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Test Report

No. 12 - 098

25/07/2012, . copy

Commission: **„Soudabond Easy“**
Investigations to the bond strength (dry) in support of ETAG - Guideline 004 on aerated concrete PP2-040

Customer: **Soudal 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.

Contents

Annexes

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 Soudal N.V. to carry out investigations to the bond strength (dry) of the PU-Foam „Soudabond Easy“ 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
- Soudabond-Easy

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 ± 2) °C/ (50 ± 5) RH.

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

1. At least 1 day of storage at (23 ± 2) °C/(50 ± 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.

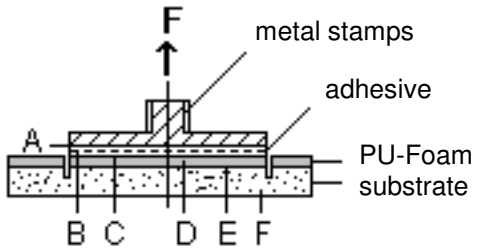
2.2 Test equipment

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 "Soudabond Easy" 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 „Soudabond Easy" on the substrate "aerated concrete".

Point	Test	average value	minimum value	annex
Bond strength (dry) on substrates [N/mm²], d = 8 mm				
1	aerated concrete PP2	0.21	0.181	annex

Table 1: Test results

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

Annex

Test Report 12 - 098

25/07/2012

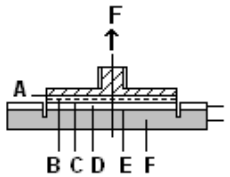
„Soudabond Easy“

Bond strength (dry) on aerated concrete

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

Substrate: aerated concrete PP2

Adhesive: Soudabond Easy, thickness 8 mm



PU-Foam substrate

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 in substrate

No.	thickness [mm]	dimensions [mm]	bond strength σ_{BS} [N/mm²]	average value $\sigma_{BS,average}$ minimum value $\sigma_{BS,min}$ [N/mm²]	failure in % A-C	D	E	F
Normal climate (23 °C/ 50 % RH)								
1	8	50 x 50	0.181	$\sigma_{BS,average}$ = 0.21 $\sigma_{BS,min}$ = 0.181			100	
2			0.206			30	70	
3			0.196				100	
4			0.256			70	30	
5			0.207				100