ALSEAL MARKETING SDN. BHD. (625140-D)
LOT PT 2291, JALAN KAMPUNG BARU, KAMPUNG BARU SUNGAI BULOH,
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EMAIL: Info@alsealmarketing.com **WEBSITE:** http://www.alsealmarketing.com
GST No.: 001625505792

Our reference: 05/J18/LTR/Y326

5th October 2018

Dear Valued Customer / Business Partners,

RE: "ALSEAL" AS-205 High Performance Silicone Sealant – Product Performance

This is to confirm that the product performance of **"ALSEAL" AS-205 High Performance Silicone Sealant** has been tested by ISO/IEC 17025 accredited independent third-party testing labs. The following standards were used to test the performance of AS-205:

Test standard	Description	Report No.
ASTM C920	Standard Specification for Elastomeric Joint Sealants	7191157064-MEC17-01C-ED (221411390)
ASTM C719	Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)	7191196300-MEC18/01-ED (221415052)

Conclusion

AS-205 is classified as a **Type S** (single-component sealant), **Grade NS** (non-sag sealant), **Class 50** (±50% movement), Use **NT** (non-traffic), **M** (mortar), **A** (aluminium), **G** (glass) according to ASTM C920 and ASTM C719.

Should you require further information concerning the above product, please do not hesitate to contact us.

Thank you.

Yours sincerely,
For Alseal Marketing Sdn. Bhd.

Prepared by: Yap Wai Hoong
(R&D Chemist)

Verified by: Alex Ng
(Technical Manager)

Test Report No. 7191157064-MEC17/01C-ED (221411390)
dated 13 Apr 2017

PSB Singapore

Choose certainty.
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Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSB Pte Ltd. In addition, this report is governed by the terms set out within this report.

SUBJECT:

Testing of sealant

TESTED FOR:

Alseal Marketing Sdn Bhd
Lot 2291, Jalan Kampung Baru
Kg. Baru Sungai Buloh
47000 Selangor Darul Ehsan
Malaysia

SAMPLE DESCRIPTION:

The following items were received on 27 Jan 2017 as shown:

Sample	Size	Quantity
'AS-205 High Performance Silicone Sealant'	300 ml/cartridge	10 cartridges

TEST METHODS:

Adopted ASTM C920 : 2008 Standard Specification For Elastomeric Joint Sealants

Staining And Colour Change

1. Adopted ASTM C510 : 2005 Standard Test Method For Staining And Colour Change Of Single Or Multi-Component Joint Sealants

Test cycle	:	8 hours UV exposure at 55°C and 4 hours condensation at 45°C
Exposure duration	:	100 hours
No. of determination	:	1 for staining test, 1 for colour change test, 1 as control

Extrudability

2. Adopted ASTM C1183 : 2008 Standard Test Method For Extrusion Rate Of Elastomeric Sealants

Test pressure	:	40 psi
No. of determination	:	1

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1 Science Park Drive, #02-01
Singapore 118221

Flow Properties

3. ASTM C639 : 2007 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 : 2006 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 : 2003 Standard Test Method For Tack-Free Time Of Elastomeric Sealants

No. of determinations	:	2

Cyclic Adhesion & Cohesion

6. Adopted ASTM C719 : 2005 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

Test temperature	:	Room temperature
Substrate	:	Mortar, Aluminium and Glass
No. of determinations	:	3 per substrate for class 25

Effects Of Heat Ageing

7. ASTM C1246 : 2006 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 Standard Test Method For Effects Of Accelerated Weathering On Elastomeric Joint Sealants

Test cycle	:	8 hours UV exposure at 55°C and 4 hours condensation at 45°C
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. ASTM C794 : 2006 Standard Test Method For Adhesion-In-Peel Of Elastomeric Joint Sealants

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 water at 23°C for 7 days

Crosshead speed	:	50.8 mm/min
Substrate	:	Mortar, Aluminium and Glass
No. of determinations	:	4 per substrate

Material Identification/Verification

10. ASTM E1252 : 2007 Standard Practice For General Techniques For Obtaining Infra-Red Spectra for Qualitative Analysis
Material Identification/Verification By Fourier Transform Infra-Red Spectrometric Analysis (FTIR)

CONDITIONING:

Unless otherwise specified, all test specimens were tested at 23 ± 2°C and 65 ± 5% relative humidity.

TEST RESULTS:

Test	'AS-205 High Performance Silicone Sealant'	ASTM C920 : 2008 Standard Specification For Elastomeric Joint Sealants
1. Staining And Colour Change	No staining and no colour change	The sealant shall not cause any visible staining on the top surface of a white cement mortar base
2. Extrudability	50.5 ml/min	Type S (single component), grade NS (non-sag or gunnable sealant) shall have an extrusion rate time of not <10 ml/min

TEST RESULTS:

Test	'AS-205 High Performance Silicone Sealant'	ASTM C920 : 2008 Standard Specification For Elastomeric Joint Sealants
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 >4.8mm in vertical displacement and shall show no deformation in horizontal displacement (refers to Types II and IV sealants)
4. Indentation Hardness	test piece 1, average : 23.5 test piece 2, average : 25.6 average of 2 test pieces : 24.6	T (traffic) sealant shall have a hardness reading of not <25 or >50 after being properly cured NT (non-traffic) sealant shall have a hardness reading of not <15 or >50 after being properly cured
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
6. Adhesion & Cohesion Under Cyclic Movement, Class 25 a. Mortar b. Aluminium c. Glass	 No bond failure No bond failure No bond failure	The total loss in bond and cohesion areas among the three specimens tested for each surface shall not be >9 cm^2 with mortar, aluminium or glass substrates
7. Effects Of Heat Ageing On Weight Loss, Cracking And Chalking, average	1.0% No cracking and chalking	The sealant shall not lose >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 after the specified UV exposure and shall show no cracks after exposure at cold temperature and the bend test
9. Adhesion-In-Peel, average a. Mortar b. Aluminium c. Glass	 42.7 N (9.6 lbf) 41.5 N (9.3 lbf) 32.6 N (7.3 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 <22.2 N (5 lbf) and the sealant shall show no >25% adhesive bond loss for each individual test
10. Material Identification/ Verification By FTIR	Silicone-based material (refer Figure 1)	-

REMARKS:

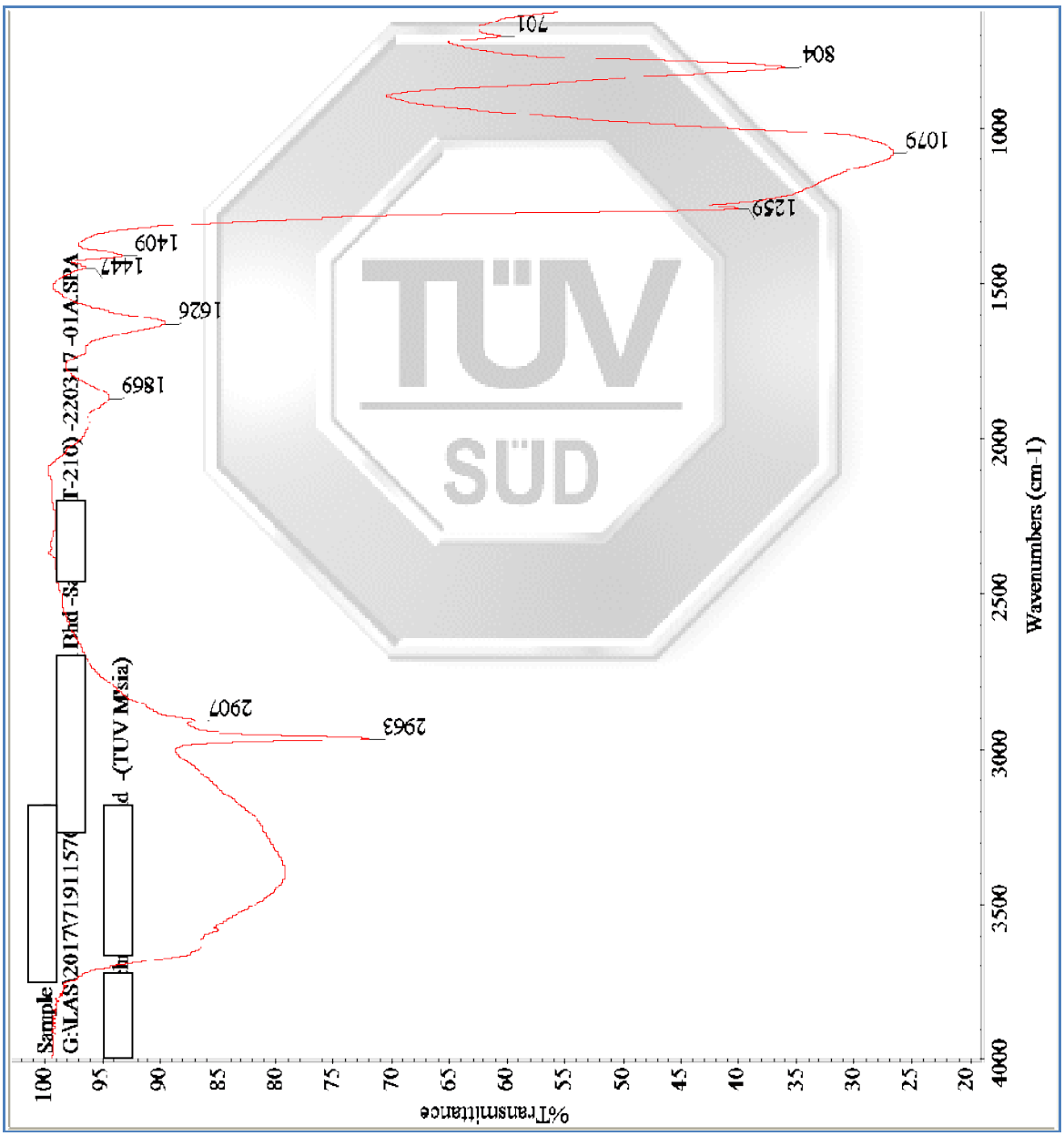
1. The test conditions for staining and colour change tests and effects of accelerated weathering test were adopted from ASTM G154 : 2006 Standard Practice For Operating Fluorescent Light Apparatus For UV Exposure Of Non-Metallic Materials.
2. The mortar, aluminium and glass substrates were requested by the client for cyclic adhesion/cohesion and adhesion-in-peel tests.
3. The substrates do not require priming prior to application of the sealant as specified by the client.
4. The class 25 joint movement for cyclic adhesion/cohesion test was specified by the client.

PSB Singapore

Eddie Suwand
Senior Associate Engineer

Alex Tan
Engineer
Building
Mechanical Centre

Figure 1 : IR spectrum of 'AS-205 High Performance Silicone Sealant'



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2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

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July 2011

Test Report No. 7191196300-MEC18/01-ED (221415052)
dated 5 Oct 2018

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SUBJECT:

Testing of sealant

TESTED FOR:

Alseal Marketing Sdn Bhd
No. 2291, Jalan Kampung Baru
Kg. Baru Sungai Buloh
47000
Selangor Darul Ehsan
Malaysia

Attn: Mr Cheong Chee Leong

SAMPLE DESCRIPTION:

The following items were received on 10 Aug 2018 as shown:

Sample	Size	Quantity
'AS-205 High Performance Silicone Sealant'	300 ml/cartridge	3 cartridges

TEST METHOD:

Adopted ASTM C920 : 2014a Standard Specification For Elastomeric Joint Sealants

Cyclic Adhesion & Cohesion

Adopted ASTM C719 : 2014 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 : Aluminium
Test temperature : Room temperature
No. of determinations : 3 for Class 50

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1 Science Park Drive, #02-01
Singapore 118221

CONDITIONING:

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

TEST RESULT:

Test	'AS-205 High Performance Silicone Sealant'	ASTM C920 : 2014a Standard Specification For Elastomeric Joint Sealants
Adhesion & Cohesion Under Cyclic Movement, Class 50	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^2 ($1^1/_2$ $in.^2$) with standard mortar, glass, and aluminium or any other specified substrates

REMARKS:

1. The class and substrate were specified by the client.
2. The substrates do not require priming before application of the sealant as specified by the client.

Eddie Suwand
Testing Officer
Senior Associate Engineer

Fabien Tan
Engineer
Real Estate & Infrastructure
Mechanical

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