

Test report no.: 94931/11-V

Customer: Sika Deutschland GmbH
Stuttgarter Straße 117
72574 BAD URACH
GERMANY

Order: Testing of the change in mass and volume as well as the adhesion and cohesion properties after immersion of the one-component sealant **Sikaflex® PRO-3 (i-cure)** in test liquids according to section 5.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

Verbal order of: 2011-02-16

Ref.: Mr Ralf Heinzmann

Sample receipt: 20011-02-17 and 2011-02-25

Test period: 2011-03-01 to 2011-05-27

The test report comprises 5 pages.

Würzburg, 2011-07-27
Sc/ste

i. V. 

Dr.-Ing. Marcus Heindl

International akkreditiert

i. A.



Wolfgang Ries

SKZ - TeConA GmbH

The original language of the report is German. In case of doubt, the German version is obligatory.

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1. Order

On 16 February 2011 the company Sika Deutschland GmbH, Stuttgarter Straße 117, 72574 BAD URACH, GERMANY, placed a verbal order with SKZ - TeConA GmbH to test the change in mass and volume as well as the adhesion and cohesion properties after immersion of the one-component sealant **Sikaflex[®] PRO-3 (i-cure)** in test liquids according to section 5.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

2. Test material

On 17 February 2011 and 25 February 2011 SKZ - TeConA GmbH received the following samples for testing:

20 plastic bags	one-component joint sealant
Designation:	Sikaflex[®] PRO-3 (i-cure)
Base material:	polyurethane
Batch:	0012786460
Colour:	plain white

100 ml one-component priming for absorbent substrates (concrete)	
Designation:	Sika Primer 3N
Batch:	0012657006

3. Test procedure and test scope

Testing of the change in mass and volume as well as the adhesion and cohesion properties after immersion of the one-component sealant **Sikaflex[®] PRO-3 (i-cure)** in test liquids was performed in accordance with section 5.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

The one-component sealant **Sikaflex[®] PRO-3 (i-cure)** was tested in conjunction with **Sika Primer 3N** and substrate mortar M1 according to ISO 13640.

Usually we carry out tests according to standards for which we have an accreditation. The list of all standards for which we are accredited is shown on the homepage at www.skz.de.

Test specimen preparation and pre-treatment

For the testing samples with dimensions of joint 12 x 12 x 50 mm were produced according to DIN EN ISO 8340. As substrate Mortar M1 in accordance with ISO 13640 was used. The contact surfaces were pre-treated with primer **Sika Primer 3N**.

The preconditioning of the samples was carried out according to DIN EN ISO 8340, method B.

method A: 28 days at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ rel. humidity.

method B: The samples were conditioned according to method A and were then subjected three times to the following storage cycle:

- a) 3 days in the oven at $(70 \pm 2) ^\circ\text{C}$
- b) 1 day in distilled water at $(23 \pm 2) ^\circ\text{C}$
- c) 2 days in the oven at $(70 \pm 2) ^\circ\text{C}$
- d) 1 day in distilled water at $(23 \pm 2) ^\circ\text{C}$

Test liquids:

As test liquids summer diesel according to DIN EN 590 and jet fuel type Jet A1 according to NATO Code 34 were used.

3.1 Change in mass and volume after immersion in test liquid

Testing of the change in mass and volume after immersion in test liquid was conducted according to section 5.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants and according to EN 14187-4 - cold applied joint sealants - Part 4, Test methods for the determination of the change in mass and volume after immersion in test fuel, class D (liquid chemical as appropriate).

The test is conducted for medium stress with a stress duration of up to 72 h according to section 3.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

Requirements of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants and the EN 14188-2 Joint fillers and sealants, Part 2 - Specifications for cold applied sealants.

Change in volume < 30 % and

Weight loss after back drying < 25 %.

3.2 Adhesion and cohesion properties after immersion in test liquid

Testing of the change in mass and volume after immersion in test liquid was conducted according to section 5.4.3 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants and according to EN 14187-6, cold applied joint sealants - Part 6, Test methods for the determination of adhesion and cohesion properties after immersion in liquid chemicals, class D (liquid chemical as appropriate).

The test is conducted for medium stress with a stress duration of up to 72 h according to section 3.4.4 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

Requirements of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants :

Change of the tensile stress value between -50 % and +20 % compared to the specimen which was not subjected to a preliminary stress.

Requirement of the EN 14188-2 Joint fillers and sealants, Part 2 - Specifications for cold applied sealants:

no failure

4 Results

4.1 Change in mass and volume after immersion in test liquid

change in mass after immersion in test liquid			
test liquid	test duration	specification	result
diesel	72 h	< 25 %	-18.3 %
Jet A1			-24.8 %

change in volume after immersion in test liquid			
test liquid	test duration	specification	result
diesel	72 h	< 30 %	-8.0 %
Jet A1			-8.9 %

4.2 Adhesion and cohesion properties after immersion in test liquid

test liquid	test temperature	test duration	extension	specification	result
diesel	23 °C	72 h	100 %	Δ E100 +20 % to -50 %	-4.3 %
Jet A1					-7.1 %

After immersion, the specimens showed slight swelling.

5. Assessment of the results

The one-component joint sealant **Sikaflex[®] PRO-3 (i-cure)** in conjunction with **Sika Primer 3N** meets the requirements of the change in mass and volume as well as the adhesion and cohesion properties after immersion in the test liquid diesel and Jet A1 according to section 5.3.2 of the approval principles for joint sealing systems in storing, filling and handling plants, Part 1 - Joint sealants.

The requirements of the EN 14188-2 (Joint fillers and sealants, Part 2 - Specifications for cold applied sealants) relating to the change in mass and volume as well as the adhesion and cohesion properties after immersion in the test liquids diesel and fuel Jet A1 are also met.