

Kiwa GmbH, Voltastraße 5, 13355 Berlin

Widopan Produkte GmbH  
Ostereichen 3  
21714 Hammah

**Kiwa GmbH**  
MPA Berlin-Brandenburg  
Voltastr. 5  
13355 Berlin

T: +49 (0) 30 467761 – 0  
F: +49 (0) 30 467761 – 10  
E: [de.info.kiwaberlin@kiwa.com](mailto:de.info.kiwaberlin@kiwa.com)

[www.kiwa.com](http://www.kiwa.com)

Project: Testing the resistance under mastic asphalt

Plant: Widopan Produkte GmbH  
Ostereichen 3  
21714 Hammah

Order date: July 07<sup>th</sup>, 2021

Request for testing: Tests to evaluate the resistance of the system "WIDOCRYL-Detail" to mastic asphalt stresses via selected tests according to ETAG 033

Sample description: see section 1

Number of samples: see section 1

Sample(s) taken by: a representative of Widopan Produkte GmbH.  
If the test material has not been used up, it will be stored for 4 weeks. A longer storage period requires a written agreement.

Sample(s) received: July 08<sup>th</sup>, 2021

Test period: July – August 2021

Berlin, August 09<sup>th</sup>, 2021



i.V. Dr. Matthias Reese  
Lab manager

i.A. Thorben Strate  
Project engineer

## 1. General

Kiwa GmbH, MPA Berlin-Brandenburg, was commissioned by Widopan Produkte GmbH to carry out the tests within the framework of the evaluation of the resistance to guassasphalt stress on the waterproofing system

### “WIDOCRYL-Detail“

according to the selected tests of ETAG 033 "Guideline for European Technical Approval for Liquid Applied Bridge Waterproofing Kits" (July 2010 edition).

### 1.1 Material, Application

The following tables list the individual products, their function and application / manufacturer information.

**Table 1 Information about the products**

Product	Function	Comp.	Batch no. <sup>a)</sup>	Delivery <sup>a)</sup>
“WIDOCRYL - Betongrundierung PM“	Primer	Resin	21021721	10 kg Bundle
“WIDOCRYL -Detail“	Membrane	Resin	21070232	13kg oder 5 kg Bundle
“WIDOPAN-Härter“	Curing agent	Curing agent	20121305	0,3 kg Bundle
“Polyestergittervlies G165“	Reinforcement	-	1137720 und 1937818	50 m Roll

**Table 2 Manufacturing conditions**

Product	Components	Mixing ratio <sup>a)</sup> [Vol.-%]	Application quantity <sup>a)</sup> [g/m <sup>2</sup> ]
Primer “WIDOCRYL - Betongrundierung PM“	Resin	100,00	500 - 700
	Curing agent	-5 °C: 6,00 +5 °C: 4,50 +15 °C: 3,00 +25 °C: 1,50 +30 °C: 1,00	
Membrane “WIDOCRYL -Detail“	Resin	100,00	Fleece insert: 2.800 Lattice fabric: 1.500
	Curing agent	-5 °C: 1,00 +5 °C: 0,75 +15 °C: 0,50 +25 °C: 0,25 +30 °C: 0,15	
	Reinforcement	-	

The test specimens were manufactured under the responsibility of Widopan Produkte GmbH.

<sup>a)</sup> Information from the client. <sup>k)</sup> Change. <sup>z)</sup> The conformity statement is made according to the requirements of the specifications mentioned and according to the first binary Kiwa decision rule and the respective confidence level.

This assessment is a pure statement of conformity by the testing body. It does not replace the subsequent assessment and evaluation of the certification body or the confirmation of conformity..

## 1.2 Scope of testing

**Table 3 Scope of testing**

Test	Test basis	Product
Bond strength	EN 13596:2005-01 (German version)	Composite body
Tensile properties	EN ISO 527-4:2020-08 (German version)	“WIDOCRYL-Detail“

## 1.3 Basis of evaluation

A comparison of the reference tests to the claimed tests is chosen as the basis for evaluation. Requirements of ETAG 033 (July 2010 edition) are further referred to.

## 2. Test results

### 2.1 Bond strength

#### 2.1.1 Reference

Manufacturing, storage and testing conditions:

<b>Test basis:</b>	EN 13596:2005-01 (German version)
<b>Examination(s) on:</b>	“WIDOCRYL-Detail“ (composite body)
<b>Testing device:</b>	Bond strength device F20D EASY (Freundl)
<b>Testing conditions:</b>	Storage and testing at normal climate (23 ± 2) °C, (50 ± 10) r.h.

Test results:

**Table 4 Bond strength of “WIDOCRYL-Detail“**

Specimen	Test spot	Bond strength [N/mm <sup>2</sup> ]	Separation case with division in [%]							
			A	A/B	B	B/C	C	C/Y	Y	Y/Z
“WIDOCRYL-Detail“	1	3,07	100							
	2	3,01	100							
	3	2,92	100							
	4	2,57	100							
	5	2,28	100							
<b>Mean</b>		<b>2,77</b>								
min. value		2,28								
Standard deviation		0,34								

**Legend:**

Cohesive failure in:

- A: Substrate
- B: Primer
- C: Membrane
- Y: Glue

Adhesive failure between:

- A/B: Substrate and primer
- B/C: Primer and membrane
- C/Y: Membrane and glue
- Y/Z: Glue and stamp

## 2.1.2 After mastic asphalt stressing (indirect)

Manufacturing, storage and testing conditions:

<b>Test basis:</b>	EN 13596:2005-01 (German version)
<b>Examination(s) on:</b>	“WIDOCRYL-Detail“ (composite body)
<b>Testing device:</b>	Bond strength device F20D EASY (Freundl)
<b>Testing conditions:</b>	Mastic asphalt stressing (indirect) according to ETAG 033 (July 2010 edition), Section 5.1.1.5 i b) Test at normal climate ( $23 \pm 2$ ) °C, ( $50 \pm 10$ ) r.h.

Test results:

**Table 5 Bond strength of “WIDOCRYL-Detail“ after stressing**

Specimen	Test spot	Bond strength [N/mm <sup>2</sup> ]	Separation case with division in [%]							
			A	A/B	B	B/C	C	C/Y	Y	Y/Z
“WIDOCRYL-Detail“	1.1	2,35	100							
	1.2	2,31	100							
	1.3	2,22	100							
	1.4	2,30	100							
	1.5	2,24	100							
	2.1	2,33	100							
	2.2	2,00	100							
	2.3	1,82	100							
	2.4	2,45	100							
	2.5	2,84	100							
<b>Mean</b>		<b>2,29</b>								
min. value		1,82								
Standard deviation		0,27								
<b>Change to reference</b>		<b>-17,33 %</b>								

**Legend:**

Cohesive failure in:

A: Substrate  
B: Primer  
C: Membrane  
Y: Glue

Adhesive failure between:

A/B: Substrate and primer  
B/C: Primer and membrane  
C/Y: Membrane and glue  
Y/Z: Glue and stamp

## 2.2 Tensile properties

### 2.2.1 Reference

Manufacturing, storage and testing conditions:

<b>Test basis:</b>	EN ISO 527-4:2020-08 (German version)
<b>Examination(s) on:</b>	"WIDOCRYL-Detail" (membrane)
<b>Testing device:</b>	Universal tensile compression testing machine Zwick Z020
<b>Specimen type:</b>	Specimen type 1B according to EN ISO 527-4:2020-08 (German version)
<b>Testing conditions:</b>	Storage and testing at normal climate (23 ± 2) °C, (50 ± 10) r.h. Preliminary force 5 N, load speed 10 mm/min

Test results:

**Table 6 Tensile properties of "WIDOCRYL-Detail"**

Specimen	Width $b_0$ [mm]	Thickness $d_0$ [mm]	Tensile strength $\sigma_{max}$ in [N/mm <sup>2</sup> ]		Elongation at $\sigma_{max}$ in [%]	
			Single value	Mean	Single value	Mean
PK1	10,12	2,04	19,77	<b>21,58</b>	13,33	<b>14,06</b>
PK2	10,11	2,03	21,46		14,12	
PK3	9,99	1,98	22,91		14,01	
PK4	10,01	1,97	21,86		14,04	
PK5	10,01	1,98	22,08		14,27	
PK6	10,11	2,08	21,39		14,56	

## 2.2.2 After mastic asphalt stressing (indirect)

Manufacturing, storage and testing conditions:

<b>Test basis:</b>	EN ISO 527-4:2020-08 (German version)
<b>Examination(s) on:</b>	“WIDOCRYL-Detail“ (membrane)
<b>Testing device:</b>	Universal tensile compression testing machine Zwick Z020
<b>Specimen type:</b>	Specimen type 1B according to EN ISO 527-4:2020-08 (German version)
<b>Testing conditions:</b>	Mastic asphalt stressing (indirect) according to ETAG 033 (July 2010 edition), Section 5.1.1.5 i b) Testing at normal climate (23 ± 2) °C, (50 ± 10) r.h. Preliminary force 5 N, load speed 10 mm/min

Test results:

Table 7 Tensile properties of “WIDOCRYL-Detail“ after stressing

Specimen	Width b <sub>0</sub> [mm]	Thickness d <sub>0</sub> [mm]	Tensile strength $\sigma_{\max}$ in [N/mm <sup>2</sup> ]		Elongation at $\sigma_{\max}$ in [%]	
			Single value	Mean	Single value	Mean
PK1	10,08	2,01	23,34	<b>23,67</b>	14,00	<b>13,66</b>
PK2	10,15	2,08	23,00		14,18	
PK3	10,12	2,12	23,03		13,37	
PK4	9,99	1,98	25,22		13,49	
PK5	10,08	2,07	23,15		13,51	
PK6	10,02	1,99	24,29		13,40	
<b>Change to reference:</b>			<b>+9,69 %</b>		<b>-2,82 %</b>	

### 3. Summary and evaluation

Kiwa GmbH, MPA Berlin-Brandenburg, was commissioned by Widopan Produkte GmbH to carry out the tests within the framework of the evaluation of the resistance to guassasphalt stress on the waterproofing system

#### “WIDOCRYL-Detail“

according to the selected tests of ETAG 033 "Guideline for the European technical approval of liquid applied bridge waterproofing kits" (July 2010 edition).

Within the scope of the assessment, comparative reference tests without mastic asphalt stress were carried out.

In the bond strength test, the values of the stressed specimens are lower than the reference specimens. The failure occurs in the concrete in all cases. Thus, the bond is not decisive for the failure. In both cases (reference / stressed), the requirements of ETAG 033 (adhesive tensile strength  $\geq 1 \text{ N/mm}^2$ ) are clearly fulfilled.

The composite behaviour of the "WIDOCRYL-Detail" system can be assessed as resistant to mastic asphalt stresses.

The tests of the tensile properties show that there is a change in the material behaviour. There was an increase in the strengths

The material behaviour of the "WIDOCRYL-Detail" system can be assessed as resistant to mastic asphalt stresses.