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## Test Report

**No. 12 - 343**

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Commission: „Rectavit Easy Fix“

Investigations to the bond strength (dry) in support of ETAG - Guideline 004  
on aerated concrete PP2-040

Customer: **Rectavit N.V.**

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Liability: Institute for Facades and Fixing Technology

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The Test Report contains 5 pages and 1 annex.

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**Annexes**

Annex    Bond strength (dry) on aerated concrete PP2

**0 References**

[1] ETAG - Guideline 004

Guideline for European Technical Approval of External Thermal Insulation Composite Systems (ETICS) with rendering  
Englisch version, August 2011

[2] DIBt - Methods of verification of PU-Foam as adhesive for ETICS on polystyrene

## **1 Introduction**

The IFBT GmbH (Institute of Facades and Fixing Technology) was commissioned by the company Rectavit N.V. to carry out investigations to the bond strength (dry) of the PU-Foam „Rectavit Easy Fix“ on aerated concrete PP2 in support of ETAG - Guideline 004 [1].

used materials:

- SIPOREX-Plan block of the company KS Baustoffwerke Blatzheim GmbH & Co. KG  
DIN V 4165 - PP2 - 0.40 - 599 x 200 x 249
- Rectavit Easy Fix

## **2 Test conception**

### **2.1 Test specimens**

The test specimens were produced by a member of staff of IFBT GmbH. The PU-Foam was always applied fully spread (meandering) on insulation product, which were stuck then on the cellular concrete. To reach the respective thickness of the hardened foam of 8 mm, distance holders were laid between insulating panels and aerated concrete. The PU-Foam was stored in a normal climate ( $23 \pm 2$ ) °C/ ( $50 \pm 5$ ) RH.

The specimens were prepared for the 'dry' adhesion tests (A) in 4 stages:

1. At least 1 day of storage at ( $23 \pm 2$ ) °C/( $50 \pm 5$ )% relative humidity
2. Preparation of the specimens - Distance of the insulation material to PU-foam
3. Preparation of the tests
  - Gluing on the deflection-resistant metal stamps (size 50 mm x 50 mm) with adhesive.
  - Cutting into the test surfaces till the substrate or insulation material.
4. Test
  - Testing was carried out after the adhesive had dried.

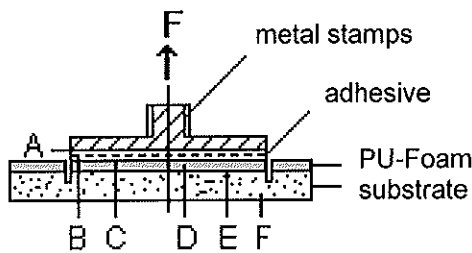
### **2.2 Test equipment**

The bond strength was determined using the test apparatus F6D EASY MLC manufactured by Fa. Maschinenbau Josef Freundl.

The aims of the test are:

1. To subject the system to even and extensive normal strain,
2. To determine the failures (tear-off) load
3. To spot the failing layer or failing composite layer
4. To determine the axial stiffness (load/displacement curve) in the area of the characteristic load and until failures (tear-off)

Possible types of failure



- A - C Testing failure
- D - F Failure to be evaluated
- D Failure in PU-Foam
- E Failure in the joint between PU-Foam/ substrate
- F Failure on substrate

Diagram 1: Bond strength on the substrate

### 2.3 Testing

The tests to determine the bond strength of the PU-Foam „Rectavit Easy Fix“ on aerated concrete in support of ETAG - Guideline 004 [1] was carried out only in dry condition. 5 attempts were carried out. The single results as well as the picture documentation are included in the annex.

### 3 Summary

The test results (average value and minimum value) of the carried out tests are summarised in the following table for the PU-Foam „Rectavit Easy Fix“ on the substrate „aerated concrete“.

Point	Test	average value	minimum value	annex
Bond strength (dry) on substrates [N/mm <sup>2</sup> ], d = 8 mm				
1	aerated concrete PP2	0.21	0.181	annex

Table 1: Test results

The information of the types of failure can be found in the annex.

# **Annex**

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**„Rectavit Easy Fix“**

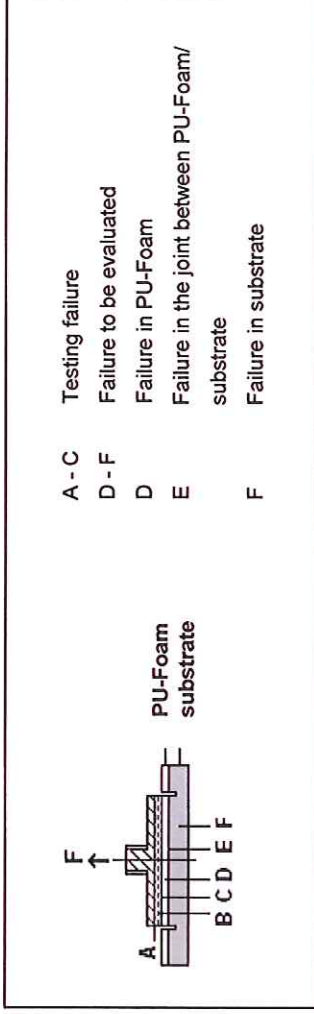
*Bond strength (dry) on aerated concrete*

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**Bond strength (dry) on substrate in support on ETAG - Guideline 004 point 5.1.4.1.2**

Substrate: aerated concrete PP2

Adhesive: Rectavit Easy Fix, thickness 8 mm



No.	thickness [mm]	dimensions [mm]	bond strength $\sigma_{BS}$ [N/mm <sup>2</sup> ]	average value $\sigma_{BS,average}$ minimum value $\sigma_{BS,min}$ [N/mm <sup>2</sup> ]	failure in %					
					A-C	D	E			
<b>Normal climate (23 °C/ 50 % RH)</b>										
1	8	50 x 50	0.181	$\sigma_{BS,average} = 0.21$ $\sigma_{BS,min} = 0.181$	A-C	D	E	F		
2			0.206						30	70
3			0.196						70	30
4			0.256							
5			0.207							

