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Designated  
according to  
Article 29 of  
Regulation (EU)  
Nº 305/2011



## European Technical Assessment

**ETA 16/ 0680**  
**of 22/ 10/ 2017**

English translation prepared by IETcc. Original version in Spanish language

### General Part

**Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) Nº305/2011:**

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

**Trade name of the construction product**

**TECNOCOAT P-2049**

**Product family to which the construction product belongs**

Liquid Applied Bridge deck Waterproofing based on pure polyurea

**Manufacturer**

**TECNOPOL SISTEMAS S.L.**  
Finlàndia, 33 08520 LES FRANQUESES DEL VALLÈS, Barcelona – Spain

**Manufacturing plant(s)**

Finlàndia, 33 08520 LES FRANQUESES DEL VALLÈS, Barcelona – Spain

**This European Technical Assessment contains**

7 pages  
Annex 1. Contain confidential information and is not included in the ETA when that assessment is publicly available

**This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of**

Guideline for European Technical Approval (ETAG) nº 033 “Liquid applied Bridge Deck waterproofing Kits” ed. 2010, used as European Assessment Document (EAD)

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## SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

### 1 Technical description of the product

The Liquid Applied bridge deck Waterproofing kit "TECNOCOAT P-2049" is designed and installed in accordance with the manufacturer, design and installation instructions, deposited at the IETcc. This kit comprises the following components, which are factory produced by the manufacturer.

| Components             | Trade name       | Consumption                 | Thickness                  |
|------------------------|------------------|-----------------------------|----------------------------|
| Primer                 | PRIMER-PU 1050   | $\geq 0.200 \text{ kg/m}^2$ | $\geq 190 \text{ microns}$ |
| Waterproofing membrane | TECNOCOAT P-2049 | $\geq 2,4 \text{ kg/m}^2$   | $\geq 2,3 \text{ mm}$      |

TECNOCOAT P-2049 is a liquid bridge deck applied roof waterproofing based on 100% polyurea, manufactured by the company TECNOPOL SISTEMAS S.L, consists of a polyurea resins, bi-component, elastomeric; which once polymerised conforms an elastic lining, in form of a layer completely bonded to the support (concrete).

Liquid applied bridge deck waterproofing kits are not intended to receive direct vehicular traffic in service and in this case will always be used beneath overlays of asphalt (low mastic asphalt, a coarse bituminous mixture or concrete) which may have a protective character and/or additional waterproofing function.

### 2 Specification of the intended use in accordance with the applicable EAD

The intended use of this System is the waterproofing of concrete bridge deck against the water. This applied kit fulfils the Essential Requirements n° 1 (Safety in case of fire), n° 3 (Hygiene, health and the environment) and n° 4 (Safety in use) of the European Regulation 305/11.

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  $(160 \pm 10) \text{ }^\circ\text{C}$  (CBM).
- A.3. Overlay of low temperature mastic asphalt (applied at a minimum temperature  $> 160 \text{ }^\circ\text{C}$  (LM Amin) and a maximum temperature of  $< 220 \text{ }^\circ\text{C}$  (LM Amax). The asphalt overlay has an additional waterproofing function.
- A.4. Non-asphaltic overlays

The performance levels of this System according to the Guide ETAG 033 are included in the annex 1. The provisions made in this European Technical Approval (ETA) are based on an assumed intended working life of the system of 25 years. The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are only to be regarded as a means for choosing the right products in relation to the expected economically reasonable working life of the works. "Assumed intended working life" means that, when an assessment following the ETAG provisions is made, and 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.

**Installation.** The Kit is installed on site. It is the responsibility of the manufacturer to guarantee that the information about design and installation of this kit is effectively communicated to the concerned people. This information can be given using reproductions of the respective parts of this European Technical Assessment. Besides, all the data concerning the execution shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations.

Design. The fitness of the respective use for the levels of performance of this System stated in Annex 1 complies with the national requirements. In the MTD the manufacture gives information on the quantities consumed and the processing, which shall lead to a thickness of the roof waterproofing  $\geq 2,3 \text{ mm}$ .

Usage range of temperatures. The range of operational temperatures of the waterproofing layer is  $-40^\circ\text{C}$  to  $+60^\circ\text{C}$ . EN 1991-1-5 provides a correlation between the shade air temperature and bridge temperature component.

Condition of support. The support on which the waterproofing is applied shall have a surface texture of 0.3 mm to 1.5 mm. EN 1766: 2000, clause 7.2 or EN 13036-1: 2002 describe suitable methods for measuring surface texture. The age of the concrete support is normally assumed to be in excess of three weeks and unless specific assessments have been made the cohesive strength of the concrete surface shall be  $\geq 1.5 \text{ MPa}$ .

**Weather conditions.** The waterproofing system cannot be put in place during rain, hail or snow. The support temperature shall be greater than 5°C and at least 3°C above the dew point, unless specific assessments have been made.

**Execution.** Particularly, it is recommended to consider:

- The kit installation has to be carried out by qualified installers,
- it can only be used the components of the kit indicated in this ETA,
- the supervision of the amount of material used (kg/m<sup>2</sup>) and the control visual to check that each coat cover totally the one below, can ensure the minimum thickness of the kits,
- inspection of roof surface (cleanliness and correct preparation) before applying the roof waterproofing,
- It is applied by a hot spray applied machines. Temperatures, component A, 70 °C. Component B, 65 °C. Pressure about 170 bars.

Before, the installation of TECNOCOAT P-2049, it is recommended to read its security card

**Use, maintenance and repair of the works.** In those bridges with deteriorated areas of the waterproof layers, they will be repaired removing all the deteriorated layers. Afterwards, the new product will be assembled following the installation instruction and the new coats must overlap, at least 3 cm, to the coat no deteriorated. Further installation details are laid down in the MTD place at IETcc.

### 3 Performance of the product and references to the methods used for its assessment

The identification tests and the assessment for the intended use of this kit according to the Essential Requirements were carried out in compliance with the ETA Guidance n.033: Guideline for European Technical Approval of "Liquid applied Bridge Deck waterproofing Kits (called ETAG 033, in this ETA).

#### 3.1 Characteristics of the assembled system

**Mechanical resistance and stability** (BWR 1)

| Characteristic   | Method           | Condition test | Values        |
|--|------------------|----------------|---------------|
| Bond strength to support   | EN 13596         | P1, S0, T5     | ≥1 MPa        |
| Bond strength to support after heat impact                               |                  | P1, S1, T5     | ≥1 MPa        |
| Tensile stress (initial /heat impact) 10 mm/min 23°C<br>1 mm/m -10°C     | EN 527-2, 1B     | P1, S0/S1, T5  | 6 / 8,5 MPa   |
| Elongation (initial/heat impact) 10 mm/min 23°C<br>1 mm/m -10°C          |                  | P1, S0/S1, T3  | 10 / 15 MPa   |
| Resistance to chloride ion penetration                                   | TR 22            | P1, S0, T5     | Pass (<0,04%) |
| Resistance to compaction (160°C)   | EN 14692 (met 2) | P1, S1.3, T5   | Pass          |
| Resistance to perforation (23°C)   | TR 006           | P1, S0, T5     | Pass (I4)     |
| Resistance to shear to support/overlay (mastic asphalt (220°C)           | EN 13653         | P1, S1.2.2, T5 | 0,23 MPa      |
| Resistance to shear to support/overlay (coarse bituminous mixture 160°C) |                  | P1, S1.2.3, T5 | 0,22 MPa      |
| Water-tightness (23°C)   | EN 14694         | P1, S0, T5     | Pass          |

**Hygiene, health and environment** (BWR 3)

**Statement of dangerous substances.** According to the manufacturer's declaration taking account of EOTA TR 034, the product installed does not contain and release any dangerous substance.

**Safety in use** (BWR 4)

| Characteristic                                     | Method   | Condition test | Values (MPa) |
|--|----------|----------------|--------------|
| Bond strength to overlay (220°)                    | EN 13596 | P1, S1.2.2, T5 | 0,9          |
| Bond strength to Coarse bituminous mixture (160°C) |          | P3, S1.3, T5   | 0,75         |
| Resistance to shear to Mastic asphalt (160°C)      |          | P1, S1.2.2, T5 | 0,4          |

#### Aspects of serviceability

| Characteristic  | Method   | Condition test | Values |
|---|--|----------------|--------|
| High/low service temperature  | The effects of low temperature are covered by the capacity to bridge crack |                |        |
| Capacity to penetrate pores in the support  | This aspect is covered by the bond strength to support                     |                |        |
| Resistance to flow  | Annex E ETAG 033   | P1, S0, T5     | Pass   |
| Minimum thickness   | 2,3 mm   |                |        |
| The effects of climatic conditions on application (Minimum/maximun application temperature: 5/40°C)<br>Bond strength to support | EN 13596   | P1, S0, T5     | ≥1 MPa |
| Bond strength to moisture support   | Not relevant. The concrete support must have a humidity ≤ 4%               |                |        |
| Bond strength to day joints, (24h, 48h)   |  | P4, S0, T5     | ≥1 MPa |
| Bond strength to section joints (7d UV)   |  | P4, S0, T5     | ≥1 MPa |

## Aspects of durability

| Characteristic   | Method          | Condition test     | Values      |
|--|-----------------|--------------------|-------------|
| <b>Water (28d, 23°C)</b>   |                 |                    |             |
| Variation in mass (edges sealed/ edges not sealed)                 | EN 14233        | P1, S5.1, T5       | <2,5%       |
| Micro hardness Initial/ageing                                      | ISO 48 (M)      | P1, S5.1, T5       | 67° / 61°   |
| <b>Alkali (EN 175) (28d, 50°C) (EN ISO 175)</b>                    |                 |                    |             |
| Variation in mass  | ISO 175         | P1, S5.2, T5       | ≤ 0,5%      |
| Micro hardness Initial/ageing                                      | ISO 48 (M)      | P1, S5.2, T5       | 88° / 87°   |
| <b>Bitumen (84d at 70°C)</b>                                       |                 |                    |             |
| Micro hardness Initial/ageing                                      | ISO 48 (M)      | P1, S5.3, T5       | 88° / 79°   |
| <b>Heat ageing (28d at 70°C) (TR-011)</b>                          |                 |                    |             |
| Capacity to bridge cracks (-20°C) after heat impact                |                 | P1, S2+S1, T2      | Pass        |
| Tensile stress (initial/Heat Ageing) 10mm/min 23°C                 | EN 527-2,<br>1B | P1, S0/S2, T5      | 6 / 8 MPa   |
| 1mm/m -10°C  |                 | P1, S0/S2, T3      | 10 / 11 MPa |
| Elongation (initial/Heat Ageing) 10mm/min 23°C                     |                 | P1, S0/S2, T5      | 185 / 190 % |
| 1mm/m -10°C  |                 | P1, S0/S2, T3      | 17 / 18 %   |
| Bond strength to support   | EN 13596        | P1, S2, T5         | ≥1 MPa      |
| <b>Freeze-Thaw (20 cycles EN 13687-3)</b>                          |                 |                    |             |
| Bond strength to support   |                 | P1, S3, T5         | ≥1 MPa      |
| Resistance to shear (to support/overlay) (220°C) after Freeze-Thaw |                 | P1, S3/ S1.2.2, T5 | 0,25 MPa    |

### 3.2 Characteristics of the components

The characteristics of the components of this system show the following values, which compliance with their respective tolerances stated in the Manufacture Technical Dossier (MTD).

**TECNOCOAT P-2049.** Waterproofing liquid constituted by polieter-amines and pre-polymer of isocyanate, with loads and pigments mineral, and additives (anti-air entering, biocides, etc.). The main characteristics of this waterproof liquid are:

| Properties  | Component A | Component B |
|---|-------------|-------------|
| Density (g/cm <sup>3</sup> ) (ISO 1675)           | 1,11 ± 5%   | 1,09 ± 5%   |
| Dry extract (105°C) (% weight) (EN 1768)          | 100         | 100         |
| Ash content (450°C) (% weight) (EN 1879)          | ≤ 1         | ≤ 1         |
| Viscosity (cps) (S63, 30 rpm, 25°C) (EN ISO 2555) | 600 ± 50    | 650 ± 50    |

### PRIMER-PU 1050

| Properties   | Component A | Component B |
|--|-------------|-------------|
| Density (g/cm <sup>3</sup> ) (ISO 1675)            | 1,19 ± 5%   | 1,03± 5%    |
| Dry extract (105°C) (% weight) (EN 1768)           | 100         | 100         |
| Ash content (450°C) (% weight) (EN 1879)           | 50 ± 5%     | 20 ± 5%     |
| Viscosity (cps), (S63, 30 rpm, 25°C) (EN ISO 2555) | 450 ± 50    | 900 ± 50    |

## 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

**System of attestation of conformity.** According to the decision 2003/722/EC of the European Commission <sup>(1)</sup> the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) n° 305/2011) given in the following table applies.

| Product          | Intended uses                            | Level or Classes | System |
|------------------|--|------------------|--------|
| TECNOCOAT P-2049 | Liquid Applied Bridge deck Waterproofing | Any              | 2+     |

This system of attestation of conformity +2 is defined as follows:

Tasks for the manufacturer: Initial type-testing of the product, Factory production control and Testing of samples taken at the factory in accordance with a prescribed test plan.

Tasks for the notified body: Certification of factory production control on the basis of: Initial inspection of factory and of factory production control and Continuous surveillance (annual), assessment and assessment of factory production control.

<sup>(1)</sup> Official Journal of the European Communities L229/14 of 20.08.1997

## 5 Technical details necessary for the implementation of the AVCP system, as provided for the applicable EAD

The ETA is issued for this kit on the basis of agreed data/information, deposited at IETcc, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the kit are appropriately informed of specific conditions according to sections 1, 2, 4 and 5 including the annexes of this ETA. Changes to the kit or the components or their production process, which could result in this deposited data/information being incorrect should be notified to the IETcc before the changes are introduced. IETcc will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

### 5.1 Tasks of the manufacturer

**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 ensure that the product is in conformity with this ETA.

The manufacturer may only use components stated in the technical documentation of this ETA including Control Plan. The incoming raw material is subjected to verifications by the manufacturer before acceptance.

The factory production control shall be in accordance with the Control Plan<sup>(2)</sup> which is part of the Technical Documentation of this ETA. The Control Plan has been agreed between the manufacturer and the IETcc and is laid down in the context of the factory production control system operated by the manufacturer and deposited at the IETcc. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

**Initial type-testing of the product.** Initial type-testing carried out by the IETcc is that set out in chapter 5 of the guideline ETAG 033. The IETcc assessed the results of these tests in accordance with chapter 6 of this Guide, as part of the ETA issuing procedure.

The verifications underlying this ETA have been furnished on samples from the current production, these replace the initial type-testing. After changing the production process or starting the production in another manufacturing plant the initial type-test shall be repeated.

**Other tasks of the manufacturer.** The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in the field of kit, order to undertake the actions laid down in this clause. For this purpose, the control plan shall be handed over by the manufacturer to the notified bodies involved.

For initial type – testing, the results of the tests performed, as part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases the necessary initial type- testing has to be agreed with the IETcc.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this ETA.

### 5.2 Tasks of notified bodies. The notified body shall perform

**Initial inspection of factory and of factory production control.** The Notified Body shall ascertain that, in accordance with the Control Plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in this ETA.

**Continuous surveillance, assessment and assessment of factory production control,** in accordance with the provisions laid down in the control plan, at least one per year.

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 certification body involved by the manufacturer shall issue an EC Certificate of factory production control stating the conformity of the provisions of this ETA.

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

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<sup>(2)</sup> The control plan is a confidential part of this European Technical Assessment and only handed over to the notified body involved in the procedure of attestation of conformity. See section 3.2.2.

Issued in Madrid on 22 october 2017  
by



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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja

A handwritten signature in blue ink, appearing to read 'Marta Castellote', written over a faint, illegible stamp.

Marta Castellote  
Director