CONSTRUCTION MATERIALS TECHNOLOGIES

LABORATORY TEST RESULTS

Report for: Zhengzhou Zhongyuan Silande High Technology Co., Ltd.
No. 28 Dongqing West St.,
Zhengzhou Hi-Tech Development Zone
Zhengzhou, Henan
P.R. China – 450001

Attention: Judy Huang

Product Name: MF896	**Manufacturer:** Zhengzhou Zhongyuan Silande High Technology Co., Ltd.
Date Received: *See Sampling Section*	**Source:** *See Sampling Section*
PRI-CMT Project No.: LCY-001-02-01	**Dates Tested:** April 7, 2017 – Dec. 22, 2017

Purpose: Determine specification properties for *Zhengzhou Zhongyuan Silande High Technology Co., Ltd.'s MF896* for compliance with ASTM D 5893: *Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements*. The product is a one part, cold applied sealant.

Test Methods: Testing was completed as described in ASTM D 5893/D5893M-10: *Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements*. Test methods assigned or referenced include ASTM C 639: *Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants*, ASTM C 661: *Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer*, ASTM C 679: *Standard Test Method for Tack-Free Time of Elastomeric Sealants,* ASTM C 792: *Standard Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants,* ASTM C 793: *Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants*, ASTM C 1183: *Standard Test Method for Extrusion Rate of Elastomeric Sealants,* ASTM D 412: *Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension,* ASTM D 2202: *Standard Test Method for Slump of Sealants* and ASTM D 5329: *Standard Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.*

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Sampling: The following materials were received by PRI.

Product	Source	Date
MF896	Zhengzhou Zhongyuan Silande High Technology Co., Ltd.	Feb. 23, 2017

Results of Testing:

Property	Test Method	Result	Requirement
Physical Property Requirements			
Cure Evaluation [*Pass/Fail*] 1 specimen; 1/2" x 1/2" x 2"; Cure specimen 21d+4h @ 73.4±3.6°F & 50±5%RH;	ASTM D 5893 Sec. 9.1	Pass	No presence of any uncured material
Rheological Properties 1 specimen; ¾" x ½" x 6"; Cond. sealant 16-24h @ 40±3.6°F			
Type NS – Slump (mm)	ASTM D 2202	2.5	≤ 7.6
Type SL – Type I [*Pass/Fail*]	ASTM C 639	NA	Smooth, level with no bubbling
Extrusion Rate (ml/min) 1 specimen; Cond. sealant 16h @ 73.4±3.6°F & 50±5%RH; Test Cond. @ 73.4±3.6°F & 50±5%RH Test with polyethylene nozzle @ 40psi for 60s	ASTM C 1183 Procedure A		
Specific Gravity		1.4	Report
Extrusion Rate		21	≥ 20
Tack-Free Time [*Pass/Fail*] 1 specimen; Test Cond. 73.4±3.6°F & 50±5%RH;	ASTM C 679	Pass	No transfer of the sealant when tested at 5h±10min
Actual Tack Free Time (min)		120	Report
Effects of Heat Aging (%) 2 specimens; 5" x 1-1/2" x 1/4"; Cure 7d @ 73.4±3.6°F & 50±5%RH; Test Cond. 21d @ 158±3.6°F	ASTM C 792		
Percent Weight Loss		1	≤ 10
Visual Examination for presence of cracks or chalking		Pass	No cracking or chalking

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Property	Test Method	Result	Requirement
Bond *[Pass/Fail]* 3 specimens per condition; 1/2" x 1/2" x 2"; Cure 21d+4h @ 73.4±3.6°F and 50±5%RH; Test 5 cycles; Rate 1/8 in/h Extension ½"	ASTM D 5893/ ASTM D 5329		
Non-Immersed Bond Tested @ -29+1°C		Pass	No crack, separation, or other opening
Water Immersed Bond Test Condition 96h immersed @ 73.4±3.6°F Tested @ -29+1°C		Pass	No crack, separation, or other opening
Oven-Aged Bond Test Condition 7d+2h @ 70+1°C Tested @ -29+1°C		Pass	No crack, separation, or other opening
Hardness *[dimensionless]* 2 specimens; 5" x 1-1/2" x 1/4"; 3 measurement readings per specimen (6 total); Cure. 21d @ 73.4±3.6°F & 50±5%RH	ASTM C 661		
Cond. 2h @ -29+1°C (Durometer Type A-2)		25	≤ 25
Cond. 23+2°C (Durometer Type 00)		59	≥ 30
Flow *[Pass/Fail]* 1 specimens; 40mm x 60mm x 3.2mm; Cure. 21d @ 73.4±3.6°F & 50±5%RH; Test Cond 72+0.5h @ 200+2°F	ASTM D5893/ ASTM D 5329	Pass	No flow
Ultimate Elongation (%) 5 specimens; Die C; Rate 20in/min; Cure 21d+4h @ 73.4±3.6°F & 50±5%RH Tested @ 73.4±3.6°F & 50±5%RH;	ASTM D 412 Method A	824	≥ 600
Tensile Stress @ 150% Elongation (psi) 5 specimens; Die C; Rate 20in/min Tested @ 73.4±3.6°F & 50±5%RH;	ASTM D 412 Method A	23	≤ 45
Effects of Accelerated Weathering *[Pass/Fail]* 3 specimens; 5" x 1-1/2" x 1/8"; Cure 72h @ 73.4±3.6°F and 50±5%RH; Test Cond. 5000h ASTM G 154, Cycle 1; Test Cond. 24h @ -15±3.6°F Test 180° around 1/2" ø mandrel in 1s @ -15°F	ASTM C 793		
Visual Inspection for cracking after accelerated weathering		Pass	Pass
Visual Inspection for cracking after cold exposure and low temperature bend		Pass	Pass
Resilience (%) 1 specimen; 6 oz.; Cure 21d+4h @ 73.4±3.6°F & 50±5%RH; Test Cond 7d + 2h @ 158+2°F Tested @ 73.4±3.6°F & 50±5%RH;	ASTM D5893/ ASTM D 5329	79	≥ 75

Note(s): None

LCY-001-02-01.1

Statement of Compliance:

The product tested complies with the specification properties within ASTM D 5893: *Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements*. The product was evaluated as a non-sag, single component silicone sealant. The laboratory test results presented in this report are representative of the material supplied.

Signed:	**Anthoy Catlett** **Laboratory Technician**	**Signed:**	**Jason Simmons** **Director**
Date:	January 10, 2018	**Date:**	January 10, 2018

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	01/10/2018	4	NA
Revision	01/10/2018	4	Editorial (Manufacturer identification)

END OF REPORT