

**Test report no.:** 94931/11-II

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

**Order:** Testing of one-component polyurethane joint sealant  
**Sikaflex® PRO-3 (i-cure)**  
according to DIN EN ISO 11600 - F - class 25 HM  
with substrate mortar M1 according to ISO 13640.

**Verbal order of:** 2011-02-16 **Ref:** Mr Ralf Heinzmann

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

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

This test report comprises of 6 pages.

Würzburg, 2011-06-09

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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 one-component polyurethane joint sealant **Sikaflex® PRO-3 (i-cure)** in accordance to DIN 11600 - Type F - class 25 HM with substrate mortar M1 according to ISO 13640.

## 2. Test material

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

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

100 ml one-component priming for absorbent substrates (concrete)

Designation:	<b>Sika Primer 3N</b>
Batch:	0012657006

## 3. Test procedure

Testing of one-component silicone joint sealant **Sikaflex® PRO-3 (i-cure)** was carried out in accordance with DIN EN ISO 11600 (edition April 2004), table 3 - requirements for construction sealants (F) - classification 25 HM.

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](http://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 as contact material. 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  $(23 \pm 2)$  °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  $(70 \pm 2)$  °C
- b) 1 day in distilled water at  $(23 \pm 2)$  °C
- c) 2 days in the oven at  $(70 \pm 2)$  °C
- d) 1 day in distilled water at  $(23 \pm 2)$  °C

### 3.1 Elastic recovery

This test was carried out according to ISO 7389 with an extension of 100 %.

Requirement: Elastic recovery shall be at least 70 %.

### 3.2 Tensile properties (secant tensile modulus)

The test was carried out according to ISO 8339. The secant tensile modulus was determined on test specimens which were extended by 100 % of the original width at temperatures of 23 °C and 20 °C.

Requirement:

Secant tensile modulus at 23 °C:  $> 0.4 \text{ N/mm}^2$   
at -20 °C:  $> 0.6 \text{ N/mm}^2$

### 3.3 Tensile properties at maintained extension

This test was carried out according to DIN EN ISO 8340 with an extension of 100 % and at a temperature of 23 °C and -20°C.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

### 3.4 Determination of adhesion/cohesion properties at variable temperatures

This test was carried out according to ISO 9047. The amplitude of extension/compression was  $\pm 25$  % of the initial joint width.

Requirement:

The joint sealant must not separate from the contact material nor shall the joint sealant display any signs of crack formation.

3.5 Adhesion and cohesion properties at maintained extension after immersion in water

This test was carried out according to ISO 10590 with an extension of 100 %.

Requirement:

After 24 h neither an adhesive nor a cohesive failure shall occur on the test specimens which are extended by 100 %.

3.6 Change in volume

The test was carried out according to ISO 10563.

Requirement: The change in volume must be  $\leq 10$  %.

3.7 Recovery

This test was carried out according to ISO 7390, method A and B (horizontal and vertical position) at 5 °C and 50 °C.

Requirement:

According to method A and B at 5 °C and 50 °C the slump (flow) of the joint sealant must not exceed 3 mm.

**4. Test results**

4.1 Elastic recovery

Elastic recovery was 98.3 %.



4.2 Tensile properties (secant tensile modulus)

<b>extension [%]</b>	<b>temperature [°C]</b>	<b>secant tensile modulus [N/mm<sup>2</sup>]</b>
100	23	0.7
100	-20	1.3

4.3 Tensile properties at maintained extension

<b>extension [%]</b>	<b>temperature [°C]</b>	<b>adhesion/cohesion properties after 24 h of extension</b>
100	23	+
100	-20	+

+ = The joint sealant of test specimens extended by 100 % of the initial joint width did not display any signs of crack formation or separation from the adherent surface.

4.4 Determination of adhesion/cohesion properties at variable temperatures

Samples did not show any adhesion or cohesion cracks.

4.5 Adhesion and cohesion properties at maintained extension after immersion in water

Samples did not show any adhesion or cohesion cracks.

4.6 Change in volume

The change in volume was -0.6 %.

4.7 Recovery

<b>method</b>	<b>temperature in °C</b>	<b>slump in mm</b>
A vertical	5	0
A vertical	50	0
B horizontal	5	0
B horizontal	50	0

**5. Designation**

Joint sealant DIN EN ISO 11600 - F - 25 LM - M1P

**6. Assessment of test results**

Testing of one-component polyurethane joint sealant **Sikaflex® PRO-3 (i-cure)** in conjunction with **Sika Primer 3N** was carried out in accordance with DIN EN ISO 11600 (edition April 2004), table 3 - requirements for construction sealants (F) - classification 25 HM.