Deutsches Institut für Bautechnik
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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-13/0653

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*		BDPS Sikalastic-841 ST
Zulassungsinhaber *Holder of approval*		Sika Deutschland GmbH Kornwestheimer Straße 107 70439 Stuttgart DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*		Flüssig aufzubringende Brückenabdichtung *Liquid applied bridge deck waterproofing*
Geltungsdauer: *Validity:*	vom *from* bis *to*	17 June 2013 17 June 2018
Herstellwerk *Manufacturing plant*		Sika Deutschland GmbH Kornwestheimer Straße 107 70439 Stuttgart DEUTSCHLAND

Diese Zulassung umfasst *This Approval contains*	13 Seiten einschließlich 4 Anhänge *13 pages including 4 annexes*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Liquid-applied bridge deck waterproofing kits", ETAG 033.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5 (1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the product and intended use

1.1 Definition of the construction product

The liquid applied bridge deck waterproofing "BDPS Sikalastic-841 ST" is a kit. The kit consists of the components:

- primer "Sika Concrete Primer" on the basis of a two component polyurea for application by rolling, sanded with quartz sand
- waterproofing layer "Sikalastic-841 ST" on the basis of a two component polyurea for spray application
- tack coat "Sika Concrete Primer" sanded with pellets of a hot-melt adhesive "Sikalastic-827 LT/HT"

As an assembled system these components form a homogeneous, continuous bridge deck waterproofing. The kit is used for concrete bridge decks.

Annex 1 shows the components and the system build-up and in Annex 2 the characteristic values are given.

The minimum thickness of the bridge deck waterproofing applied is 2.4 mm.

The overlay of the bridge deck waterproofing consists of low temperature mastic asphalt (LMA) or a coarse bituminous mixture (CBM).

1.2 Intended use

The watertight system is intended to be used for the tightness of concrete bridge decks against penetration of water. The system is suitable for the following use categories according:

- (A) with overlay and intended to receive vehicular traffic
  - A.1 Overlay coarse bituminous mixture applied at (160 ± 10) °C (CBM)
  - A.3 overlay of low temperature mastic asphalt (applied at a minimum temperature > 160 °C (LMA_{min}) and a maximum temperature of < 220 °C (LMA_{max}). The asphalt overlay has an additional waterproofing function.

The product shows classifications according to the test categories of ETAG 033 which facilitate the use taking into account of national requirements (see chapter 2.)

In the manufacturer's technical dossier[7] (MTD) to this ETA the manufacturer gives specific information concerning the application of the product.

The verifications which are the basis of this ETA give reason for the assumption of an intended working life[8] of the bridge deck waterproofing of 25 years, provided that the watertight covering kit is subject to appropriate use and maintenance. These provisions are based upon the current state of the art and the available knowledge and experience.

7 The manufacturer's technical dossier (MTD) comprises all information necessary for the production and the installation of the product as well as for the repair of the bridge deck waterproofing made from that and it is deposited with DIBt. It was checked by DIBt and it was found to be in accordance with the conditions stated in the approval and the characteristic values determined during the approval testing.

8 "Assumed intended working life" means that it is expected that, when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the Essential Requirements.

The indications given on the working life of the watertight membrane cannot be interpreted as a guarantee given by the manufacturer but are regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of product and methods of verification

2.1 Characteristics of the construction product

The components of the construction product show the characteristic values with respect to the permissible tolerances which are stated in Annex 1 to this ETA and in the MTD.

The permissible tolerance does not affect the characteristics of the products and the assembled system negatively.

The chemical composition and the characteristic values of the components of the kit and the manufacturing methods are confidential and deposited with DIBt.

Requirements concerning hygiene, health and the environment and safety in use as well as durability in the sense of the essential requirements N° 1, 3 and 4 of the Council Directive 89/106/EEC are satisfied.

The verified characteristic values of the kit are stated as classifications in Annex 1 and 2 of this ETA. These values can be used to assess whether the requirements of the Member State of destination, for specific use, are met.

According to the manufacturer's declaration the composite waterproofing system taking account of the EU database[9] does not contain any dangerous substances. Within the scope of this approval there may be other requirements applicable to dangerous substances resulting from transposed European legislation or applicable national laws, regulations and administrative provisions.

There may be other requirements applicable to the products resulting from other applicable national laws, regulations and administrative provisions and transposed European legislation.

These requirements need also to be complied with, when and where they apply.

2.2 Methods of verification

The Assessment of the fitness of the liquid applied bridge deck waterproofing kit for the intended use with regard to the essential requirements N° 1, 3 and 4 was performed following the ETAG 033 "Liquid applied bridge deck waterproofing kits".

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 2003/722/EC dated 6/10/2003 of the European Commission[10] system 2+ of the attestation of conformity applies to the watertight membrane system.

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:
  (1) initial type–testing of the product;
  (2) factory production control;
  (3) testing of samples taken at the factory in accordance with a prescribed test plan.

[9] Notes are stated in Guidance Paper H: A harmonized approach relating to Dangerous substances under the construction product directive, Brussels, 18 February 2000

[10] Official Journal of the European Union L260/32 dated 11/10/2003

(b) Tasks for the notified body:

(4) certification of factory production control on the basis of:

– initial inspection of factory and of factory production control;

– continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this ETA.

The factory production control shall be in accordance with the appropriate part of the control plan[11] which is confidential part of the MTD. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with DIBt.

The factory production control follows the identifying properties of the components given in ETAG 033 and as specified in the MTD.

The manufacturer may only use incoming materials according to the MTD. He shall inspect or control the incoming materials on acceptance according to the control plan.

The results of the factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

The records shall include at least the following information:

– name of the product and of the initial materials,

– type of inspection or control,

– date of manufacture of the product, batch N° if needed, and date of inspection or control of the product or of the initial materials,

– result of inspections or controls and, as far as applicable, comparison with the requirements,

– signature of the person responsible for the factory production control.

The records shall be kept for at least five years. On request they shall be presented to DIBt.

Details concerning extent, type and frequency of the tests or inspections to be performed within the scope of the factory production control shall correspond to the control plan.

3.2.1.2 Initial type-testing of the product

The initial type-testing refers to the product properties stated in the appropriate part of the control plan to this ETA. They follow the product properties given in ETAG 033.

If the verifications underlying this ETA have been furnished on samples from the current production, these will replace the initial type-testing.

[11] The control plan is a confidential part of the MTD to this ETA and deposited with DIBt. It contains the required information on the factory production control and on the initial type-testing. As far as relevant to the tasks of the notified body involved in the procedure of attestation of conformity the control plan will be handed over to the notified body. See section 3.2.2.

Otherwise the necessary initial type-testing shall be carried out according to the provisions of the control plan and observance of the required property values shall be ascertained by the manufacturer.

If the production process is changed or if a new production line is started, at the beginning of the new production process an Initial type test is necessary.

3.2.1.3 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 3.1 (b) in the field of the product in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in section 3.2.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of conformity, stating that the product is in conformity with the provisions of this ETA and shall mark the product with the CE mark according to clause 3.3. The declaration of conformity shall be accompanied by the EC-certificate of conformity of the factory production control according to clause 3.2.2.

3.2.2 Task of the notified body

The notified body shall perform the

- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

in accordance with the provisions laid down in the control plan.

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the provisions of this ETA.

In cases where the provisions of the ETA and its control plan are no longer fulfilled the notified body shall withdraw the certificate of conformity and inform DIBt without delay.

3.2.2.1 Initial inspection of factory and factory production control

The notified body ascertains that, in accordance with the MTD, factory conditions and production control allow the manufacturer to ensure the consistency and homogeneity of the manufactured product and its trace ability, thus guaranteeing that the final characteristics of the product are those indicated under chapter 2.

3.2.2.2 Continuous surveillance, judgment and assessment of factory production control

The notified body shall visit the factory at least once a year but if necessary i.e. if the results of any inspection give rise to any remarks additional inspections may be required.

The Surveillance of the manufacturing process shall include:

- Checking the documentation of factory production control, to ensure continuing compliance with the provisions of the ETA,
- Identification of changes by comparing data obtained during the initial inspection or during the last inspection.

If the ETA provisions are not complied with, the certificate of conformity shall be withdrawn and the DIBt shall be informed without delay.

3.3 CE marking

The CE marking[12] shall be affixed on the packaging of the kit of the watertight membrane "BDPS Sikalastic-841 ST" or its accompanying documents.

The letters "CE" shall be followed by the identification number of the notified body, and be accompanied by the following additional information:

- name and address or identifying mark of the manufacturer,
- last two digits of the year in which the CE marking was affixed,
- number of the EC certificate for the factory production control,
- number of the European technical approval,
- number of the European technical approval guideline.

The components shall be marked as belonging to the composite bridge deck waterproofing kit "BDPS Sikalastic-841 ST".

CE marking and accompanying information:

CE	**Letters "CE"**
nnnn	Identification number of notified body
Sika Deutschland GmbH Kornwestheimer Straße 107 70439 Stuttgart DEUTSCHLAND	Name and address of the producer
13	two last digits of year of affixing CE marking
nnnn-CPD-*xxxx*	number of the EC certificate for the FPC
ETA-13/0653	ETA number
ETAG 033	ETAG number
Liquid applied bridge deck waterproofing	intended use
Classification of the system and declared values of the product and system characteristics see Annex 1 and 2 of ETA-13/0653	classification and characteristics of the product

[12] Council Directive 93/68/ECC; Notes on the CE marking are stated in Guidance Paper D "CE marking under the Construction Products Directive", Brussels, 01 August 2002

4 Assumptions under which the fitness of the kit for the intended use was favourably assessed

4.1 Manufacturing

The components of the kit of the watertight membrane are factory-made according to the procedure laid down in the MTD.

The ETA is issued for the kit on the basis of the product of agreed data/information, deposited with DIBt. Changes to the components of the kit or in the production process of the components, which change the results of the production process and/or the properties of the product and which are not in line with the deposited data should be notified to DIBt before the changes are introduced. DIBt will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

4.2 Design and dimensioning

The fitness for the use of the bridge deck waterproofing kit results from the classifications and characteristics stated in Annex 2, if need, taking into account national requirements.

The supplementing statements of the manufacturer stated in the MTD for design and application of the bridge deck waterproofing shall be considered.

4.3 Installation

The fitness for use of the watertight membrane can be assumed only, if the installation is carried out according to the installation instructions stated in the MTD by the manufacturer, in particular taking account of the following points:

- installation by appropriately trained personnel,
- installation of only those components which are marked components of the kit,
- installation with the required tools and adjuvant,
- precautions during installation,
- specific guidance on process control on site,
- inspecting the substrate surface for cleanliness, acceptable surface structure and correct preparation before applying the product,
- inspecting compliance with suitable weather and curing conditions,
- ensuring a thickness of the watertight covering of at least 2.0 mm by processing appropriate minimum quantities of material,
- inspections during installation and of the finished watertight membrane and documentation of the results.

The information as to the

- maximum and minimum application temperature of the asphalt for the overlay
- method of repair on site,
- handling of waste products

shall be considered.

4.4 Manufacturer's responsibilities

It is the manufacturer's responsibility to make sure that all those who utilize the kit will be appropriately informed about the specific conditions according to sections 1, 2, 4, and 5 including the Annexes to this ETA and the not confidential parts of the MTD deposited to this ETA.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

Information on:

- Packaging,
- transport and
- storage

are given in the MTD.

5.2 Use, maintenance and repair

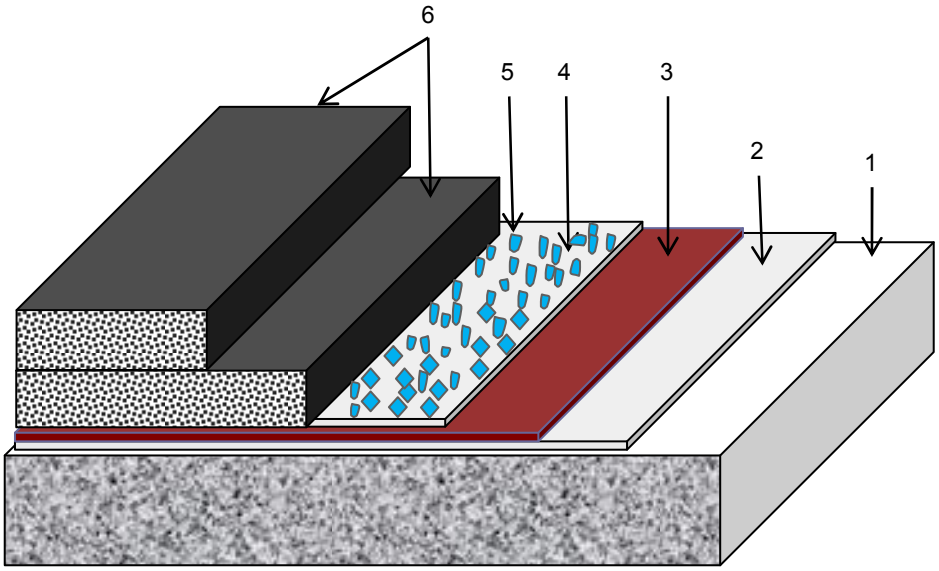
Information on:

- Use
- maintenance
- repair

are given in the MTD.

Dirk Brandenburger
Head of Department

beglaubigt:
Hemme



1	concrete bridge deck	
2	primer	Sika Concrete Primer (minimum quantity consumed: 0.4 kg/m²) sanded with quartz sand (minimum quantity consumed: 0.7 kg/m²
3	waterproofing layer	Sikalastic-841 ST (minimum quantity consumed: 2.2 kg/m²)
4	tack coat	Sika Concrete Primer (minimum quantity consumed: 0.6 kg/m²)
5		gritted with Sikalastic -827 LT / HT (minimum quantity consumed: 0.8 kg/m²
6	overlay (not part of the kit)	

Minimum thickness of waterproofing layer: 2.4 mm

Use categories according ETAG 033:

- (A) with overlay and intended to receive vehicular traffic
  - A.1 Overlay coarse bituminous mixture applied at (160 ± 10) °C (CBM)
  - A.3 overlay of low temperature mastic asphalt (applied at a minimum temperature of > 160 °C (LMA_{min}) and a maximum temperature < 220 °C (LMA_{max}). The overlay has an additional waterproofing function.

BDPS Sikalastic-841 ST Sika Deutschland GmbH	Annex 1
System built-up and classification	

Characteristic	**Proved under test conditions** (P,S,T)[1]	**Value** **Pass** **NPD**
Bond strength to support[5]	P1, S0, T5 P1, S0, T2[2] P1, S0, T6[2] P1, FT, T5 P1, FT, T2[2] P1, FT, T6[2] P2, S0, T5 P1, LMA_{max}, T5 P1, CBM, T5 P3, S0, T5 P4, S0, T5 P4, S0, T2 P4, S0, T6	2.54 Mpa > LV = 1.0 MPa 4.08 Mpa 2.25 Mpa 2.91 Mpa> LV = 1.0 MPa 2.97 Mpa 2.48 Mpa 2.13 Mpa see Bond strength to overlay see Bond strength to overlay not relevant[3] 2.38 Mpa 3.93 Mpa 2.41 Mpa
Capacity to bridge cracks	P1, LMA_{max}, HA, T2[6] P1, CBM, HA, T2 P1, S0, T1[2] P1, FT, T1[2]	Pass Pass Pass Pass
Resistance to CI penetration	-	npd
Resistance to compactation	P1, CBM, T5	pass
Resistance to perforation	P1, S0, T5	pass I_4
Resistance to shear to support	P1, LMA_{max}, T5 P1, CBM, T5[4]	0.88 MPa, max. 5 mm 0.81 MPa, max. 5 mm
Resistance to shear to overlay	P1, LMA_{min}, T5[4]	see P1, CBM, T5: 0.81 MPa, max. 5 mm
Watertightness	P1, S0, T5	watertight
Bond strength to overlays	P1, LMA_{max}, T5[2] P1, CBM, T5[4] P1, LMA_{max}, FT, T5[2] P1, CBM, FT, T5 P1, LMA_{max}, T2[2] P1, CBM, T2[2] P1, LMA_{max}, FT, T2[2] P1, CBM, FT, T2[2] P1, LMA_{max}, T6[2] P1, CBM, T6[2] P1, LMA_{max}, FT, T6[2] P1, CBM, FT, T6[2]	1.5 MPa 1.5 MPa 1.4 MPa 0.8 MPa 2.4 MPa 1.9 MPa 2.4 MPa 1.8 MPa 0.93 MPa 0.46 MPa 0.89 MPa 0.29 MPa
Slipperiness	P1, S0, T5	npd

1 Explanation see Annex 3
2 in addition to ETAG 033
3 concrete with a humidity ≤ 4%
4 CBM ≡ LMA_{min}
5 verified with quartz sand 0.1 – 0.4 mm
6 verified with specimen type 5b: verification for mastic asphalt overlay with additional waterproofing function

BDPS Sikalastic-841 ST
Sika Deutschland GmbH

Characteristics and classifications

Annex 2.1

Characteristic	**Proved under test conditions** (P,S,T)[1]	**Value** **Pass** **NPD**
Resistance to materials in contact: Change of micro hardness Change of mass	P1, T5 Water (Wa) Alkalinity (Al) Bitumen (Bi) Water (Wa) Alkalinity (Al)	 0 IHRD -12 IHRD -4 IHRD +1.21 % -2.3 % (-0,21 %)[7]
Resistance to materials in contact:	Oil, petrol, diesel, de-icing salt	accepted
Resistance to Heat aging Change of tensile strength Change of elongation Change of tensile strength Change of elongation	P1, HA, T5 P1, LMA, T5	 +6.5 %, -2.2 % +10.0 %a, +0.5 %
Aspects of serviceability: High / low service temperature Capacity to penetrate pores Resistance to flow Effects of climate conditions Moisture content of substrate Effects of day joints Effects of section joints	 P1, S0, T5	 Pass (application with 70 °C) pass pass pass concrete with a humidity ≤ 4% pass (see bond strength to support) not relevant
Minimum thickness		2.4 mm
Release of dangerous substances		does not contain any

[7] Comparable tests after water storing have shown the resistance to alkalinity. The change of mass after storing in water and drying is -2.09 %. So the influence by alkali is -0.21 % and smaller than the limited value of -0.5 %.

P	Categories for sample preparation, as short keys to characterise the kit
P1 = NC	Normal application condition at 23 °C and 50 % rel. humidity
P2 = SC	Severe application conditions for minimum and maximum temperatures and maximum rel. humidity given by the manufacturer
P3 = MC	High moisture content of the concrete base specimen
P4 = OA	Overlapping areas: day joints, section joints
S	**Categories of stress conditions before testing**
S0	No stress before testing
S1 **S1.1 = MA** **S1.2 = LMA** **S1.3 = RA_{170}**	Heat impact Application of mastic asphalt with maximum application temperature ≥ 220 °C up to 250°C, declared by the manufacturer Application of mastic asphalt with minimum application temperature < 200 °C - , declared by the manufacturer Application and compactation of coarse bituminous mixture with 170 °C
S2 = HA	Heat ageing at 70 °C
S3 = FT	Freeze-Thaw cycles
S4 = UV	Artificial weathering und water and UV
S5 **S5.1 = Wa** **S5.2 = Al** **S5.3 = Bi**	Materials in contact Water Alkali Bitumen
T	**Categories of temperature conditions for testing**
T1 = -30°C	Extreme low temperature -30 °C
T2 = -20°C	Severe low temperature -20 °C
T3 = -10°C	Low temperature -10 °C
T4 = 0°C	Moderate Low temperature 0 °C
T5 = 23°C	Normal temperature 23 °C
T6 = 40°C	High temperature 40 °C

for detailed information see ETAG 033

BDPS Sikalastic-841 ST
Sika Deutschland GmbH

Explanation of key signs

Annex 3