

General Building Code Test Certificate

- Translation -

Test Certificate No.: P-1200/312/15 MPA-BS

Test item: „SWELLFLEX® RB“ rubber swelling 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: H-Bau Technik GmbH
Am Güterbahnhof 20
79771 Klettgau

Date of first issue: 01. August 2016

Issued on: 09. August 2018

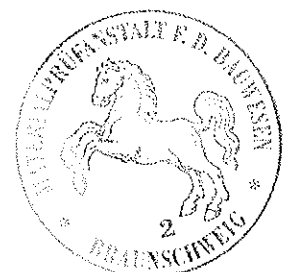
Valued until: 08. August 2023

This General Building Code Test Certificate (abP) consists of 6 pages and 3 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

This General Building Code Test Certificate (abP) applies to the fabrication and use of the Swellflex RB rubber swelling tape in connection with the M-FLEX mounting glue & density.

The Swellflex RB rubber swelling tape is an extruded rubber mixture, consisting of butyl rubber, water swellable resins, polyethylene, silicone and special filler materials, which is produced as a rectangular profile with the dimensions 18 mm x 7 mm (width x height). The single-component M-FLEX mounting glue & density is based on an MS polymer and comes in 290-ml cartridges.

1.2 Field of application

The normal-flammability sealing system corresponds to Bauregelliste A, Part 2, No. 2.53 (as amended). It is used to seal construction joints in concrete elements with a high water penetration resistance against pressing and non-pressing water and against ground moisture. The immersion depth in water must not exceed 10 metres.

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.

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

2 Provisions concerning the construction product

2.1 Properties and characteristic values

The construction products have the characteristic values that are shown in annexes 1 and 2, which must be complied with.

The fitness for use of the sealing system has been demonstrated in tests performed on the premises of the Materials Testing Institute (MPA) in Braunschweig (see Assessment Report No. 5014/754/08). 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.

2.2 Packaging, transport, storage and identification

- (1) The rubber swelling tape will be packed in boxes containing rolls of 48 metres each. The product has to be handled and stored, so the rubber swelling tape and the adhesive are not adversely affected in their designed properties. The materials have to be protected against the action of frost and atmospheric influence.



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

- (2) The information provided on the packaging regarding other legal areas shall be observed.
- (3) The manufacturer's specifications regarding storage periods shall be complied with. System components that have to be used together shall be clearly marked and marketed together. The delivery notes for the product must be marked with the conformity mark (Ü mark) in compliance with the conformity 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
 - Lot number
 - Intended use
 - Reference to application requirements

3 Declaration of conformity

(1) General

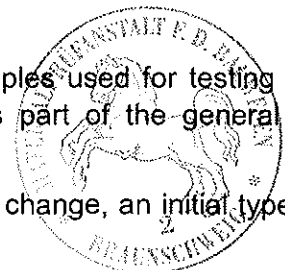
In accordance with Bauregelliste A Part 2, No. 2.53, conformity of the construction product with the requirements set forth in this General Building Code Test Certificate (abP) is demonstrated by the manufacturer's declaration of conformity (ÜHP), which shall be issued on the basis of factory production 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 (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 include the following details as a minimum:

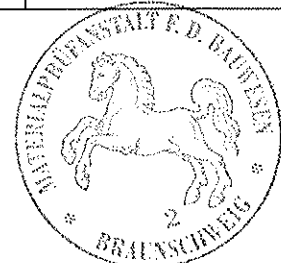
- Name of the product
- Type of test or inspection
- Date when produced and date of test
- Test results and comparison with requirements
- Signature of person in charge of factory production control

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

Properties	Test conditions	Requirements	Frequency
Swellflex RB rubber swelling tape			
Inspection of base material	Manufacturer's declaration or suitable tests	No signs of change	Per shipment lot
Thickness	-	7 mm ± 5 %	Per lot
Width	-	18 mm ± 5 %	Per lot
Weight	-	157 g/m ± 3 %	Per lot
Swelling capacity (gain in weight)	8 d stored in distilled water	1244 wt % ± 10 %	Per lot
M-FLEX monting glue & density			
Inspection of base material	Manufacturer's declaration or suitable tests	No signs of change	Per shipment lot
Density	DIN EN ISO 1183-1 immersion method	1.52 g/cm ³ ± 3 %	Per lot
Infrared spectrum	see annex 2	No signs of change	Per lot



4 Execution

Product details are shown in annex 3 and must be complied with.

In the joint region, the concrete surface must be dry, plane and clean, and it must have been freed from loose material and release agents. The rubber swelling tape must always be glued to the hardened concrete surface, using the M-FLEX mounting glue & density. It has to be checked for perfect fit and premature swelling just before placing the concrete.

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. 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 (abP) dated 09. August 2018. The legally binding text is the aforementioned German General Building Code Test Certificate.



Dr.-Ing. K. Herrmann
Head of Department



i. A.



M. Pankalla
Engineer/official in charge

Properties of the Swellflex RB rubber swelling tape

- Appearance: grey, rubber-elastic, homogeneous
- Density: 1.25 g/cm³
- Weight loss: 79.9 wt %
(TGA, 25° C to 1000° C) (see also annex 2)
- Swelling capacity after (weight increase)
 - Stored in alkaline cond.: 21 d = 749 wt %
 - Stored in acid cond. (pH 4.5): 14 d = 488 wt %
 - Stored in water (dist.): 8 d = 1244 wt. %
- Swelling pressure: 0.56 N/mm²
- Flammability: building material class E acc. to DIN EN 13501-1

Properties of the M-FLEX mounting glue & density

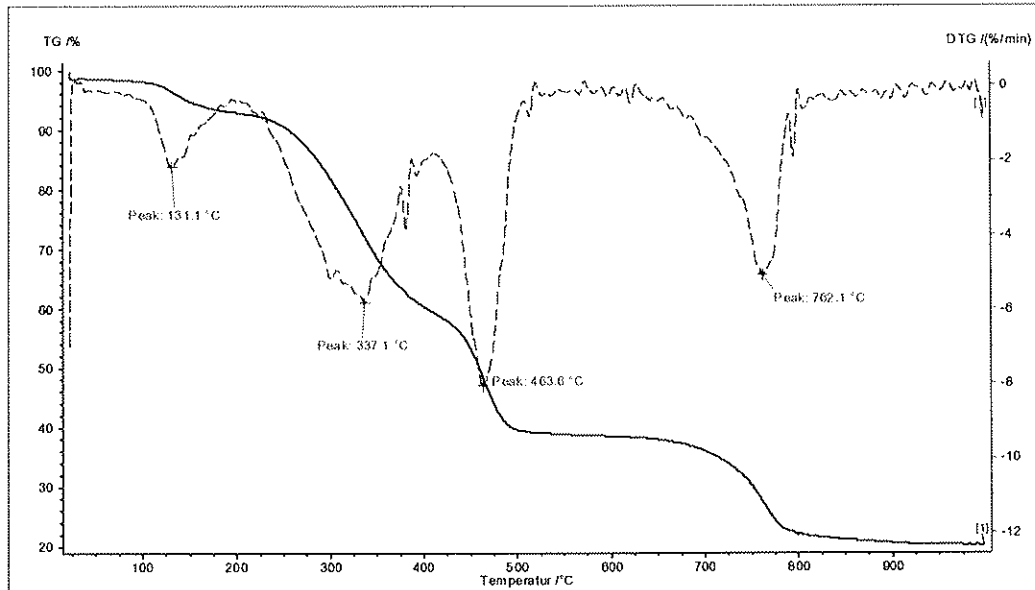
- Appearance: tacky, soft, homogeneous
- Density (DIN ISO 1183-1): 1.52 g/cm³
- IR spectrum: see annex 2



Thermogravimetric analysis

„SWELLFLEX® RB“ rubber swelling tape

MPA / BMB Braunschweig

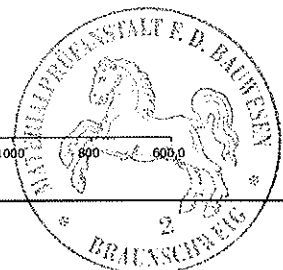
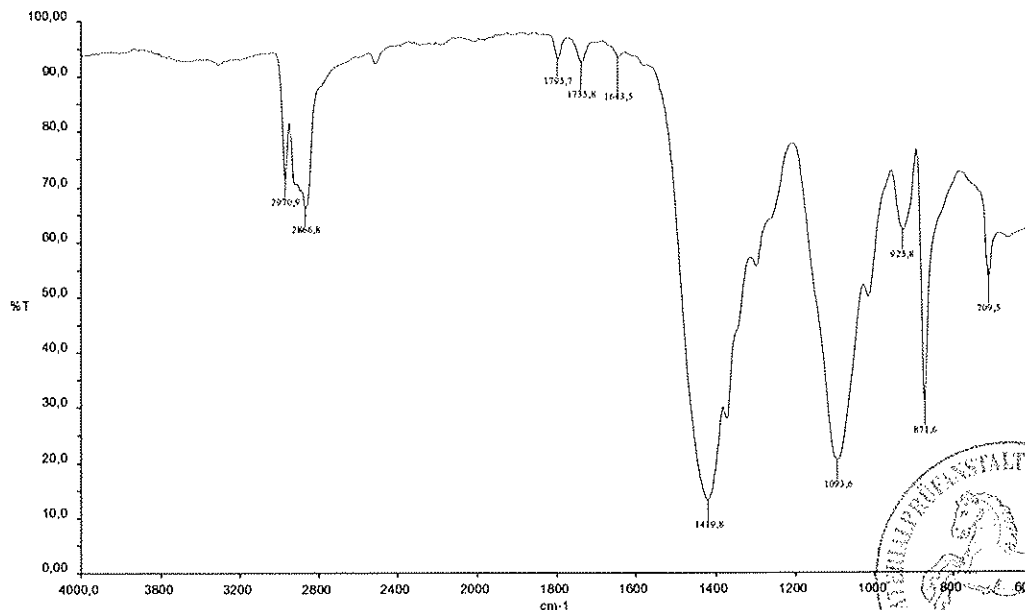


Thermogravimetric analyses were made on the basis of DIN EN ISO 11358. The heating rate was 20 K/min. Measurements were made in a nitrogen atmosphere within a temperature range of 25 °C to 1000 °C.

IR spectrum

M-FLEX mounting glue & density

The infrared spectrum was recorded (pyrolysis) within a wave number range of 4000 cm⁻¹ to 600 cm⁻¹. The layer thickness was selected, so the DIN 51451 requirements respecting extinction conditions were complied with.



Instructions for installation

- Swellflex RB rubber swelling tape should be stored in a dry place and left in its original packaging until it is used.
- The substrate must be dry, plane and it must have been freed from loose material and release agents.
- To prevent underflow, Swellflex RB rubber swelling tape has to be glued to the substrate with the M-FLEX mounting glue & density. The processing instructions (technical data sheets) for the adhesive must be complied with.
- Swellflex RB rubber swelling tape is glued in place in the middle of the joint, leaving a space of about 8 cm both at the inner and the outer reinforcement. In members of a relatively large thickness, Swellflex RB rubber swelling tape can be installed within $1/3 d$ to $1/2 d$ of the member thickness d (with respect to the exposed side).
- Joints are either butted (bevel cut less than 45°) or designed as lap joints (at least 10 cm in parallel).
- Swellflex RB rubber swelling tape is provided with a retard layer. Before placing the concrete, Swellflex RB rubber swelling tape must be checked for perfect fit and premature swelling.

Due regard must be given to notes and regulations based on DIN 1045, Parts 1-4, regulations for watertight structures (WU-Richtlinie) and DBV codes of practice (DBV-Merkblätter) in designing and providing joints.

