

**Test Report No. 7191238129-MEC20/02A\_AD1-ED**  
dated 31 Aug 2020



PSB Singapore

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**SUBJECT:**

Testing of sealant submitted by Hangzhou Zhijiang Silicone Chemicals Co., Ltd

**TESTED FOR:**

Finotech Switzerland AG  
Talacherring 6a  
8103 Unterengstringen  
Switzerland

Attn: Mr Joerg Szybalski

**SAMPLE DESCRIPTION:**

1. No physical test sample was submitted for testing 'Finotech® SQ-500' which is the subject of this additional test report.
2. This additional test report is not applicable for certification scheme application with any certification bodies.
3. The test results stated in this additional test report are based exclusively on the test results of a past submitted and tested sample reported in test report No. 7191238129-MEC20/02A-ED dated 31 Aug 2020.
4. This additional test report is issued on the basis of the declaration by the customer that 'Finotech® SQ-500' which is the subject of this additional test report is exactly the same as the original sample provided for test report No. 7191238129-MEC20/02A-ED dated 31 Aug 2020 in terms of technical specification and performance.
5. The details of the product, including name, brand, article number and any technical specification are solely provided by the client and no verification has been done by TUV SUD PSB Pte Ltd to whether such details are true and correct.
6. The detailed declaration by the client as follows:
  - Company name: Hangzhou Zhijiang Silicone Chemicals Co., Ltd.
  - Address: No. 1717 Century Avenue, Linjiang Industry Park, Xiaoshan Hangzhou, Zhejiang China
  - Name of authorised person: Mr John Zhao
  - Company telephone number: 18058736111
  - Email address: john.zhao@chinazhijiang.com

**TEST METHODS:**

Adopted ASTM C920 : 2018 Standard Specification For Elastomeric Joint Sealants



LA-2007-0380-A LA-2007-0386-C  
LA-2007-0381-F LA-2010-0464-D  
LA-2007-0382-B LA-2018-0702-B  
LA-2007-0383-G LA-2018-0703-G  
LA-2007-0384-G LA-2020-0747-L  
LA-2007-0385-E

The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council. Inspections/Calibrations/Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our inspection body/laboratory.

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TUV®



Staining And Colour Change, UV Exposure

1. Adopted ASTM C510 : 2016 Standard Test Method For Staining And Colour Change Of Single Or Multi-Component Joint Sealants

Test equipment : QUV Weatherometer  
Lamp designation : Fluorescent UVA 340 mm  
Test cycle : 8 hours UV exposure at 55°C and 4 hours condensation at 45°C (ASTM G154)  
Exposure duration : 100 hours  
No. of determinations : 4 samples: 2 samples with sealant and 2 samples without sealant (For UV Exposure)  
2 control samples: 1 sample with sealant and 1 sample without sealant (Standard Conditions)

Staining And Colour Change, Standard Conditions In Distilled Water

Test apparatus : Container with distilled water  
Test condition : Distilled water immersion for 1 minute, once a day, (5 days per week)  
Test duration : 14 days  
No. of determinations : 2 samples: 1 sample with sealant and 1 sample without sealant (For distilled water immersion)  
2 control samples: 1 sample with sealant and 1 sample without sealant (Standard Conditions)

Extrudability

2. Adopted ASTM C1183/C1183M : 2013 (2018) Standard Test Method For Extrusion Rate Of Elastomeric Sealants

Test pressure : 40 psi  
No. of determination : 1

Flow Properties

3. ASTM C639 : 2015 Standard Test Method For Rheological (Flow) Properties Of Elastomeric Sealants

Method : Test method for 'Type II' sealant  
Test conditions : a) 4.4°C in environmental chamber for 4 hours  
b) 50°C in oven for 4 hours  
No. of determinations : 2 for vertical and horizontal displacements

Hardness

4. ASTM C661 : 2015 Standard Test Method For Indentation Hardness Of Elastomeric-Type Sealants By Means Of A Durometer

Test Conditions:

a) 23°C and 50% relative humidity for 7 days  
b) 38°C and 95% relative humidity for 7 days  
c) 23°C and 50% relative humidity for 7 days  
No. of determinations : 2, 3 points per test piece



Tack-Free Time

5. ASTM C679 : 2015 Standard Test Method For Tack-Free Time Of Elastomeric Sealants

No. of determinations : 2

Cyclic Adhesion & Cohesion

6. Adopted ASTM C719 : 2014 (2019) Standard Test Method For Adhesion And Cohesion Of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)

Test Conditions:

- a) 23°C and 50% relative humidity for 7 days
- b) 38°C and 95% relative humidity for 7 days
- c) 23°C and 50% relative humidity for 7 days
- d) Immersion in distilled water at 23°C for 7 days
- e) Drying in oven at 70°C for 7 days

Substrate : Anodized aluminium and glass  
Test temperature : Room temperature  
No. of determinations : 3 for class 50 per substrate

Effects Of Heat Ageing

7. ASTM C1246 : 2017 Standard Test Method For Effects Of Heat Ageing On Weight Loss, Cracking, And Chalking Of Elastomeric Sealants After Cure

Test Conditions:

- a) 23°C and 50% relative humidity for 28 days
  - b) 70°C for 21 days
- No. of determinations : 3, 1 as control

Effects Of Accelerated Weathering

8. Adopted ASTM C793 : 2005 (2017) Standard Test Method For Effects Of Accelerated Weathering On Elastomeric Joint Sealants

Test Conditions:

23°C and 50% relative humidity for 21 days

Test equipment : QUV Weatherometer  
Test cycle : 8 hours UV exposure at 55°C and 4 hours condensation at 45°C (ASTM G154)  
Lamp designation : Fluorescent UVA 340 mm  
Exposure duration : 250 hours  
No. of determinations : 3 (1 as control)

Bend test

Apparatus : Steel mandrel  
Test condition : -26°C for 24 hours  
No. of determinations : 3



Adhesion-In-Peel

9. Adopted ASTM C794 : 2018 Standard Test Method For Adhesion-In-Peel Of Elastomeric Joint Sealants

Test Conditions:

23°C and 50% relative humidity for 21 days

Substrate : Anodized aluminium and glass  
 Crosshead speed : 50 mm/min  
 No. of determinations : 4 per substrate

**CONDITIONING:**

Unless otherwise specified, all test specimens were tested at 23 ± 2°C and 50 ± 5% relative humidity.  
 Standard Conditions parameters: 23 ± 2°C and 50 ± 5% relative humidity.

**TEST RESULTS:**

Test	'Finotech® SQ-500'	ASTM C920 : 2018 Standard Specification For Elastomeric Joint Sealants
1. Staining And Colour Change	No staining No colour change	The sealant shall not cause any visible stain on the top surface of a white cement mortar base
2. Extrudability	146.0 ml/min	Type S (single component), grade NS (non-sag or gunnable sealant) shall have an extrusion rate of not less than 10 ml/min
3. Rheological (Flow) Properties	Vertical displacement: 0 mm sag Horizontal displacement: No deformation	Grade NS (non-sag) or gunnable sealant shall have flow characteristics such that it does not sag more than 4.8 mm ( <sup>3</sup> / <sub>16</sub> in.) in vertical displacement. Also the sealant shall show no deformation in horizontal displacement (refer to Types II and IV in the tests)
4. Indentation Hardness	test piece 1, average : 17.8 test piece 2, average : 18.5 average of 2 test pieces : 18.2	Use T1 (traffic) sealant shall have a hardness reading, after being properly cured, of not less than 25 Use T2 (traffic) sealant shall have a hardness reading, after being properly cured, of less than 25 Use NT (non-traffic) sealant shall have a hardness reading, after being properly cured, of less than 60
5. Tack-Free Time	No transfer of test specimens to the polyethylene film	There shall be no transfer of the sealant to the polyethylene film when tested at 72 hours



**TEST RESULTS:**

Test	'Finotech® SQ-500'	ASTM C920 : 2018 Standard Specification For Elastomeric Joint Sealants
6. Adhesion & Cohesion Under Cyclic Movement, Class 50 a. anodized aluminium b. glass	No loss in bond No loss in bond	The total loss in bond and cohesion areas among the three specimens tested for each surface shall be no more than 9 cm <sup>2</sup> (1½ in. <sup>2</sup> ) with standard mortar, glass, and aluminium or any other specified substrates
7. Effects Of Heat Ageing On Weight Loss, Cracking And Chalking, average	0.9% No cracking and chalking	The sealant shall not lose more than >7% of its original weight or show any cracking and chalking
8. Effects Of Accelerated Weathering	No cracks after UV exposure and bend test	The sealant shall show no cracks greater than those shown in example #2 of Figure 1 in ASTM C793 after the specified UV exposure and shall show no cracks greater than those shown in example #2 of Figure 2 in ASTM C793 after exposure at cold temperature and the bend test (refer to Photo 1)
9. Adhesion-In-Peel, average a. anodized aluminium b. glass	136.8 N (30.8 lbf) 119.1 N (26.8 lbf) cohesive failure within the sealant and no adhesive bond loss between sealant and substrate for each test piece	The peel strength for each individual test shall not be less than 22.2 N (5 lbf) when tested with standard mortar, glass, and aluminium or any other specified substrate. In addition, the sealant shall show no more than 25% adhesive bond loss for each individual test

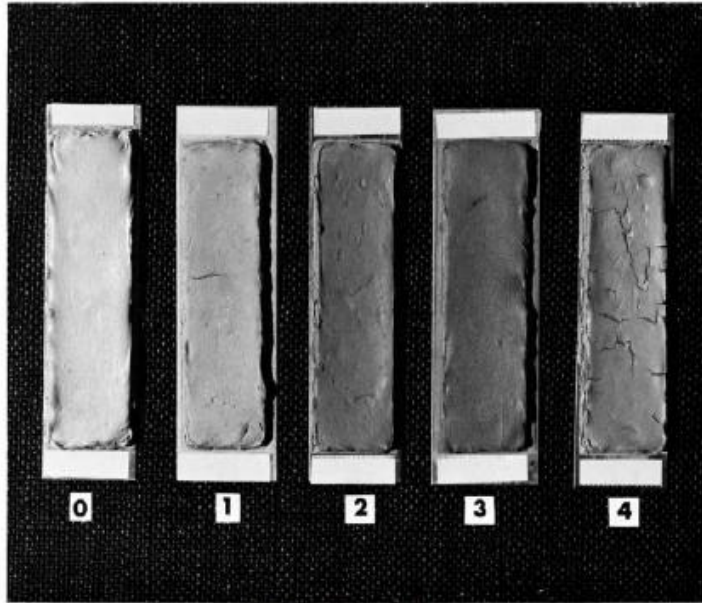
**REMARKS:**

1. The test conditions for staining and colour change tests and effects of accelerated weathering test were adopted from ASTM G154 : 2016 Standard Practice For Operating Fluorescent Light Apparatus For UV Exposure Of Non-Metallic Materials.
2. For effects of accelerated weathering test, in ASTM C793, Photo 1 consists of Figure 1 which indicate the presence of cracks after UV exposure and Figure 2 which indicate the presence of cracks after bend test.
3. The substrates did not require priming before application of the sealant as specified by the client.
4. The class and types of substrate are specified by the client for ASTM C719 joint movement and ASTM C794 peel strength tests.
5. One sausage foil was sent to other section for material identification/verification FTIR test.
6. The anodized aluminium substrates were provided by Hangzhou Zhijiang Silicone Chemicals Co., Ltd.

Eddie Suwand  
Testing Officer  
Senior Associate Engineer

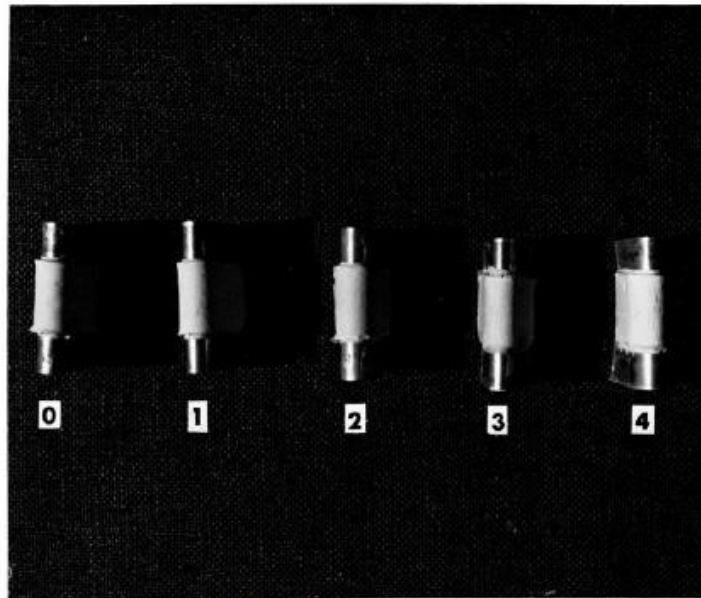
Tan Boon Kwee  
Assistant Vice President  
Real Estate & Infrastructure  
Mechanical Centre

 C793 - 05 (2017)



NOTE 1—Number 0 represents no cracks.

FIG. 1 Examples of Cracking Obtainable After the Weathering Test



NOTE 1—Number 0 represents no cracks.

FIG. 2 Examples of Cracking Obtainable After the Bend Test

Photo 1: Figures 1 and 2 showing presence of cracks after UV exposure and after bend test respectively  
(taken from ASTM C793 as a guide and are not client's samples)



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Effective 01 September 2020

