cm side overlap in the vicinity of joints (end of tape and start of the new roll). The side overlapping of the tape ends must be done without air bubbles by firmly pressing the tapes together.
- Before concreting (after SynkoElast® and the concrete have cooled) it is recommended that the secure seat of the sealing tape on the concrete is checked. A well-adhering SynkoElas® strip can only be pulled off with considerable effort. The strip must be glued on again with heat if it is easy to remove.
- The protective foil should be removed from the sealing tape as shortly before the next concrete section as possible. After removing the sealing strip care should be taken that the joint sealing tape does not become dirty before the second section is concreted.





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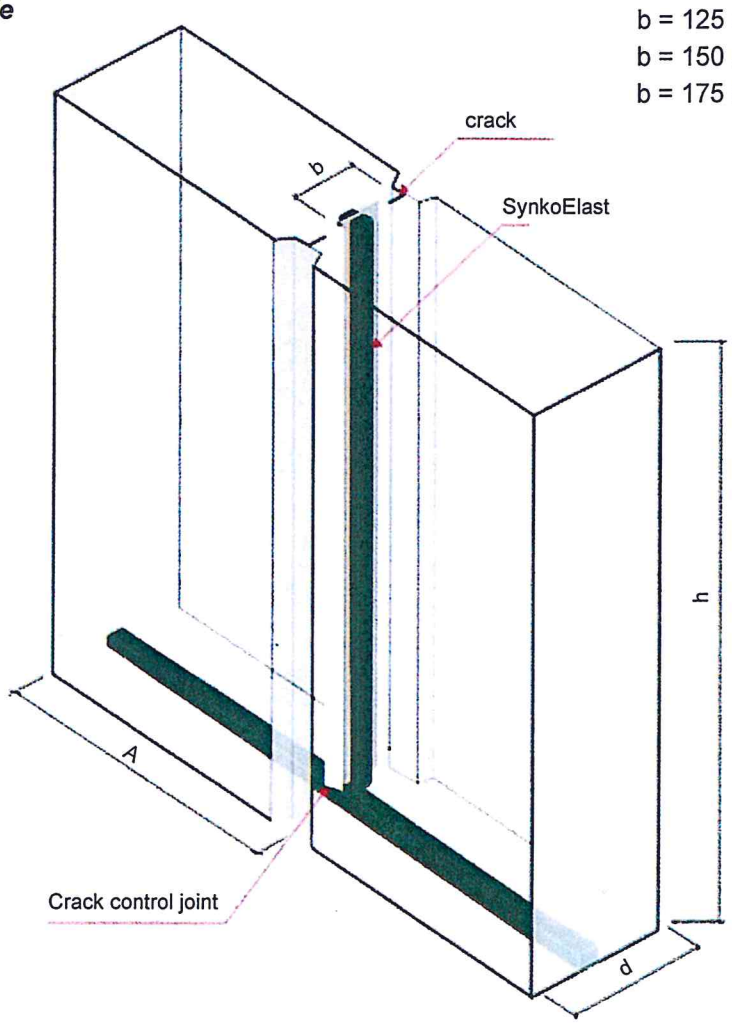
SynkoElast crack control joint

b = 80 mm for d up to 20 cm
b = 100 mm for d up to 20 - 24 cm
b = 125 mm for d up to 25 - 29 cm
b = 150 mm for d up to 30 - 34 cm
b = 175 mm for d up to 35 - 39 cm

Principle



Recommendation according to the German Concrete Association (Deutscher Beton-Verein)

$$\frac{\text{A (clearance) in [m]}}{\text{crack control joints}} = \frac{\text{h [m]}}{\text{2d [m]}}$$

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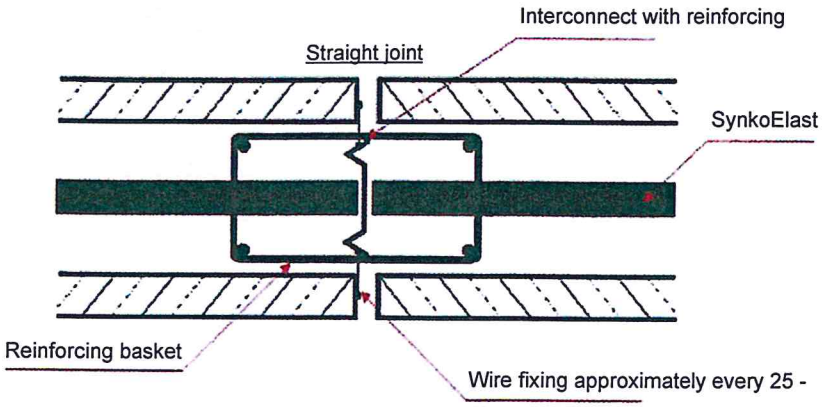
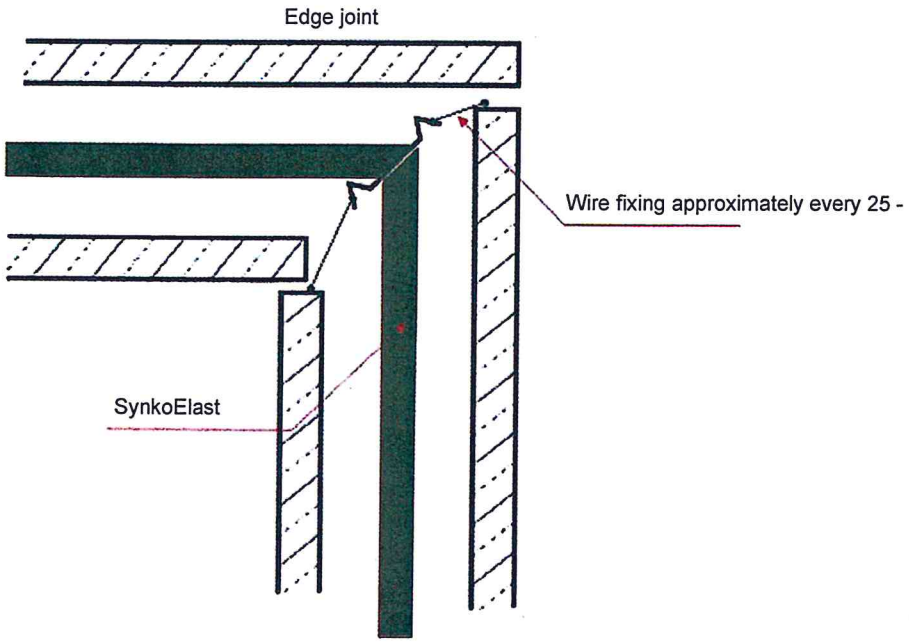
SynkoElast - crack control section in element walls

Principle





*** Reinforcing basket with reduced reinforcement.**
Not **calculated for crack width limitation.**

BT Bienaue Art zubaun innovation

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In my capacity as a publicly appointed and sworn translator for the English language for Baden-Wuerttemberg, I hereby certify this translation from the original German document (General building supervisory test certificate no. P-6101/9650 MPA-BS) presented to me to be correct and complete to the best of my knowledge and belief.

Tübingen, 28th September 2021

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