

General Building Code Test Certificate

- Translation -

Test Certificate No.: P-5316/053/14 MPA-BS

Test item: "KUNEX KLEMMFUGE" clamp-fitting joint
for use as a joint sealant for movement joints in structural
components made of concrete with high water penetration
resistance against pressing and non-pressing water and
against soil moisture in compliance with Verwaltungsvorschrift
Technische Baubestimmungen No. C 3.30

Client: PohlCon GmbH
Nobelstraße 51
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This General Building Code Test Certificate (abP) consists of 7 pages and 2 annexes.

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A General provisions

- (1) This General Building Code Test Certificate (abP) attests that the construction product can be used within the meaning of federal state building code regulations.
- (2) The General Building Code Test Certificate (abP) does not replace any of the building permits, approvals and certificates required by law for the performance of building projects.
- (3) The General Building Code Test Certificate (abP) is granted without prejudice to the rights of third parties, in particular private property rights.
- (4) Producers and distributors of the construction product shall, without prejudice to any additional regulations set out under the special provisions below, furnish the user of the construction product with copies of the General Building Code Test Certificate (abP), and they shall in addition point out that the General Building Code Test Certificate (abP) must be available at the place of use of the construction product. On request, the manufacturer/distributor must provide the authorities involved or the test engineers and experts or institutions involved in the building inspection procedure with copies of the general building inspection test certificate.
- (5) The General Building Code Test Certificate (abP) may not be copied unless as a complete text. Excerpts of the Certificate may only be published with the prior permission of the Braunschweig Civil Engineering Materials Testing Institute (MPA Braunschweig). The wording of, or drawings used in, advertising brochures must not be in conflict with the contents of the General Building Code Test Certificate. Translations of the General Building Code Test Certificate shall bear the note "translation of the German original not checked by MPA Braunschweig".
- (6) The General Building Code Test Certificate (abP) is subject to revocation. The provisions may be subsequently amended or revised, in particular if and when required as a result of new technical findings.
- (7) The general building authority test certificate refers to the information and documents provided by the applicant. Changes to these basic principles are not covered by the general building authority test certificate.

B Special provisions

1 Test item and field of application

1.1 Test item

This General Building Code Test Certificate (abP) applies to the fabrication and use of the "KUNEX KLEMMFUGE" clamp-fitting joint.

The "KUNEX KLEMMFUGE" clamp-fitting joint is an external clamping system for movement joints in concrete members with a high water penetration resistance against pressing and non-pressing water and against ground moisture in compliance with Verwaltungsvorschrift Technische Baubestimmungen No. C 3.30.

The "KUNEX KLEMMFUGE" clamp-fitting joint consists of the Kunex clamp-fitting joint tape, type D-K and DA-K (comprising a leg, at least 100 mm wide, that will be clamp fitted, and a joint tape leg that will be set in the watertight concrete element), a primer, a crude-rubber tape, profiled steel bars, and anchor bolts / glued systems with anchor rods.

1.2 Field of application

The "KUNEX KLEMMFUGE" clamp-fitting joint may be used for sealing movement joints in structural elements made from concrete with a high water penetration resistance under the following conditions:

- Ground moisture and non-pressing water
- Pressing water up to a maximum water pressure of 0.5 bar (5 m water column)

Note: regarding the permissible water pressure for the joint tape leg set in the concrete, the regulations of General Building Code Test Certificate No. P-5143/478/13 MPA-BS for joint tape types D and DA are relevant. The maximum permissible water pressure must not exceed the 5 metres for the clamping system.

The movement joints may be up to max. 30 mm wide when installing the sealing system. The resultant deformation (v_r) may be up to 20 mm, with an elongation V_x of max. 18 mm and a shear v_y of max. 9 mm.

The clamping construction must always be placed on the side of the component facing the water.

The sealing system is suited for zones with changing water levels, and complies with utilisation-class A requirements for application classes 1 and 2 as set forth in the regulations for watertight structures (WU-Richtlinie) ¹.

¹ German committee for RC directive "Wasserundurchlässige Bauwerke aus Beton" (watertight structures made from concrete), 2017-12

2 Provisions concerning the construction product

2.1 Composition, properties and characteristics

(1) The "KUNEX KLEMMFUGE" clamp-fitting joint consists of the following components:

- Kunex clamp-fitting joint tape, type D-K and DA-K
 - One side with a clamp-fitted leg; at least 100 mm wide (material properties in accordance with General Building Code Test Certificate (abP) P-5143/478/13 MPA-BS or in accordance with DIN 18541-2)
 - One side with a leg to be set in concrete (material properties and geometry in accordance with General Building Code Test Certificate (abP) P-5143/478/13 MPA-BS or in accordance with DIN 18541-2)
- Primer
FRANKOPUR 2K-Primer in accordance with section 3 (3)
or
Wecryl Primer 276 in accordance with General Building Code Test Certificate (abP) No. P-5260/371/09 MPA-BS
- Crude-rubber tape (width x height = 100 mm / 80 mm x 4 mm), with protective film on one side (characteristics in accordance with Test Report No. 5015/350/13 of 23/06/2014)
- - S 235 V4A profiled steel bars (length x width x height = 1,300 mm x 80 mm x 8 mm, hole centre distance = 150 mm; hole dimensions = 18 mm x 30 mm) or
 - S 235 galvanised profiled steel bars (length x width x height = 1450 mm x 80 mm x 8 mm, hole centre distance = 150 mm; hole dimensions = 18 mm x 30 mm)
- - Toge TSM 10 or TSM 14 anchor bolt in accordance with type approval Z-21.1-1799 or ETA-15/0514 and test report No. BBV 1610417 of TÜV Rheinland LGA Bautechnik GmbH
 - mungo MVA anchor, epoxy acrylate with M 16 anchor rod in accordance with ETA-06/0093
 - mungo MIT-SE plus vinyl ester mortar with M 16 anchor rod in accordance with ETA-10/0130
 - Würth concrete screw W-BS10 bzw. W-BS 14 in accordance with ETA-16/0043
 - Würth anchor W-VD with W-VD-A M 16 anchor rod in accordance with ETA-06/0074
 - MKT anchor VZ with V-A M 16 anchor rod in accordance with ETA-20/0533

(2) Proof of the usability of the joint tapes was provided in accordance with the test principles for the issuing of General Building Code Test Certificates for joint seals in ground-contacting building components made of concrete with high water penetration resistance (PG-FBB), Part 2 (Sealing for movement joints), May 2020 edition. The description of the tests and presentation of the results are contained in the MPA Assessment Reports No. 5015/350/13 and No. 5317/054/14. The "KUNEX KLEMMFUGE" clamp-fitting joint must conform with the technical characteristics specified in section 2.1 (1).

The reaction to fire of the clamp-fitting joint tape conforms with the class-*E* requirements in DIN EN 13501-1.

2.2 Production, packaging, transport, storage, marking

- (1) The "KUNEX KLEMMFUGE" clamp-fitting joint product is produced industrially. Any changes in the formulation as well as changes concerning the manufacturer(s) must be reported to the Testing Laboratory without delay.
- (2) The components will be packed in a plastic film and cardboard box. The construction products have to be handled and stored, so their designed properties will not be adversely affected. The FRANKOPUR 2K-Primer, Wecryl Primer 276, the mungo MVA anchor bolt, the epoxy acrylate and the mungo MIT-SE plus vinyl ester mortar must meet the specifications in the technical data sheets and the safety data sheets.
- (3) The information provided on the packaging regarding other official requirements must be complied with.
- (4) The manufacturer's specifications regarding storage periods shall be complied with. System components that have to be used together must be clearly marked and marketed together.

2.3 Conformity mark

- (1) The manufacturer shall mark the "KUNEX KLEMMFUGE" clamp-fitting joint product with the conformity mark (Ü mark) in compliance with the conformity marking regulations of the federal states. The conformity mark with the required details:
 - Name of manufacturer
 - Number of the General Building Code Test Certificate (abP)shall be shown on the packaging or, if this should not be possible, in the package leaflet. This marking may be provided only if the conditions set forth in section 3 below are complied with.
- (2) The following details must be shown on the packaging of the construction product or in package leaflet:
 - Product name
 - Lot number
 - Intended use
 - Reference to application requirements

3 Declaration of conformity

(1) General information

In accordance with Verwaltungsvorschrift Technische Baubestimmungen No. C 3.30 conformity of the construction product with the requirements set forth in this General Building Code Test Certificate (abP) is demonstrated by the manufacturer's declaration of conformity (ÜHP), which shall be issued on the basis of factory production control (FPC) and construction product inspection before the conformity (initial type test) is confirmed by an inspection body approved for such inspections.

(2) Initial type test of the construction product performed by an approved inspection body

An initial type test is not required for the product, because the samples used for testing for purposes of a general type approval were taken from the normal production run in the production plant.

If the conditions under which the product is manufactured should change, the initial type test must be repeated.

(3) **Factory production control (FPC)**

DIN 18200 requires that factory production control (FPC) be established for, and be performed in the production plant.

Factory production control must be performed in compliance with the specifications that are listed below and that reflect the special features of the product and the conditions for producing this product. The requirements made are based on the results of the initial type test.

- Kunex joint tape, type D-K and DA-K
 - Clamp-fitting leg; minimum width: 100 mm; geometry: in accordance with in-house standard; material properties: requirements in accordance with General Building Code Test Certificate (abP) P-5143/478/13 MPA-BS or in accordance with DIN 18541-2
 - Leg set in concrete; material properties and geometry: requirements in accordance with General Building Code Test Certificate (abP) P-5143/478/13 MPA-BS or in accordance with DIN 18541-2
- FRANKOPUR 2K-Primer
 - Density Primer A300-BA = $1,065 \pm 3 \%$ per lot
 - Density Harder HA30-BB = $1,078 \pm 3 \%$ per lot
- Crude-rubber tape
 - Dimensions in accordance with section 2.1: $\pm 5 \%$ per lot
 - Shore-A hardness after 15 s = $16 \pm 20 \%$ per lot
 - Tensile properties in accordance with MPA Test Report 5015/350/13 of 23/06/2014 $\pm 20 \%$ twice annually
- S 235 V4A profiled steel bars / S 235 galvanised profiled steel bars
 - Dimensions in accordance with section 2.1 $\pm 5 \%$ per lot

The specified requirements must be complied with.

The results of factory production control must be recorded and evaluated by the manufacturer. The records must at least include the following details:

- Name of the product
- Type of test or inspection
- Date when produced and date of test
- Test results and comparison with requirements
- Signature of person in charge of factory production control

The records must be kept for a minimum of five years and must be presented upon request.

Should testing supply inadequate results, the manufacturer must take immediate action to remedy any deficiencies noted. Non-conforming construction products must be handled so that confusion with conforming and faultless construction products is positively prevented. Once the deficiency has been corrected, the required test must be repeated to the extent that is necessary to prove adequate correction.

4 Execution

For use of the product, the manufacturer's instructions for installation and any technical rules and regulations that apply to the specific application must be complied with. The General Building Code Test Certificate and the manufacturer's installation and work procedure instructions must be available on the site.

The prepared concrete base must be dry, plane and clean; it must have been freed from loose material, cement slurry and release agents; and it must be primed with the FRANKOPUR 2K-Primer or Wecryl Primer 276 in accordance with the technical data sheet for the primer.

The clamping system must be applied in accordance with the manufacturer's instructions for installation (annexes 1 and 2). This includes placing the anchor bolts / the injection system with the anchor rod in accordance with the manufacturers' specifications (drilled depth, ambient conditions, possibly injection mortar hardening, etc.). The tightening torque for the bolts is 80 Nm; to be checked/re-tightened after 90 minutes.

The joint tape leg to be concreted in with the hollow body must always be arranged on the side of the component facing the water.

The manufacturer is obliged to incorporate the implementation regulations into his implementation instructions without contradiction.

5 Legal basis

This General Building Code Test Certificate (abP) is issued on the basis of article 19 of the building code of Lower Saxony (NbauO) in conjunction with Verwaltungsvorschrift Technische Baubestimmungen No. C 3.30.

6 Legal remedy

This General Building Code Test Certificate (abP) is subject to objection. Objections must be lodged in writing or stated orally on the record of the management of Materialprüfanstalt für das Bauwesen, Beethovenstraße 52, 38106 Braunschweig within a period of one month after it has been issued. The date on which the Testing Laboratory receives the notice of objection shall decide on whether the objection was made timely.

Dipl.-Min. F. Ehrenberg
Head of Testing Laboratory

i. A.
M. Pankalla
Engineer/official in charge

Documents without a stamp and signature bear a verifiable, qualified electronic signature.

Manufacturer's instructions for installation (page 1)

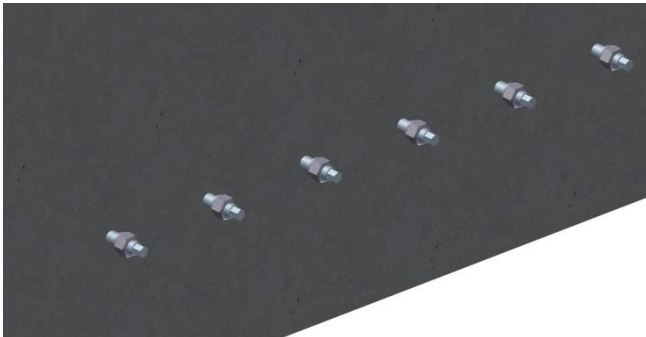
General information

The conditions in the clamping region (existing structure) must be as follows:

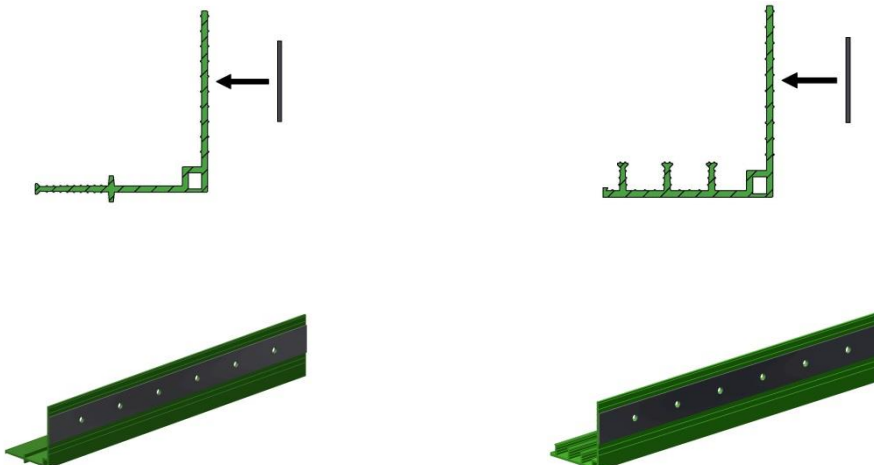
- At least 250 mm wide
- Clean, smooth, plane, and free from ripples and shoulders
- No cavities, cracks or loose particles
- Impermeable to water
- Load capacity, tensile strength of surface at least 1.5 N/mm², compressive strength >25 N/mm² (C25/30)

Instructions for installation

- Check existing structure for irregularities in the concrete texture, cracks, load capacity and water impermeability. Slightly roughen, clean and prime the base.
- Mark the position of the clamping system on the existing structure.
Use the clamping rail as a template for the boreholes.
Fix the rail, drill the boreholes (a Ø14, b Ø18), clean the boreholes (air – mechanical – air).
- a) Screw the TSM 14 anchor bolt into the borehole. With this system it is possible to additionally use injection mortar (note the information provided by the manufacturer).
- b) Place the anchor or injection mortar into the borehole. Place the M16 anchor rods by rotating them. Do not move the anchor rods during the hardening period (note the information provided by the manufacturer).

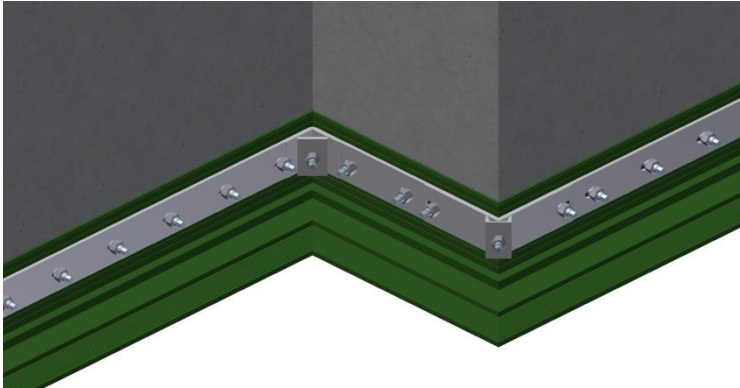


- Fix the crude-rubber strip on the outside of the clamp-fitting tape and provide holes, using the clamping rail as a template.

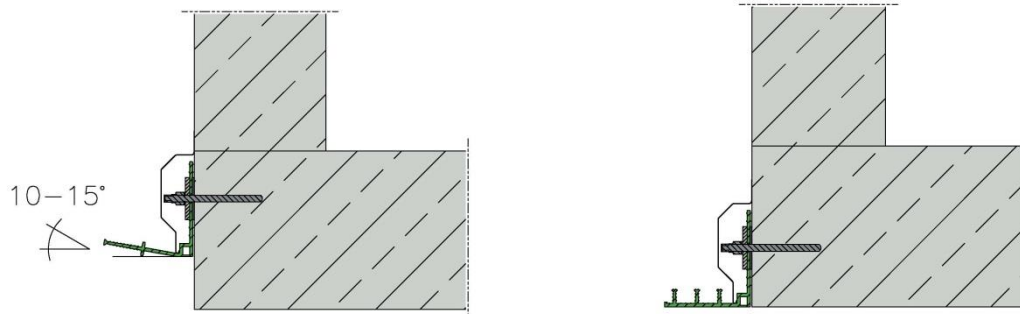


Manufacturer's instructions for installation (page 2)

- Fix the joint tape with crude rubber and clamping rail.
- Fit the washer and nut and tighten to 80 Nm with a torque wrench. Wait at least 90 minutes before checking the torque, then re-tighten if necessary.



Internal joint tapes have to be secured in their position at an angle $>10^\circ$ before placing the concrete.



- A profiled cover should be used for protecting the expansion joint of a clamping system.

