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European Technical Assessment

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General Part

Technical Assessment Body issuing the European Technical Assessment:

Kiwa Nederland B.V., Sir Winston Churchilllaan 273, 2288 EA Rijswijk, www.kiwa.nl

Trade name of the construction product

**“Wecryl Waterproofing System below Asphalt”
(German: “Wecryl Abdichtungssystem unter Asphalt”)**

Product family to which the construction product belongs

Liquid Applied Bridge Deck Waterproofing

Manufacturer

WestWood Kunststofftechnik GmbH
An der Wandlung 20
32469 Petershagen – Germany

Manufacturing plant(s)

An der Wandlung 20
32469 Petershagen – Germany

This European Technical Assessment contains

10 pages including 1 Annex

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

EAD 030675-00-0107

Liquid Applied Bridge Deck Waterproofing Kits

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Specific parts

1. Technical description of the product

The Liquid Applied Bridge Deck Waterproofing Kit “Wecryl Waterproofing System below Asphalt” is a kit based on PMMA, which consists of the components listed in Table 1. The system builds, depending on the substrate, are given in Annex A.

Table 1 Components of the Liquid Applied Bridge Deck Waterproofing Kit

| Function | Component | Consumption |
|---|-----------------------------------|--|
| Sealer (optional, for concrete substrates) | “Wecryl 821” | 200 – 1.200 g/m ² |
| Primer (for concrete substrates) | “Wecryl 130” | 400 – 600 g/m ² |
| Scratch coat (optional, for concrete substrates) | “Wecryl 131” / “Wecryl 131 K” | 1.700 g/m ² per mm layer thickness |
| Waterproofing membrane | “Wecryl 240” “Wecryl 240 thix” | 2.400 g/m ² 2 x 1.200 g/m ² |
| Tack coat (for coatings with MA) | “Wecryl 890 Tack Harz” | 400 g/m ² |
| Tack coat (for coatings with CBM) | „WestWood Tack Harz“ | 400 g/m ² |

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1 Intended use(s)

The intended use of the Liquid Applied Bridge Deck Waterproofing Kit is the waterproofing of the concrete and/or steel deck of the bridge preventing or controlling the passage of water to the support.

For steel substrates, the waterproofing membrane is directly applied to the substrate without the use of a sealer, primer or scrape filler.

This kit is made of non-load bearing construction elements. It does not contribute directly to the stability of the bridge on which is installed, but it can contribute its durability by providing enhanced protection from the effect of weathering.

This kit is not intended to receive direct vehicular traffic in service and in this case will always be used beneath overlays of mastic asphalt (MA) or asphalt concrete (CBM) which may have a protective character and/or additional waterproofing function.

The applicable use areas are as follows:

- (A) With overlay and intended to receive vehicular traffic
 - o A.1 Overlay of asphalt concrete applied at (160 ± 10) °C (CBM)
 - o A.2 Overlay of mastic asphalt applied from 220 °C to 250 °C (MA)
- (B) Without overlay (exposed) and intended to receive only pedestrian or cycle traffic
- (C) Without overlay (exposed) and un-trafficked (including special case of un-ballasted rail bridges)

This kit can be applied in vertical surface to solve singular points.

This kit is designed and installed in accordance with the manufacturer, design and installation instructions.

2.2 Working life/Durability

The assessment methods included or referred to in the underlying EAD have been written based on the assumed working life of 25 years, when installed in the works (provided that the product is subject to

appropriate installation). These provisions are based upon the current state of the art and the available knowledge and experience.

The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be longer or shorter than referred to above.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA nor by the Technical Assessment Body (TAB) issuing this ETA, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

2.2 Installation

The kit is installed on site. It is the responsibility of the manufacturer to guarantee that the information about design and installation of these kits is effectively communicated to the concerned people.

Minimum usage temperature

The minimum usage temperature of the waterproofing layer is -20 °.

Condition of support

The age of the concrete support is normally assumed to be in excess of four weeks and unless specific assessments have been made the cohesive strength of the concrete surface shall be greater than 1.5 MPa.

Weather conditions

The waterproofing system cannot be put in place during rain, hail or snow. The support temperature shall be greater than 3 °C.

Execution

The kit installation has to be carried out by qualified installers.

Only the components of the kit indicated in this ETA can be used.

For vertical application, only the primer and waterproofing membrane shall be used. For the membrane, the thixotropic version shall be used and applied in two layers of 1.200 g/m² per layer.

The substrate must be inspected visually (cleanliness and correct preparation) before applying kit.

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

The following table shows the performed identifying and characterizing tests in regards to the Basic Works Requirement (BWR) which were performed in accordance to EAD 030675-00-0107.

Table 2 Identifying and characterizing tests for BWR 1

| Basic Works Requirement 1: Mechanical resistance and stability | | | | | |
|---|--|----------------------------|------------|---|-------------|
| Essential characteristic | | Relevant Clause in the EAD | | Test conditions according to Annex C of the EAD | Values |
| Bond strength to support (kit to support, concrete and steel) | | 2.2.1 | | P1 S0 T5 | > 1,0 MPa |
| Capacity to bridge cracks | | 2.2.2 | | P1 (S0 / S1) + S2 T2 | Watertight |
| Resistance to chloride ion penetration | | 2.2.3 | | - | NPA |
| Resistance to dynamic actions | Resistance to perforation | 2.2.4 | 2.2.4.1 | P1 S0 T5 | Passed (I4) |
| | Resistance to compaction of asphalt concrete | | 2.2.4.2 | P1 S1.2 T5 | Watertight |
| Resistance to heat impact | Bond strength (indirect method) | 2.2.5 | 2.2.1 | P1 S1 T5 | > 1,0 MPa |
| | Tensile strength (indirect method) | | 2.2.5 | P1 S1 T5 | > 2,9 MPa |
| | Tensile elongation (indirect method) | | | P1 S1 T3 | > 5,7 MPa |
| | Capacity to bridge cracks (indirect / direct method) | | | P1 S1 T5 | 129 % |
| | | | 2.2.2 | P1 (S0 / S1) + S2 T2 | Watertight |
| Resistance to shear between the substrate and overlay | | 2.2.6 | | P1 S1.1 T5 | > 0,6 MPa |
| | | | | P1 S1.2 T5 | > 0,9 MPa |
| Watertightness | | 2.2.7 | | P1 S0 T5 | Watertight |
| Resistance to high and low service temperatures | Low temperatures | 2.2.8 | 2.2.2 | P1 S0 T2 | Watertight |
| | High and low service temperature | | 2.2.1 | - | NPA |
| | | | 2.2.6 | - | NPA |
| Capacity to penetrate pores in the support | | 2.2.9 | | - | NPA |
| Resistance to flow | | 2.2.10 | | P1 S0 T5 | Passed |
| Dry film thickness | | 2.2.11 | | P1 S0 T5 | > 2,0 mm |
| Resistance to the effects of climatic conditions on application | Minimum climate (3 °C) | 2.2.12 | | P2 S0 T5 | > 1,0 MPa |
| | Maximum climate (35 °C) | | | | > 1,0 MPa |
| Resistance to the effects of the quality of the support | Moisture content | 2.2.13 | | - | NPA |
| | Day Joints | | | P4 + P2 S0 T5 | > 1,0 MPa |
| | Section joints | | | P4 S0 T5 | > 1,0 MPa |
| Resistance to water contact | Change of mass | 2.2.14 | Sealed | P1 S5.1 T5 | < 2,50 % |
| | | | Not sealed | | +1,47 % |
| | Change of hardness | | Sealed | | -2,10 % |
| | | | Not sealed | | -0,48 % |
| Resistance to alkali solution contact | Change of mass | 2.2.15 | | P1 S5.2 T5 | + 1,30 % |
| | Change of hardness | | | | -0,12 % |

Table 3 Identifying and characterizing tests for BWR 1 (continuation)

| Basic Works Requirement 1: Mechanical resistance and stability | | | | | |
|---|------------------------------|----------------------------|--------------|---|--------------|
| Essential characteristic | | Relevant Clause in the EAD | | Test conditions according to Annex C of the EAD | Values |
| Resistance to oil, petrol or diesel contact | | 2.2.16 | | - | Satisfactory |
| Resistance to bitumen contact | Change of hardness | 2.2.17 | | P1 S5.3 T5 | -21,5 % |
| Resistance to heat ageing | Capacity to bridge cracks | 2.2.18 | 2.2.2 | P1 (S0 / S1) + S2 T2 | Watertight |
| | Tensile strength | | 2.2.18 | P1 S2 T5 | > 3,6 MPa |
| | Tensile elongation | | | P1 S2 T3 | > 3,9 MPa |
| | Bond strength to the support | | 2.2.1 | P1 S2 T5 | 110 % |
| Resistance to UV radiation | Tensile strength | 2.2.19 | 2.2.19 | P1 S2 T3 | 103 % |
| | | | | P1 S2 + S3 T5 | > 1,0 MPa |
| | P1 S4 T5 | | | > 2,6 MPa | |
| | Tensile elongation | | P1 S4 T3 | > 7,2 MPa | |
| | Capacity to bridge cracks | | 2.2.2 | P1 S4 T5 | 121 % |
| Watertightness | 2.2.7 | P1 S4 T3 | 131 % | | |
| | | | | P1 S4 T2 | Watertight |
| | | | | P1 S4 T5 | Watertight |

Table 4 Identifying and characterizing tests for BWR 3

| Basic Works Requirement 3: Hygiene, health and the environment | | | | | |
|---|--|----------------------------|--|---|--------|
| Essential characteristic | | Relevant Clause in the EAD | | Test conditions according to Annex C of the EAD | Values |
| Content, emission and/or release of dangerous substances | | 2.2.20 | | - | NPA |

Table 5 Identifying and characterizing tests for BWR 4

| Basic Works Requirement 4: Safety and accessibility in use | | | | | |
|---|--------|----------------------------|--|---|-----------|
| Essential characteristic | | Relevant Clause in the EAD | | Test conditions according to Annex C of the EAD | Values |
| Bond strength (kit to overlay) | | 2.2.21 | | P1 S1.1 T5 | > 1,0 MPa |
| | | | | P1 S1.2 T5 | > 1,0 MPa |
| Slipperiness | | 2.2.22 | | P1 S0 T5 | 42,5 |
| Resistance to abrasion / Wear | Before | 2.2.23 | | P1 S0 T5 | 42,5 |
| | After | | | | 58,5 |

Table 6 Identifying and characterizing tests for aspects of durability

| Aspects of durability | | | | | |
|--------------------------------|--------------------------|----------------------------|--------|---|-----------|
| Essential characteristic | | Relevant Clause in the EAD | | Test conditions according to Annex C of the EAD | Values |
| Resistance to Freeze Thaw (FT) | Bond strength to overlay | 2.2.24 | 2.2.21 | P1 S3 T5 | > 1,0 MPa |
| | Resistance to shear | | 2.2.6 | | NPA |

Table 7 Test conditions according to Annex C of the EAD

| Test conditions according to Annex C of EAD 030675-00-0107 | | | |
|--|------------------------|--|--|
| Category identifier | Subcategory Identifier | Description | |
| Conditions for sample preparation | | | |
| P | P1 | Normal application climate | |
| | P2 | Severe application climate | |
| | P3 | High moisture content of the substrate | |
| | P4 | Overlapping areas | |
| Stress conditions before testing | | | |
| S | S0 | No stress conditions | |
| | S1 | S1.1 | Heat impact - Application of Mastic asphalt |
| | | S1.2 | Heat impact - Compaction of asphalt concrete |
| | S2 | Heat ageing (HA) | |
| | S3 | Freeze-Thaw (FT) | |
| | S4 | UV radiation (UV) | |
| | S5 | S5.1 | Materials in contact – Water (Wa) |
| | | S5.2 | Materials in contact – Alkali (Al) |
| | | S5.3 | Materials in contact – Bitumen (Bi) |
| Temperature conditions for testing | | | |
| T | T1 | Extreme low temperature (-30 °C) | |
| | T2 | Severe low temperature (-20 °C) | |
| | T3 | Low temperatures (-10 °C) | |
| | T4 | Moderate low temperature (0 °C) | |
| | T5 | Normal temperature (23 °C) | |
| | T6 | High temperature (40 °C) | |

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

According to the decision 2003/722//EC dated 6th October 2003 of the European Commission the system of assessment and verification of constancy of performance given in the following table applies.

Table 8 AVCP system

| Product | Product family | AVCP system |
|---|--|-------------|
| “Wecryl Waterproofing System below Asphalt” | Liquid Applied Bridge Deck Waterproofing | 2+ |

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

5.1 Tasks of the manufacturer

Initial type testing

The initial type-testing has been conducted by Kiwa to issue this ETA in accordance with the EAD 030675-00-0107 “Liquid applied Bridge Deck waterproofing Kits”.

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 a Control Plan, 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. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

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

Other tasks of the manufacturer.

The manufacturer shall, on the basis of a contract, involve a Notified Body which for the tasks referred to in section 5.2 in 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.

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 the notified body

Initial inspection of the manufacturing plant and of factory production control

During the Initial inspection of factory and of factory production control the Notified Body shall inspect, especially, the manufacturing production controls and related documentation as described in the MTD and the Control Plan relating to the manufacture of the components of the kit, including:

- Incoming materials
- Process controls
- Inspection and testing
- Calibration of equipment
- Training
- complaints

Continuous surveillance, assessment and evaluation of factory production control (once per year)

During the Continuous surveillance, assessment and evaluation of factory production control the Notified Body shall survey, assess and approve, especially, the manufacturing production controls and related documentation as described in the MTD and the Control Plan relating to the manufacture of the components of the kit, including:

- Incoming materials
- Process controls
- Inspection and testing
- Calibration of equipment
- Training
- complaints

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Annex A: System Builds

System build up for roughness heights > 1,5 mm

Substrate

1 e. g. concrete

Primer layer

2 optional: Wecryl 821
(Substrate stabiliser)

3 Wecryl 130

4 optional: Wecryl 131 / Wecryl 131 K

Waterproofing layer

5 Wecryl 240 /-thix

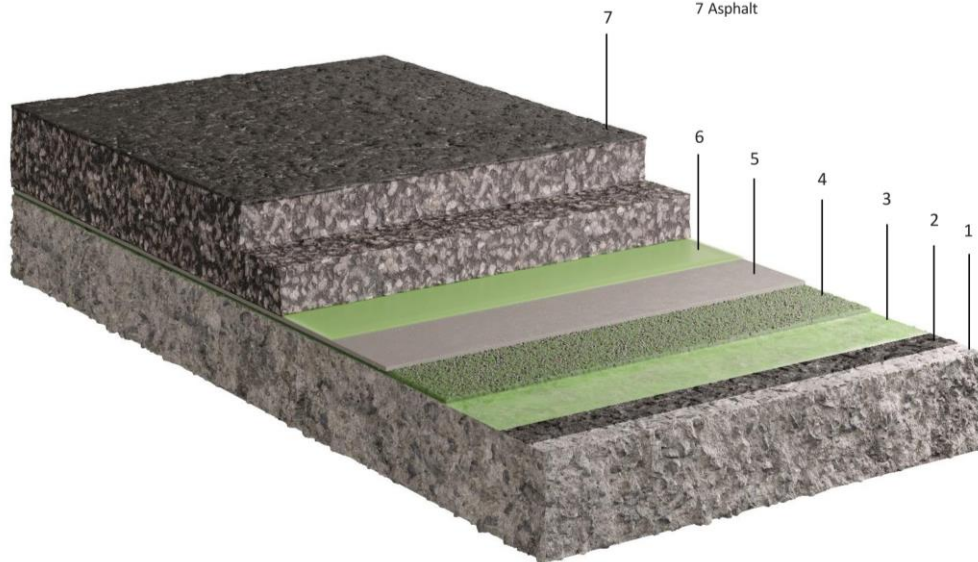
Protective layer

6 Wecryl 890 Tack Harz (mastic asphalt)

6 WestWood Tack Harz (asphalt concrete)

Finished surface

7 Asphalt



Annex A: System Builds

System build up for roughness heights < 1,5 mm

Substrate

1 e. g. concrete

Primer layer

2 optional: Wecryl 821
(Substrate stabiliser)

3 Wecryl 130

Waterproofing layer

4 Wecryl 240 /-thix

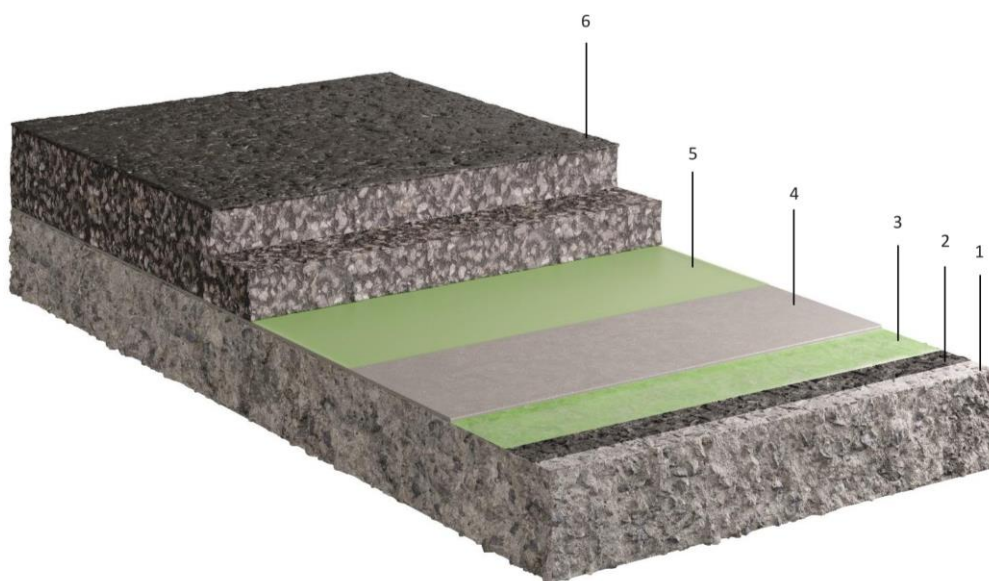
Protective layer

5 Wecryl 890 Tack Harz (mastic asphalt)

5 WestWood Tack Harz (asphalt concrete)

Finished surface

6 Asphalt



Annex A: System Builds

System build up for steel

Substrate

1 Steel

Waterproofing layer

2 Wecryl 240 /-thix

Protective layer

3 Wecryl 890 Tack Harz (mastic asphalt)

3 WestWood Tack Harz (asphalt concrete)

Finished surface

4 Asphalt

