iBMB MPA TU BRAUNSCHWEIG
Institut für Baustoffe, Massivbau und Brandschutz | Materialprüfanstalt für das Bauwesen

General Building Code Test Certificate

- Translation -

Test Certificate No.:	P-5196/307/09 MPA-BS
Test item:	AQUAFIN-CJ6 swellable joint sealing tape for internal joint sealing in 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. 2.53
Client:	SCHOMBURG GmbH & Co.KG Aquafinstraße 2 - 8 D-32760 Detmold
Date when first issued:	09/03/2010
Issued on:	21/08/2015
Valid until:	08/03/2020

This General Building Code Test Certificate (abP) consists of 7 pages and 5 annexes.

This General Building Code Test Certificate (abP) displace the General Building Code Test Certificate No. P-5196/307/09 MPA-BS dated 09/03/2015.

MATERIALPRÜFANSTALT F. D. BAUWESEN 2 BRAUNSCHWEIG

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Notified body (0761-CPD)
MPA Braunschweig has been approved and notified as a civil engineering supervisory, inspection and certification body. MPA Braunschweig has been ISO/IEC17025 accredited as a testing and calibration laboratory and ISO/IEC17020 accredited as an inspection body.

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. 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 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.

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 "AQUAFIN-CJ6" swellable joint sealing tape in connection with the installation adhesive of SCHOMBURG GmbH & Co.KG for internal sealing of construction joints in structural elements made from concrete with a high water penetration resistance in accordance with Bauregelliste A, Part 2, No. 2.53.

The "AQUAFIN-CJ6" swellable tape is produced in rectangles of 20 mm x 5 mm (width x height).

1.2 Field of application

The swelling tape may be used for the internal sealing of construction joints in structural elements made from concrete with a high water penetration resistance, with a maximum opening width of 0.25 mm, against:

- Ground moisture and non-pressing water
- Pressing water up a maximum water pressure of 0.8 bar (8 m WC)

The swelling tape is suited for use 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)[1].

The swelling tape must be applied as specified in section 4 (Execution). The sealing effect of the tape is based on its ability to swell.

2 Provisions concerning the construction product

2.1 Composition, properties and characteristics

The AQUAFIN-CJ6 swellable tape is based on a thermoplastic elastomer. It is coated and comes in rolled lengths of 25 metres. For application of the swellable tape to the hardened concrete, either the installation adhesive (supplied in 300-ml cartridges).

The construction products have the characteristic values that are shown in table 1 and annexes 1 to 3, which they must comply with.

The fitness for use of the swelling tape as a sealing means for construction joints in structural elements made from concrete with a high water penetration resistance has been demonstrated in accordance with the test principles for certification with General Building Code Test Certificates (abP) for "joint waterproofing elements in structural elements made from concrete with a high water penetration resistance when in contact with the ground" (PG-FBB, October 2012). Results are documented in Test Repors No. 5196/307/10 issued by MPA Braunschweig.

[1] German committee for RC directive "Wasserundurchlässige Bauwerke aus Beton" (watertight structures made from concrete), November 2003

Construction joints that are sealed with the swelling tape

- provide adequate stability
- are adequately impervious to water
- provide adequate age resistance

for the fields of application mentioned in section 1.2 above.

The reaction to fire of the swellable tape conforms with the class-E requirements in DIN EN 13501-1.

2.2 Production, packaging, transport, storage, marking

2.2.1 Production

The construction products are produced industrially.

2.2.2 Packaging, transport, storage

The swelling tape is packed in boxes containing rolls of 25 metres each. The product has to be handled and stored, so the swelling tape, the adhesive and the mounting rail will not be adversely affected in their designed properties. The materials have to be protected against the action of frost and atmospheric influence.

The information provided on the packaging regarding other official requirements must be complied with.

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.

2.2.3 Marking

2.2.3.1 Conformity mark (Ü mark)

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 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.

2.2.3.2 Additional details

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

3.1 General information

Confirmation that the construction product conforms with the requirements set forth in the present General Building Code Test Certificate (abP) shall be provided for each production plant in the form of a manufacturer's declaration of conformity. This declaration shall be issued on the basis of an initial type test and factory production control (FPC) in accordance with sections 3.2 and 3.3 below. The manufacturer shall declare conformity by marking the construction product with the conformity mark (Ü mark) in accordance with 2.2.3.1.

3.2 Initial type test of the construction product performed by an approved inspection body

An initial type test is not required for the product, if 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.

3.3 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 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 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.

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

Properties	Test conditions	Requirements	Frequency
AQUAFIN-CJ6 swellable tape			
Inspection of source materials	Manufacturer's declaration or suitable tests	No signs of change	Per shipment lot
Height Width	- -	5.2mm ± 5% 21.4mm ± 5 %	Per lot
Weight	-	122 g/m ± 3%	Per lot
Swelling capacity (gain in weight)	Stored for 8 days in (demin.) water	1040 wt % ± 10%	Per lot
Installation adhesive			
Inspection of source materials	Manufacturer's declaration or suitable tests	No signs of change	Per shipment lot
Density	cf. Annex 1	0.97 g/cm³ ± 3%	Per lot
Infrared spectrum	cf. Annex 3	No signs of change	Per lot

4 Execution

In the joint region, the concrete surface must be dry to moist (without a glossy water film), plane and clean, and it must be free from loose material, cement slurry and release agents. The swellable tape must always be glued to the concrete surface with the insstallation adhesive. The swelling tape has to be checked for perfect fit and premature swelling immediately before placing the concrete.

The manufacturer's product details are shown in annexes 4 and 5 and must be complied with.

This General Building Code Test Certificate and the manufacturer's processing instructions must be available at the installation location.

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 Bauregelliste A, Part 2, No. 2.53.

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-5196/307/09 MPA-BS dated 21/08/2015. The legally binding text is the aforementioned German General Building Code Test Certificate.

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

MATERIALPRÜFANSTALT F. D. BAUWESEN 2 BRAUNSCHWEIG

i. A.

M. Pankalla
Engineer/official in charge

Properties of the AQUAFIN-CJ6 swellable joint tape

• Appearance:	red, rubber-elastic, homogeneous
• Density:	1.25 g/cm³
• Weight loss: (TGA, 25° C to 1000° C)	73.4 wt %
• TGA:	see annex 2
• Swelling capacity after (gain in weight)	
- $Ca(OH)_2$ storage (pH 12):	2 h = 21 wt % 1 d = 139 wt % 8 d = 428 wt %
- H_2SO_4 storage (pH 4.5):	2 h = 9 wt % 1 d = 99 wt % 8 d = 301 wt %
- Storage in water (demin.):	2 h = 54 wt % 1 d = 464 wt % 8 d = 1043 wt %
• Swelling pressure:	1.06 N/mm²
• Flammability:	class E acc. to DIN EN 13501-1

Properties of the installation adhesive

• Appearance:	transparent, clear, paste-like, homogeneous
• Density:	0.97 g/cm³
• Infrared spectrum:	see annex 3

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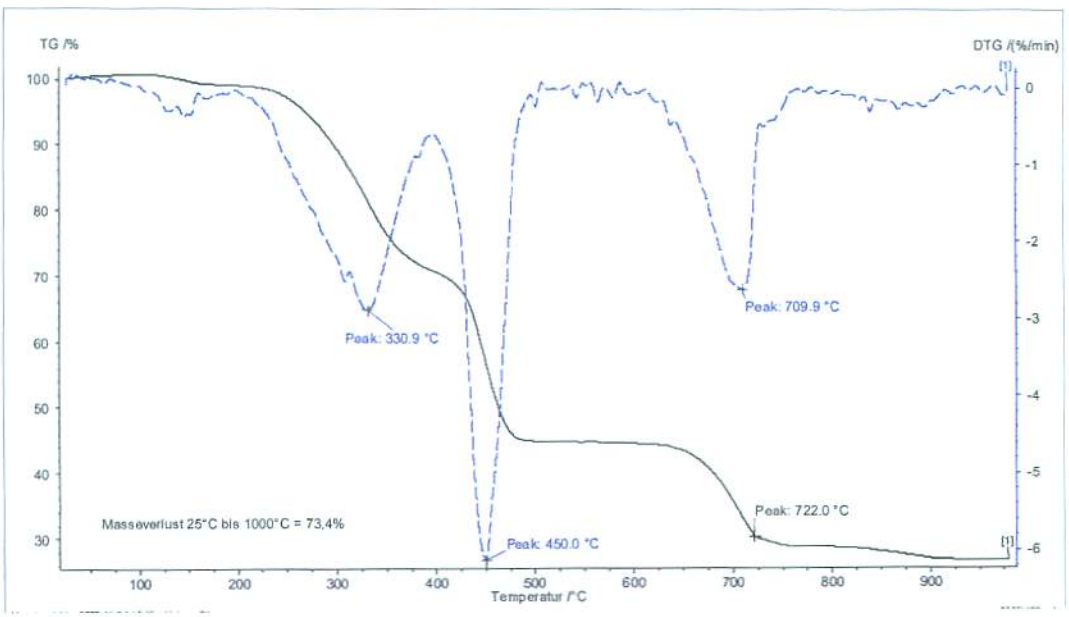
Thermogravimetric analysis — AQUAFIN-CJ6 swelling tape

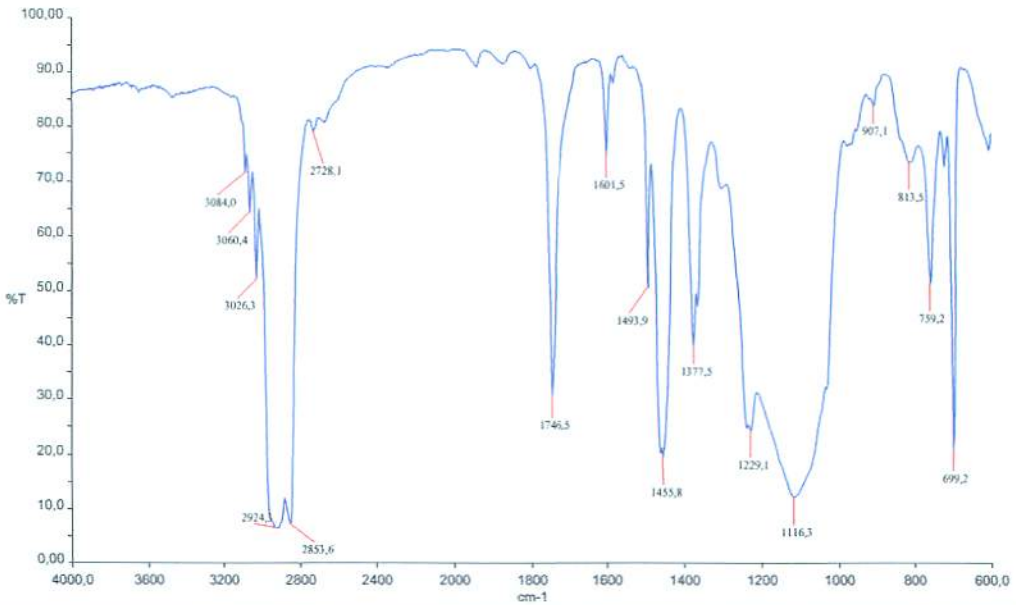
Thermogravimetric analyses were made on thebasis of DIN EN ISO 11358 specifications. The heating rate was 10 K/minute. Measurements were made with a thermoanalysing station in a nitrogen atmosphere and with synthetic air. The weight loss was determined at temperatures between 25°C and 1000°C.



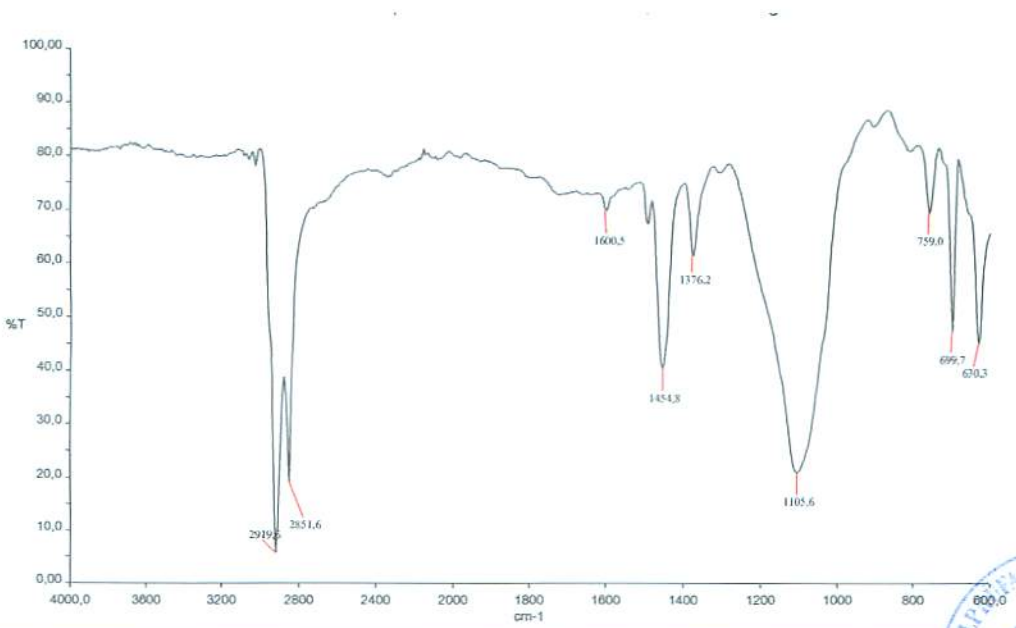
Infrared spectrum **Installation adhesive**

The IR analyses were made with a Perkin-Elmer FTIR unit of type Spectrum 2000 Explorer, wave number range 4000 cm^{-1} to 600 cm^{-1}. The quantities of the samples were selected so that the DIN 51451 requirements respecting extinction conditions were complied with.

The installation adhesive was removed from the cartridge, applied to a ZnSe sample holder (without having been preconditioned) and then analysed under the spectroscope.



A hardened sample of the material (7-day hardening time) was analysed with the Golden Gate Single Reflection ATR System.



Manufacturer's Technical Data Sheet

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SCHOMBURG

Technical data sheet

AQUAFIN®-CJ6

Art.-No. 2 07222

Thermoplastic expansive waterstop for waterproofing construction joints

- Simple application
- Rapid and strong expansion
- Self-injecting function into cracks and voids
- Completely dimensionally stable even at high temperatures
- Swelling process inexhaustible, often reversible
- Suitable for fresh water and sea water applications

Areas of application:

AQUAFIN-CJ6 is used for waterproofing the inner side of concrete construction joints in accordance with Building Regulations list A, part 2, serial number 2.53, where there is constant or intermittent exposure to ground water, run-off water and/or surface water. AQUAFIN-CJ6 is suitable for riparian zones. Construction joints can be sealed watertight to a depth of 8 m.
AQUAFIN-CJ6 is suitable for application class A, exposure levels 1 and 2 in accordance with the waterproofing guidelines of the German reinforced concrete commission (* 1).

Substrate preparation:

The substrate must be load-bearing, mostly flat and have a closed surface texture. It must be free from gravel pockets, cavities, gaping cracks, dust and be free from adhesion inhibiting substances. Laitance layers are to be removed, mechanically abraded (sand blasted) as necessary. During the application of AQUAFIN-CJ6 the substrate may be matt damp. The formation of puddles is not permitted.

Product application:

It is essential that there is at least 8 cm coverage of concrete from the side exposed to water.
Bond AQUAFIN-CJ6 with a mounting adhesive suitable for waterstops. Completely cover the prepared substrate with the mounting adhesive and press the AQUAFIN-CJ6 into the adhesive until it oozes out from beneath. Do not begin the concreting process for at least 8 hours after bonding.
Waterstop connections can be made by overlapping by 50 mm or by butt jointing. The waterstops must be placed tightly together to prevent gaps. Butt jointed waterstops must be covered by a separate section of waterstop with a 30 mm overlap to both sections.

Technical Data:

Basis:	TPE (thermoplastic elastomer)
Format:	Waterstop profile is quadratic + flexible
Colour:	red
Density:	approx. 1.25 g/m³
Dimensions:	5 × 20 mm
Start of swelling on water contact:	approx. 6 hours
Swelling capacity (demineralised water):	approx. 50% after 2 hrs approx. 460% after 24 hrs ≥ 850% after 8 days
Expansive pressure:	approx. 1.06 N/mm²
Water impermeability after installation:	
- Joint width 0.25 mm:	2 bar
- Joint width 1.0 mm:	1.5 bar
Toxicity:	none
Reaction to fire:	class E to DIN EN 13501-1
Packaging:	rolls with 40 linear metres = 200 linear metres/carton
Storage:	2 years when stored dry, frost free and protected against weathering

Manufacturer's Technical Data Sheet

AQUAFIN®-CJ6

Advice:

- It is essential to store the waterstop dry.
- Waterstops must lie flat and planar on the concrete. There must be no contaminants beneath the waterstop.
- Protect the waterstop from moisture until the concrete is poured.
- Before commencing the concreting process visually inspect the waterstop. Heavily swollen waterstop tape is unsuitable and must be removed.
- Waterstops are not suitable for movement joints.
- Follow current relevant regulations and data sheets. Therefore e.g. Guidelines "Water impermeable concrete structures", German reinforced concrete commission (DafStb) Data sheet "Injection grouting hose systems and expansive inlays for construction joints", German Concrete and Construction Technology Association.