

## General Building Code Test Certificate

- Translation -

Test Certificate No.: P-5146/481/13 MPA-BS

Test item: PVC-P sealing tubes, types Q60, Q88 and Q175  
(normal-flammability joint sealing for concrete members with a high water penetration resistance against pressing and non-pressing water and against ground moisture in compliance with Bauregelliste A, Part 2, No. 1.4)

Client: H-BAU Technik GmbH  
Am Güterbahnhof 20  
79771 Klettgau-Erzingen

Issued on: 11/06/2013

Valid until: 23/03/2015

Provided the conditions of this General Building Code Test Certificate are met, the above test item can be used as defined by Federal State Building Codes.

This General Building Code Test Certificate (abP) consists of 7 pages and 4 annexes.



## **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 issued 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. Copies of the General Building Code Test Certificate (abP) shall be made available to the authorities concerned upon request.
- (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 Materials Testing Institute (MPA). 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 the Braunschweig Materials Testing Institute".
- (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.



## **B Special provisions**

### **1 Test item and field of application**

#### **1.1 Test item**

The Q60, Q88 and Q175 sealing tubes consist of an inner stabilising sleeve that is made from hard PVC, and the sealing tube proper that is made from soft PVC and has four sealing anchors and two crack formation lips. The following dimensions are available:

Q60 PVC-P sealing tube:  $\varnothing_{\text{outside}} = 60 \text{ mm}$

Q88 PVC-P sealing tube:  $\varnothing_{\text{outside}} = 90 \text{ mm}$

Q175 PVC-P sealing tube:  $\varnothing_{\text{outside}} = 175 \text{ mm}$

#### **1.2 Field of application**

The PVC-P sealing tubes correspond to Bauregelliste A, Part 2, 1.4 (as amended). The PVC-P sealing tubes may be used in vertical wall regions for sealing predetermined cracking cross sections in concrete members with a high water penetration resistance against pressing up to a maximum water pressure of 2.0 bar (corresponds to a 20-m immersion depth).

The construction products can be used in zones of frequently changing water levels. The sealing complies with utilisation-class A requirements for application classes 1 and 2 as set forth in the regulations for watertight structures (WU-Richtlinie)<sup>1</sup>.

The PVC-C sealing tubes must be applied as specified in section 2.3 (Execution). The sealing effect is produced by the profiled sealing anchors.

## **2 Provisions concerning the construction product**

### **2.1 Properties and characteristic values**

The construction products have the characteristic values shown in table 1 and in annexes 1 to 4, and they must be in conformity with these values.

The fitness for use of the construction products has been demonstrated in tests performed on the premises of MPA Braunschweig (see Test Report No. 5259/8974). The test programme complied with the test principles for certification with General Building Code Test Certificates (abP) for joint waterstop elements used for concrete members with a high water penetration resistance against pressing and non-pressing water and against ground moisture.



<sup>1</sup> German committee for RC directive "Wasserundurchlässige Bauwerke aus Beton" (watertight structures made from concrete), November 2003

The predetermined cracking joints that are sealed with the Q60, Q88 and Q175 PVC-P sealing tubes

- provide adequate stability
- provide adequate adhesive strength
- are adequately impervious to water
- provide adequate age resistance for the field of applications mentioned in section 1.2 above.

The construction products conform with building material class B2 requirements in accordance with DIN 4102-1.

## 2.2 Production, packaging, transport, storage, identification

- (1) Sealing tubes are produced industrially. The Testing Laboratory shall be notified without delay of any changes in the formulation used for the product, or changes regarding the supplying plant.
- (2) The sealing tubes have to be packed, handled and stored so their fitness for use will not be adversely affected. The instructions provided by the manufacturer must be complied with.
- (3) The information provided on the packaging regarding other legal areas shall be observed.
- (4) The manufacturer shall mark the delivery note or packaging for the sealing tubes with the conformity mark (Ü mark) in compliance with the conformity marking regulations of the Federal States. This marking may be provided only, if the conditions set forth in section 3 below (declaration of conformity) are complied with.

## 2.3 Conformity mark

- (1) The manufacturer shall mark the construction products with the conformity mark (Ü mark) in compliance with the conformity marking regulations of the federal states. The conformity mark with the details that have to be provided on the packaging:

- 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 the package leaflet:
  - Product name
  - Batch number
  - Intended use
  - Reference to application requirements



### 3 Declaration of conformity

#### (1) General

In accordance with Bauregelliste A Part 2, No. 1.4, 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

For initial type testing, the characteristic values must be verified on the basis of table 1. The obtained values must not differ from reference values by more than the tolerances shown in that table.

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

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

#### (3) Factory production control

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 shown in table 1, which 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.

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

- 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.



Table 1: Type and frequency of tests to be performed as part of factory production control; requirements

Properties	Test conditions	Requirements	Frequency
Inspection of base material	Manufacturer's declaration or suitable tests	No signs of change	Per shipment lot
Dimensions	-	Geometry according to annexes 2 to 4 complied with	Per lot
Shore hardness	See annex 1	78 Shore A $\pm$ 5	Per lot
Tension test	See annex 1	$x \geq 10$ N/mm <sup>2</sup> tensile strength $x \geq 200$ % strain at max. force	Per lot
Tear propagation resistance	See annex 1	$x \geq 12$ N/mm	Twice per year
Reaction to low temperatures	See annex 1	$x \geq 120$ % strain at max. force	Twice per year

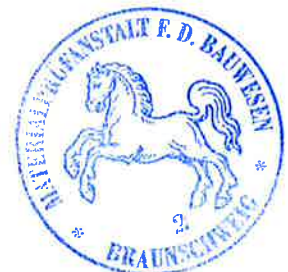
x = mean value

#### 4 Execution

The construction product may only be processed by specialist firms that work with trained staff. The manufacturer's specifications for installation and the safety data sheets must be complied with.

In particular in the base/wall region, the following must be observed for installation:

In the base/wall connection region, the PVC-P sealing tube installed in the vertical wall region may only be used together with internal construction joint tapes (stiffened with steel reinforcement or other measures) whose fitness for use must have been verified (tested in accordance with DIN 18541, DIN 7865 or verification with General Building Code Test Certificate (abP)). At the bottom end of the sealing tube, a slot is centrally cut into the tube at a right angle to the axis of the predetermined cracking lips, so the tube can be slip-fitted to the construction joint tape that is half set in the base concrete. The distance between the base concrete and the slip-fitted sealing tube must be approx. 5 cm. The sealing tube has to be aligned vertically and attached to the formwork. The width of the slot must account for the geometry of the anchor ribs of the joint tape and the size range in the mixture in the connection region. While casting the concrete care must be taken that the fine-grained connection mixture in the sealing tube is above the construction joint tape.



## 5 Legal basis

This General Building Code Test Certificate (abP) is issued on the basis of article 19 of the building code of Baden-Württemberg (LBO) in conjunction with Bauregelliste A, Part 2, No. 1.4.

## 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.

This document is the translated version of General Building Code Test Certificate No. P-5146/481/13 MPA-BS dated 11/06/2013. The legally binding text is the aforementioned German General Building Code Test Certificate.



Dr.-Ing. K. Herrmann  
Head of Testing Laboratory



i. A.



M. Pankalla  
Engineer/official in charge

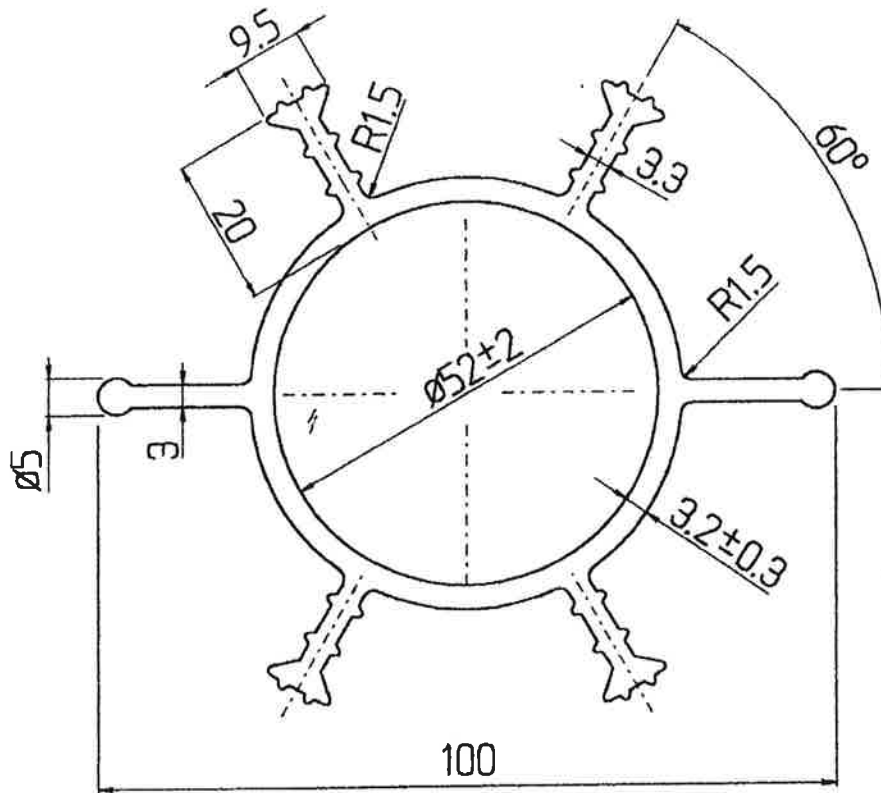
### Properties of the PVC-P sealing tubes, types Q60, Q88 and Q175

Characteristics / Test	Test conditions	Test results
<b>General characteristics</b>	DIN 18541-2, section 3.2 (3 samples per tube diameter)	Black; dimensionally stable; no blisters, cracks an shrinkage cavities
<b>Dimensions</b>	(3 samples per tube diameter)	See annexes 2 to 4
<b>Shore hardness</b>	DIN 53505 Test climate: DIN 50014-23/50-2 (3 samples per tube diameter)	x = 78 Shore A s = 1.7 Shore A
<b>Tension test</b>	DIN EN ISO 527-1 and 2 Specimen: 1 B v = 200 mm/min Test climate: DIN 50014-23/50-2 (2 samples per tube diameter)	<u>Tensile strength</u> x = 12.3 N/mm <sup>2</sup> s = 0.65 N/mm <sup>2</sup> <u>Strain at max. force</u> x = 227 % s = 21.9 %
<b>Reaction to low temperatures (tension test)</b>	DIN 18541-2, section 3.5 v = 200 mm/min Test temperature: -20°C (2 samples per tube diameter)	<u>Tensile strength</u> x = 25.9 N/mm <sup>2</sup> s = 0.72 N/mm <sup>2</sup> <u>Strain at max. force</u> x = 136 % s = 8.6 %
<b>Tear propagation resistance</b>	ISO 34-1 Specimen: leg v = 100 mm/min Test climate: DIN 50014-23/50-2 (3 samples per tube diameter)	<u>Max. tensile force</u> x = 87,6 N s = 7.2 N <u>Tear propagation resistance</u> x = 22.2 Nmm s = 5.7 N/mm
<b>Reaction to fire</b>	DIN 4102-1	Building material class B2

x = mean value s = standard deviation



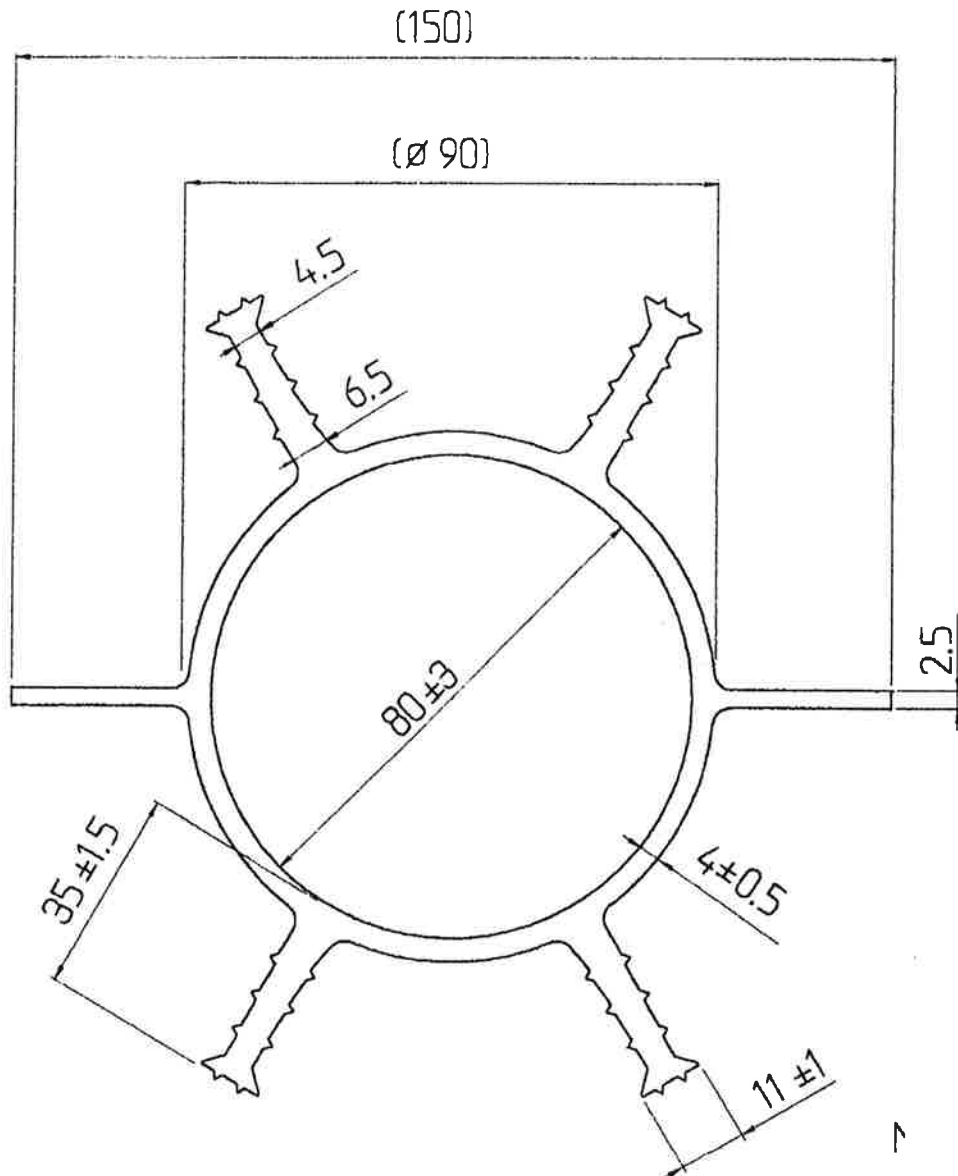




Dimensions in mm

Fig. A1: Dimensions of the Q60 PVC-P sealing tube

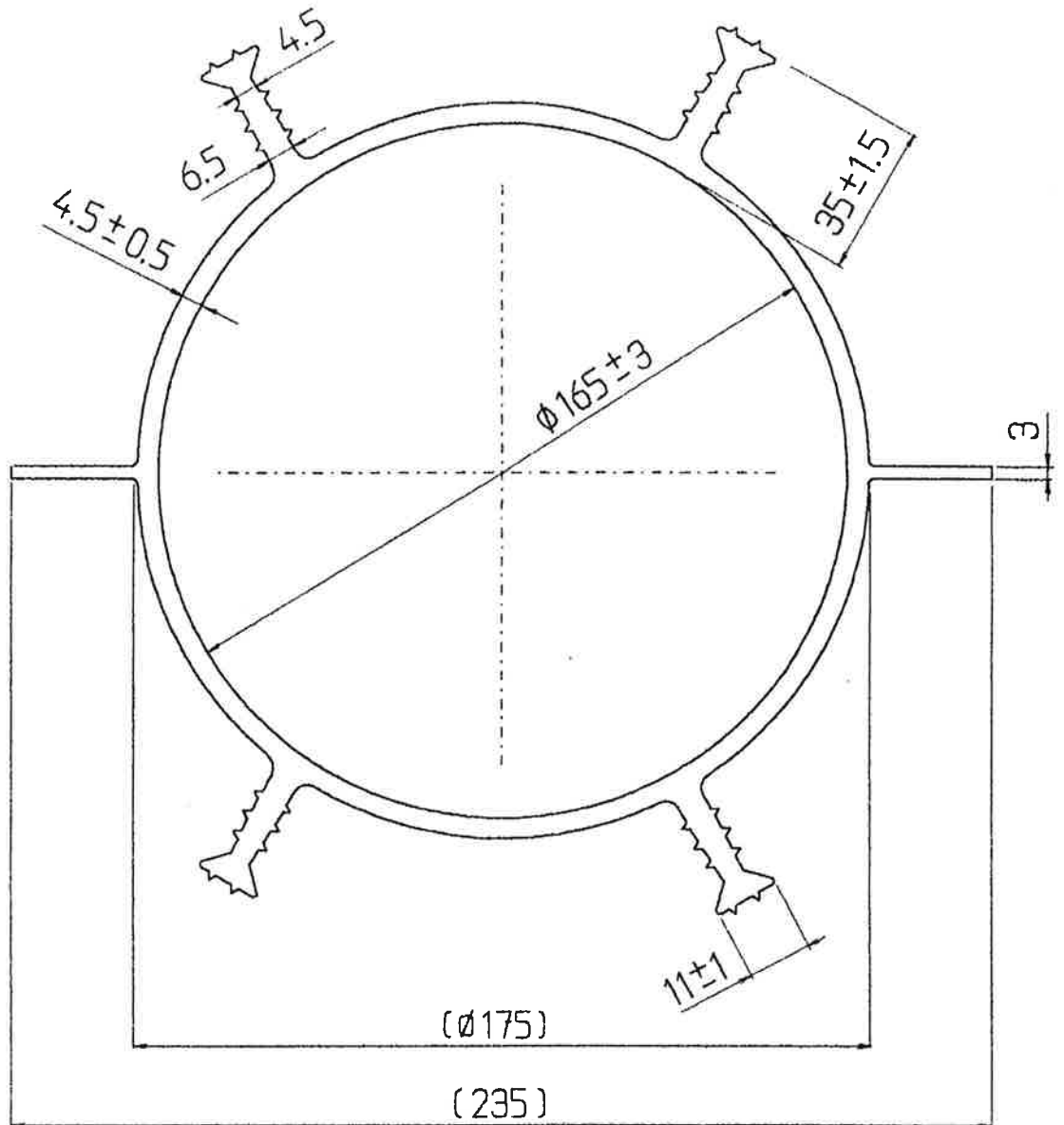




Dimensions in mm

Fig. A2: Dimensions of the Q88 PVC-P sealing tube





Dimensions in mm

**Fig. A3:** Dimensions of the Q175 PVC-P sealing tube

