



Branch TZÚS :

Brno

Accredited Test Laboratory No.:

1018.2

Issue No.: 1

## Test report

Report No.:

**060-030119**

of the day: 20.5.2009

Job No.:

**Z 060080235**

of the day: 7.8.2008

<b>Product:</b>	Polyurethane foam Illbruck
<b>Type:</b>	Illbruck PU 010 – adhesive for EPS
<b>Applicant:</b>	Tremco illbruck s.r.o.
<b>Adress:</b>	100 00 Praha 10, Úvalská 737/34
<b>Manufacturer:</b>	Tremco illbruck s.r.o.
<b>Adress:</b>	100 00 Praha 10, Úvalská 737/34
<b>Manufacturing plant:</b>	-
<b>Adress:</b>	-
<b>Sample No.:</b>	475/08

Person responsible for the content of this report - Accredited Test Laboratory manager:



**Ing. Jarmila Malíková**

This report exists in three counterparts. Two of them belong to the applicant and the third one is deposited at TZÚS together with the relevant documentation.

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Results of tests and measurement stated in this report are related only to tested subjects.

Test results and procedures marked by +) in paragraphs 2 and 3 are not subjected to CIA accreditation.



Test report:	060-030119
Accredited test laboratory No.:	1018.2
Branch office:	Brno

## 1. Subject

The purpose of the test is to determine bond strength between PUR foam Illbruck and EPS or concrete substrate.

Manufacturer: Tremco illbruck s.r.o.  
Product: adhesive for EPS  
Type: Illbruck PU 010

## 2. Sampling <sup>+)</sup>

Date of delivery to ATL: 01.07.2008  
Sample taken over by: Ludmila Fryštenská  
Storage : Laboratory store

+) not subjected to CIA accreditation according to ČSN EN ISO/IEC 17025

## 3. Used test procedures

The characteristics were measured according to following procedures:

ETAG 004 External Thermal Insulation Composite Systéme with rendering *)	5.1.4.1.2 Bond strength between adhesive and substrate
	5.1.4.1.3 Bond strength between adhesive and insulation

\*) the sample preparation was modified - see chapters 5.1., 5.2.

## 4. Test equipment and its metrological assurance

- pull-off tester DV 5 kN, accuracy  $\pm 0,01$  kN

Metrological attaching of used gauges and testing instruments is supported in Metrological rules of ATL. All used gauges were checked and calibrated during testing.



## 5. Test process data

### 5.1 Sample preparation – on concrete substrate

The adhesive foam was applied on the EPS board in strips of a diameter about 15 mm. The EPS board was glued to the concrete substrate about 1 minute after application of the PUR foam. The dimensions of the PUR foam were determined by the spacers between the boards - thickness about 10 mm and width about 70 mm. The position of the board was adjusted until 20 minutes if it was shifted by expanding foam.

After foam curing (about 24 hours), the EPS board was cut off from the foam.

Afterwards, the square cuts were made through the foam and the metal plates with wooden pads in between were glued to the square area by the PUR foam. The bond strength test was carried out after about 7 hours.

### 5.2 Sample preparation – on EPS substrate

The adhesive foam was applied on the EPS board in strips of a diameter about 15 mm. The EPS board was glued to another EPS board about 1 minute after application of the PUR foam. The dimensions of the PUR foam were determined by the spacers between the boards - thickness about 10 mm and width about 70 mm.

After foam curing (about 24 hours), the EPS board was cut off from the foam. Afterwards, the square cuts were made through the foam and the metal plates (50 x 50 mm) with wooden pads in between were glued to the square area by the PUR foam. The bond strength test was carried out by the pull-off tester.

### 5.3 Test process

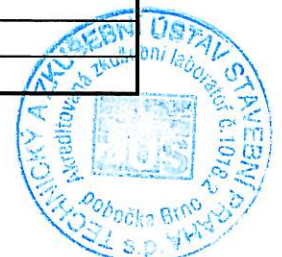
The bond strength test was performed according to relevant test procedure.

## 6. Test results

### 6.1. bond strength between PUR foam and insulation (grey EPS)

No.	area (mm <sup>2</sup> )	force (KN)	bond strength (MPa)	average bond strength (MPa)	rupture typology
1	2487	0,279	0,112	<b>0,114</b>	100 % B
2	2445	0,315	0,129		100 % B
3	2465	0,321	0,130		100 % B
4	2510	0,254	0,101		100 % B
5	2464	0,238	0,097		100 % B

Rupture: A.....in PUR foam  
 B .....in insulation  
 A/B ...adhesive rupture



### 6.2. bond strength between PUR foam and insulation (white EPS)

No.	area (mm <sup>2</sup> )	force (KN)	bond strength (MPa)	average bond strength (MPa)	rupture typology
1	2512	0,224	0,089	<b>0,085</b>	100 % B
2	2487	0,214	0,086		100 % B
3	2463	0,181	0,073		100 % A/B
4	2465	0,242	0,098		100 % B
5	2464	0,196	0,080		100 % B

Rupture: A.....in PUR foam  
 B .....in insulation  
 A/B ...adhesive rupture

### 6.3. bond strength between PUR foam and concrete

No.	area (mm <sup>2</sup> )	force (KN)	bond strength (MPa)	average bond strength (MPa)	rupture typology
1	2634,41	0,680	0,258	<b>0,252</b>	85 % A/B, 15 % C
2	2599,85	0,571	0,220		100% A/B
3	2721,02	0,708	0,260		90 % A, 10 % A/B
4	2648,65	0,661	0,250		100 % A
5	2716,97	0,751	0,276		100 % A

Rupture: A.....in PUR foam  
 B .....in substrate  
 C..... between PUR and wooden pad  
 A/B ...adhesive rupture

Test carried out:

7.7.2008 – 2.9.2008

14.5.2009 – 19.5.2009

Sample preparation:

Ing. Martin Halíček

Test carried out by:

Ing. Martin Halíček

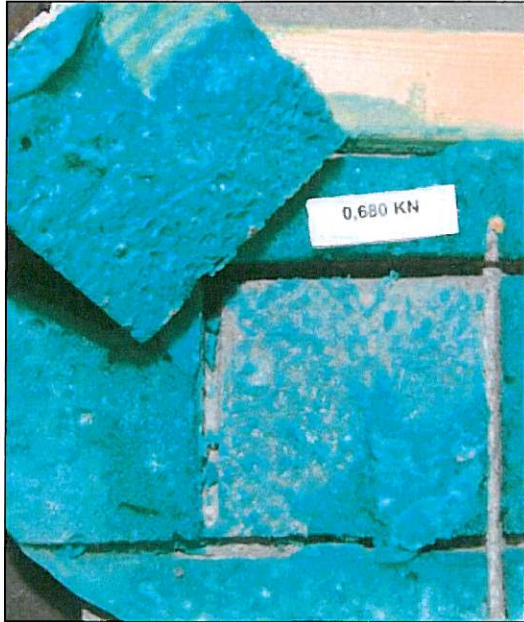
Test process supervision and translation into English

Ing. Václav Hadrava



**Photo documentation:**

1. bond strength between PUR foam and concrete







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**Technical and Test Institute for Constructions Prague**

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Accredited Test Laboratory, Authorised Body, Certification Body, Inspection Body

**Evaluation of test results introduced in test report No. 060-030119**

this page is not a part of ATL test report

On basis of Illbruck PU 010 bond strength test results, introduced in the report No. 060-030119, we state that bond strength of Illbruck PU 010 is satisfactory for use within mechanically fixed ETICS on EPS with supplementary adhesive.

May 20<sup>th</sup> 2009

Ing. Václav Hadrava

A handwritten signature in blue ink, appearing to read 'Hadrava', is written below the printed name.

