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## European Technical Assessment

**ETA -18/0194  
of 30/06/2018**

### *I General Part*

**Technical Assessment Body issuing the  
ETA and designated according to Article  
29 of the Regulation (EU) No 305/2011:  
Trade name of the construction product**

Technical and Test Institute for Construction  
Prague

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

**Logicroof V-RP**

**Holder of the assessment**

**System of mechanically fastened flexible  
roof waterproofing membranes**

**Manufacturing plant**

**LLC Zavod Logicroof  
Vostochnij Promuzel 21  
391000 Ryazan  
Russian Federation  
LLC Zavod Logicroof  
Vostochnij Promuzel 21  
391000 Ryazan  
Russian Federation  
10 pages**

**This European Technical Assessment  
including 1 annex contains**

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

Guideline for European Technical Approval  
ETAG 006:2012 used as European  
Assessment Document (EAD)

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## II Specific part

### 1 Technical description of the product (definition of the product)

This European technical assessment applies to the system Logicroof V-RP of mechanically fastened flexible roof waterproofing membranes.

The system Logicroof V-RP is composed of the following below mentioned components:

#### Waterproofing membrane

Logicroof V-RP is a PVC-P roof waterproofing membrane reinforced with a polyester grid, mechanically fastened with point fasteners to structural decks. It is produced by the holder of the approval and other components of the system are produced by other manufacturers.

The membrane is fastened with point fasteners in area of overlapping at the edge of membrane. The area of overlapping is welded.

The membrane is certificated and CE marked in accordance with EN 13956.

Table No. 1:

#### Dimensions:

Thickness [mm]	Mass per unit area[kg/m <sup>2</sup> ]	Width [mm]	Length [m]	Quantity [m <sup>2</sup> ]
1,2 (-5; +10%)	1,5 (0% /+10 %)	2100 (-0.5% / +1%) m	25 (-0 % / +5 %) m	52,5
		1600 (-0.5% / +1%) m	25 (-0 % / +5 %) m	40
		1050 (-0.5% / +1%) m	25 (-0 % / +5 %) m	52,5
1,5 (-5;+10%)	1,8 (0% /+10 %)	2100 (-0.5% / +1%) m	20 (-0 % / +5 %) m	42
		1600 (-0.5% / +1%) m	20 (-0 % / +5 %) m	32
		1050 (-0.5% / +1%) m	20 (-0 % / +5 %) m	42
1,8 (-5;+10%)	2,3 (0% /+10 %)	2100 (-0.5% / +1%) m	20 (-0 % / +5 %) m	42
		1600 (-0.5% / +1%) m	20 (-0 % / +5 %) m	32
		1050 (-0.5% / +1%) m	20 (-0 % / +5 %) m	42
2 (-5;+10%)	2,5 (0% /+10 %)	2100 (-0.5% / +1%) m	15 (-0 % / +5 %) m	31,5
		1600 (-0.5% / +1%) m	15 (-0 % / +5 %) m	24
		1050 (-0.5% / +1%) m	15 (-0 % / +5 %) m	31,5

#### Colours:

Logicroof V-RP is produced in a basic colour of the upper layer of grey, dark grey, blue, red, green and white.

#### Fastening systems:

For all detailed information see Annex No. 1.

Mechanical fastening of the system is carried out on the overlaps, using the aforementioned fasteners. The number of fasteners per square metre is determined by the varying air pressure on the roof, which depends on the geographic area, area of the roof and height of

the building. For the number of fasteners per m<sup>2</sup> the wind uplift resistance of the fastener and the national regulations and administrative provisions of the member state of destination shall be taken into account.

Fastening shall be performed according to the manufacturer's installation instructions.

Vapour control layer:

The vapour control layer shall be certificated and CE marked in accordance with EN 13984 (plastic and rubber vapour control layers) or 13970 (bitumen water vapour control layers).

Insulation

Used thermal insulations: mineral wool (MW), polyisocyanurate (PIR), polystyrene (EPS).

The insulation material shall fulfill at least characteristics stated in Cl. 6.4 of ETAG 006.

The insulation boards must be fitted tightly together, with no gaps in between. The insulation material shall be certificated and have CE marking.

Supports

Profiled steel decks

Steel deck should be galvanised, with a thickness  $\geq 0,70$  mm, specifications min. S 280 according to EN 10147 (according to ETAG 006 used as EAD).

Concrete, aerated concrete, wood, wood based panels\*

Note:

*\*Wind uplift test – changing of the substrate*

*If a new steel substrate is thicker than the one used in the full scale test, a new test is not necessary. The value determined in the full scale test will be valid for the new substrate. The correlation factor k is in this case 1*

*The value determined in the full scale test on a steel substrate can be valid for other substrates (concrete, aerated concrete, wood and wood based panels), provided that the characteristic axial loading resistance of the fastener in the other substrate is greater than or equal to the characteristic loading resistance of the fastener in the steel substrate (as applied in the full scale test. The correlation factor k is in this case 1.*

Types of systems regarding to the fastening:

- a) Mechanically fastened system with plastic tube
- b) Mechanically fastened system with barbed plastic tube
- c) Mechanically fastened system with membrane welded by induction to plates

All mounting and fixing details shall be executed according to the manufacturer's installation manual.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

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

### **2.1 Intended use**

This ETA covers system of mechanically fastened flexible roof waterproofing membranes according to ETAG 006 (used as EAD).

The system Logicroof V-RP is intended to be used as the waterproofing of roofs against the water.

## 2.2 Assumed working life

The provisions made in this ETA are based on an assumed working life of the system of 10 years, provided that the conditions laid down in this ETA are met.

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

An "assumed intended working life" means that it is expected 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.

## 3 Performance of the products and references to the methods used for their assessment

Table No. 2: Essential performance of the system

No.	ETAG paragraph on verification method of product performance	Characteristic	Expression of product performance
<b>Essential Requirement 2: Safety in case of fire</b>			
1	5.1.2.1	External fire performance (EN 13501-5+A1)	Class <b>B<sub>roof</sub></b> (t3) Class <b>B<sub>roof</sub></b> (t1) Class <b>B<sub>roof</sub></b> (t2) The resulting class depends on the composition of system.
<b>Essential Requirement 3: Hygiene, health and environment</b>			
2	5.1.3.1	Content and/or release of dangerous substances	No performance assessed
<b>Essential Requirement 4: Safety in use</b>			
3	5.1.4.1	Wind uplift test	See Annex No. 1

Table No. 3: Essential performance of the membrane

No.	ETAG paragraph on verification method of product performance	Characteristic	Expression of product performance
<b>Essential Requirement 2: Safety in case of fire</b>			
1	5.2.2.1	Reaction to fire (EN 13501-1+A1)	Class E
<b>Essential Requirement 3: Hygiene, health and environment</b>			
2	5.2.3.1	Peel resistance (joint) (EN 12316-2)	≥ 100 N/50 mm without any rupture of joint
3	5.2.3.2	Shear resistance (joint) (EN 12317-2)	≥ 600 N/50 mm ≥ 600 N/50 mm
4	5.2.3.3	Tear resistance (EN 12310-2)	longitudinally ≥ 300 N transversally ≥ 320 N
5	5.2.3.4	Resistance to cold bending/folding (EN 495-5)	- 30 °C

No.	ETAG paragraph on verification method of product performance	Characteristic	Expression of product performance	
6	5.2.3.5	Resistance to water pressure 24 hours, 10 kPa (EN 1928, method B)	Pass	
7	5.2.3.6	Water vapour permeability $\mu$ (EN 1931)	$\geq 18215$	
8	5.2.3.7	Tensile properties (EN 12311-2, method A)		
		a) Tensile strength	longitudinally	$\geq 1100$ N/50 mm
			transversally	$\geq 1000$ N/50 mm
		b) Elongation at break	longitudinally	$\geq 15$ %
transversally	$\geq 15$ %			
9	5.2.3.8	Resistance to static loading (EN 12730, method B)	loading 20 kg: no perforation	
10	5.2.3.8	Resistance to impact loading (EN 12691)		
		a) method A	pass impact height: 800 mm	
		b) method B	pass impact height: 2000 mm	
11	5.2.3.9	Determination of dimensional stability (EN 1107-2)	max. $\pm 0.5$ %	
12	5.2.3.10	Determination of thickness (EN 1849-2)		
		Thickness	Tolerances [mm]	
		1.20 mm	(-5; +10%)	
		1.50 mm	(-5; +10%)	
		1.80 mm	(-5; +10%)	
		2.0 mm	(-5; +10%)	
<b>Essential Requirement 4: Safety in use</b>				
13	5.2.4.1	Slipperiness	No performance assessed	
<b>Aspects of durability, serviceability and identification</b>				
14	5.2.7.1	Peel resistance (EN 12316-2) after long term exposure to:		
		a) heat (EN 1296)	$\geq 100$ N/50 mm <sup>2</sup> without any rupture of joint	
		b) water (EN 1847)	$\geq 100$ N/50 mm <sup>2</sup> without any rupture of joint	
15	5.2.7.2	Shear resistance (EN 12317-2) after long term exposure to:		
		a) heat (EN 1296)	$\geq 600$ N/50 mm <sup>2</sup>	
16	5.2.7.3	Resistance to cold bending/folding (EN 495-5) after long term exposure to:		
		a) heat (EN 1296)	longitudinally	-30 °C <sup>**</sup>
			transversally	-30 °C <sup>**</sup>
		a) UV (EOTA Technical Report Nr. 10)	longitudinally	No performance assessed
transversally				

- \*) If the decrease in the given characteristic after the relevant ageing is equal to or less than 20 % after ageing this may be considered to be applicable to an expected working life of at least 10 years since the overall quality of the kit is proven by the wind uplift test.

If the decrease in the given characteristic is more than 20 % after ageing further investigations (e.g. establishing further points on the degradation curve and/or level of declared value after ageing) shall be undertaken by the Technical Approval Body. This assessment should be carried out in accordance with the provisions in EOTA Guidance Document for the Assessment of Working Life of Products, Final draft, March 1997, paragraph 4.3.4 Accelerated ageing conditions.

- \*\*) If the decrease in the resistance to cold bending/folding is equal to or less than 15°C after ageing this may be considered to be applicable to an expected working life of at least 10 years since the overall quality of the kit is proven by the wind uplift test.

If the decrease in the resistance to cold bending/folding is more than 15°C after ageing further investigations (e.g. establishing further points on the degradation curve and/or level of declared value after ageing) shall be undertaken by the Technical Approval Body. This assessment should be carried out in accordance with the provisions in EOTA Guidance Document for the Assessment of Working Life of Products, Final draft, March 1997, paragraph 4.3.4 Accelerated ageing conditions.

Detailed description and essential performance of the mechanical fastening is stated in the relevant European Technical Assessments issued according to ETAG 006(used as EAD). An overview of the fastening elements and their ETAs can be found in Annex No. 1 of this ETA.

All components of the mechanically fastened flexible roof waterproofing membrane kits were clearly identified and the received data are confidential and are deposited by TZÚS Praha, s.p..

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

### **4.1. System of attestation of conformity**

The European Commission according to the Decision (98/143/EC of February 1998, Official Journal of the European Communities No. L42, 14.02.1998) on the Procedures of Attestation of Conformity has, for this type of product, laid down the **System 2+**, for the procedure of attestation of conformity(Annex III, clause 2(ii) first possibility of EU Regulation 305/2011) for systems of mechanically fastened flexible roof waterproofing membranes.

The AVCP system 2+ is defined as follows:

- a) Tasks for the manufacturer:
  - (1) Factory production control (FPC),
  - (2) Type-testing of the product
- b) Tasks for the Notified Body:
  - (1) Initial inspection of the factory and production control
  - (2) Continuous surveillance, assessment and approval of factory production control

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

In order to help the notified body to make an evaluation of conformity, the Technical Assessment Body issuing the ETA shall supply the information detailed below. This information shall initially be prepared or collected by the Technical Assessment Body and shall be agreed with the manufacturer. The following gives guidance on the type of information required:

### 1) The ETA

Where confidentiality of information is required, this ETA makes reference to the manufacturer's technical documentation which contains such information.

### 2) Basic manufacturing process

The basic manufacturing process is described in sufficient details to support the proposed FPC methods.

### 3) Product and materials specifications

The manufacturer's documentation includes:

- detailed description of the components,
- incoming (raw) materials specifications and declarations,
- references to European and/or international standards,
- technical and safety data sheets of the components.

### 4) Control Plan (as a part of FPC)

The manufacturer and the Technical and Test Institute for Construction Prague have agreed a Control Plan which is deposited with the Technical and Test Institute for Construction Prague in documentation which accompanies the ETA. The Control Plan specifies the type and frequency of checks/tests conducted during production and on the final product. This includes the checks conducted during manufacturing process on properties that cannot be inspected at a later stage and for checks on the final product.

It must be demonstrated to the notified body that the FPC system contains elements securing that the manufacturer of the final product use during the manufacturing process only products from his supplier(s) which conform to the Control Plan.

In cases where the provisions of the European Technical Assessment and its Control Plan are no longer fulfilled, the notified body shall withdraw the certificate and inform the Technical and Test Institute for Construction Prague without delay.

Issued in Prague on 30.06.2018



By  
Ing. Mária Schaan  
Head of the department Technical Assessment Body

## Annexes

### **Annex No.1: Fastening elements and wind uplift test**



#### **Annex No. 1: Fastening elements and wind uplift test**

The combinations that were tested in the full scale wind uplift test have the highest characteristic resistance of the combinations mentioned in the assessment. The characteristic resistances of other combinations are found by interpolation based on either calculation, if possible, or on small scale testing. Extrapolation to a higher value from the full scale test results is not an option because of the uncertainty of the failure mode.

**The correlation factor  $k$  can never be smaller than 0,5 or larger than 1,0. If the  $k$ -value is smaller than 0,5, the small scale concept cannot be used and a new full scale test is necessary.**

$$k = R_{nc}/R_{oc}$$

$R_{nc}$  Resistance of new element

$R_{oc}$  Resistance of old element

$k$  correlation factor between new combination and the original combination

$$W_{adm,nc} = k \times W_{adm,oc}$$

$W_{adm,nc}$  admissible load per fastener of the new combination

$W_{adm,oc}$  admissible load per fastener of the original combination

More detailed information about the fastening elements are stated in the relevant ETAs issued according to ETAG 006 (used as EAD).

Table No. 1: Fastening elements and wind uplift test

<b>a) Mechanically fastened system with plastic tube</b>			
	<b>Fastening elements</b>	<b>ETA No.</b>	<b>W<sub>adm,oc</sub> [kN]</b>
<b>Reference elements tested in the full scale test</b>	EJOT HTK 2G + TKR-4,8	07/0013	0.677
<b>Alternative fastening elements</b>	Guardian R-45 + BS-4,8	08/0285	
	SFS RP45 + BS-4,8	08/0262	
	Koelner GOK + WX-4,8	09/0346	
	KLIMAS LINO 13 + WSR-4,8	15/0578	
	CEFTECH TPK + EDS-B-4,8	12/0496	
	Top Kraft ATK + TX-4,8	15/0504	
	Eurofast TLK-45 + EDS-B-4,8	06/0007	
<b>b) Mechanically fastened system with barbed plastic tube</b>			
	<b>Fastening elements</b>	<b>ETA No.</b>	<b>W<sub>adm,oc</sub> [kN]</b>
<b>Reference elements tested in the full scale test</b>	Guardian RB 48 + BS-4,8	08/0285	0.903
<b>Alternative fastening elements</b>	SFS RP48-3N + BS-4,8	08/0262	
	EJOT EcoTek T50 + TKR 4,8	07/0013	
	KLIMAS LINO 13K + WSR-4,8	15/0578	
	Koelner GOK PLUS + WX-4,8	09/0346	
<b>c) Mechanically fastened system with membrane welded by induction to plates</b>			
	<b>Fastening elements</b>	<b>ETA No.</b>	<b>W<sub>adm,oc</sub> [kN]</b>
<b>Reference elements tested in the full scale test</b>	SFS Isoweld FI-P-6,8-PVC + BS-6,1	08/0262	1.000
	Guardian Weld GWSP-80-F2E80 + BS-6,1	08/0285	1.000

Notes: Values for the alternative fastening elements were calculated according to Annex D of ETAG 006