March 14, 2019

Mr. Brian Bowers
SSP Polymers
17842 Sampson Ln
Huntington Beach, CA 92647

Phone: (844) 4-EZ-POUR
Cell: (714) 747-5785
Email: brian@ssppolymers.com

Subject: **Report of Sealant Testing – ASTM C920**
Product: SSP Polymers EZ Pour
TEC Project No: TEC
TEC Laboratory No: 18-1119

Dear Mr. Bowers:

Testing Engineering & Consulting Services, Inc. (TEC Services) is an AASHTO R18, ANS/IEC/ISO 17025:2005, and Army Corps of Engineering accredited laboratory. TEC Services is pleased to present this report of testing on the SSP Polymer's EZ Pour Self-Leveling Sealant received at our laboratory in November of 2018. Testing was performed in accordance with the terms and conditions of our Service Agreement (TEC-PRO-09-0516). It is our understanding that the submitted product is designated as a Type M, Class 12.5, Grade P | Use T, M, (Class 2) sealant per ASTM C920-18 *Standard Specification for Elastomeric Joint Sealants.* These test results pertain only to the sample tested.

The purpose of the testing was to evaluate the submitted coating in accordance with the following test methods:

- ASTM C639-15 *Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants*
- ASTM C1183-13 *Standard Test Method for Extrusion Rate of Elastomeric Sealants*
- ASTM C661-15 *Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer*
- ASTM C1246-00(2012) *Standard Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants After Cure*
- ASTM C679-15 *Standard Test Method for Tack-Free Time of Elastomeric Sealants*
- ASTM C510-05(2011) *Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants*
- ASTM C793-05(2010) *Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants*
- ASTM C719-14 *Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)*
- ASTM C794-15 *Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants*
- ASTM C1247-14 *Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids*

ASTM C639 – Horizontal Displacement

A closed-end stainless steel channel 6.00 inches in length, 0.75 inches wide, and 0.50 inches in depth was conditioned at 4.4± 2°C for two hours. At the end of the conditioning period, the channel was filled with the subject product and returned to the conditioning chambers. At the end of a four hour period, the sealant was examined for flow properties. Test results are reported in Table 2**.**

ASTM C661 – Durometer Hardness

Two 3.00 inch x 6.00 inch x 0.25 inch specimens were cast on aluminum plates and allowed to cure for 21 days at standard conditions of 73.4 ± 3.6ºF and a relative humidity of 50 ± 2. The Shore A Durometer was firmly pressed into each specimen. Readings were recorded when the pressure foot contacted the surface of the specimen. Three readings were recorded from three areas. Individual and average test results are reported in Table 3.

ASTM C1246 – Heat Aging

Three 6.00" x 3.00" 20 gage aluminum panels were cleaned and weighed to the nearest 0.01 grams. The subject product was extruded into a 5.00" x 1.50" template and struck off at a thickness of 1/8" on each aluminum panel. The specimens were cured for 28 days at standard conditions of 73.4 ± 3.6ºF and a relative humidity of 50 ± 4%. At the end of the cure period, each specimen was weighed to the nearest 0.01 grams. Two of the three specimens were placed in a forced-draft oven at 158 ± 3.6ºF for 21 days. The third specimen remained at standard conditions to serve as a control. At the end of the 21 day heat-aging period, the specimens were removed from the oven and allowed to cool for one hour. All three specimens were weighed again to calculate the percent weight loss during the heat aging process. Test results are reported in Table 4.

ASTM C679 – Tack Free Time

The subject submitted product was extruded into a rectangular template 1/8" in depth having inside dimensions of 3.75" x 1.00" on an aluminum plate. The specimen was tested by lightly touching the surface of the sealant with a film of polyethylene wrapped over a finger. When the sealant was able to be touched lightly without adhering to the polyethylene, the sealant specimen was covered with a polyethylene strip and loaded with a 30 gram brass weight. After a 30 second period, the weight was removed and the polyethylene strip was removed by pulling it 90° away from the sealant. The sealant was considered tack free when no sealant adhered to the strip after the 30 second loading period. The specimen was tested every minute for the first ten minutes after the template was filled and struck off, every 2 minutes for the next ten minutes, every 5 minutes for the next 160 minutes, then every hour until the tack-free time was achieved. Test results are reported in Table 2.

ASTM C510 – Stain & Color Change

Four 5.00 inch x 1.50 inch x 0.25 inch mortar tiles were prepared and allowed to cure for 4 hours at 73.4 ± 3.6 ºF and a relative humidity of 50 ± 4%. The subject submitted product was applied to two of the mortar tiles at a thickness of 0.25 inches and allowed to cure for 24 hours. The other two tiles served as a control. The two coated specimens and the two control specimens were placed inside the QUV accelerated weathering machine for 100 hours under 340 nm UV light. Specimens were visually examined for stain and color change. No stain or color change was observed in the mortar tile substrates. The specimens exhibited no staining or cracking. Photos of the test specimens and the control are shown in Photos 3-4.

ASTM C793 – Accelerated Weathering

The subject product was extruded into a template having inside dimensions of 5.00" x 1.50" on three 6.00" x 3.00" x 0.01" aluminum plates and struck off at a thickness of 1/8". The specimens were allowed to cure for 21 days at standard conditions of 73.4 ± 3.6 ºF and a relative humidity of 50 ± 4%. Two specimens were placed inside the QUV accelerated weathering machine for 250 hours under 340 nm UV light. One specimen remained unexposed at standard conditions to serve as a control. Specimens were examined after the UV exposure period for cracking and discoloration. The sealant did not exhibit fading, cracking, or peeling. Photos of the specimens after UV weathering are provided in Photos 5-6.

All three specimens and a 0.5" steel mandrel were then placed in a freezer at -15° ± 4ºF for 24 hours. At the end of this period, each specimen was bent 180° along its width around the mandrel, sealant side outward, within one second. Specimens were examined for cracks in the bend area. The specimens did not exhibit any signs of cracking. Photos of the test and control specimens after the bend test are provided in Photos 7-9.

ASTM C719 – Adhesion & Cohesion

Six specimens were prepared and tested in accordance with ASTM C719. Three specimens were prepared by bonding together two 3.0" x 1.0" x 1.0" mortar substrates with a 2.0" x 0.5" x 0.5" bead of the subject submitted product such that the sealant was flush with the substrates on one side and offset 0.5" on all other sides. Three specimens were prepared by bonding together two 3.00" x 0.25" x 0.25" anodized aluminum substrates with a 2.0" x 0.5" x 0.5" bead of the subject product such that the sealant was flush with the substrates on one side and offset 0.5" on all other sides. Mortar substrates were weathered to a CSP-3 surface profile prior to bonding. Specimens were allowed to cure for 21 days at standard conditions of 73.4 ± 3.6ºF and a relative humidity of 50 ± 2%, prior to testing. The specimens were then immersed in water for a period of 7 days. At the end of the

immersion period, the specimens were removed from the water and allowed to dry completely at standard conditions. The specimens were compressed to a joint width of 0.438" and placed in an oven at 158° F for seven days. The specimens were removed from the oven, allowed to cool, and placed into the Hockman Cycle test apparatus. The specimens were subjected to ten cycles of compression to 0.438" and extension to 0.563" at a rate of 0.125" per hour. Finally the specimens were subjected to ten cycles of extension at -15°F and compression at 158°F. Test results are reported in Table 2.

ASTM C794 – Adhesion-in-Peel

Four test specimens were prepared on mortar substrates and tested at an age of 21 days. A bead of the subject product 4.00 inches in length was applied to each substrate. A 1.00" x 10.00" strip of aluminum 20-mesh was immediately placed on the sealant and lightly tapped such that it was embedded in the wet sealant 2 mm from the substrate surface. A second bead of sealant was applied and a tooling device was used to strike it off at a depth of 4 mm, such that the wire mesh was embedded uniformly at the midpoint of the sealant depth. The specimens were allowed to cure at standard conditions of 73.4 ± 3.6ºF and a relative humidity of 50 ± 2% until the time of testing. Immediately prior to testing, the loose end of the wire mesh strip was bent back 180° and the sealant-substrate interface was cut slightly by a razor. The mortar substrate was secured to the base of the testing apparatus and the mesh strip was secured by a grip. The screen was pulled at a rate of 2.0 inches/minute for a total of 1 minute. The peak force was indicated by a load cell. The failure mode was considered adhesive if the sealant pulled away from the substrate and cohesive if the tear propagated through the sealant. Average and peak peel strength and failure mode is reported in Table 5.

Table 1 – SSP EZ Pour 65 SL – Product Information

Mix ID	**SSP EZ Pour**
Lot #	NA
Kit Type	2 Component
Material Temperature	73.2°
Ambient Temperature	74.3°
Humidity	52%
Type	M – Two Component
Grade	P - Pourable
Class	12.5
Use	T – Traffic, M - Mortar

Table 2 –SSP EZ Pour – Summary Test Results

Test Method	Notes	Test Property	Age	Average Result	Specification per ASTM C920
ASTM C639	Closed Channel @ 4.4°C	Rheological - Flow after 4 hours conditioning	Plastic	Self-Leveling	Grade P: Self-Leveling
ASTM C661	Shore A	Durometer Hardness	21 Days	77	Use T: >25
ASTM C1246		Visual Change Compared to Control	28 days	No Cracking or Chalking Rating = 0	No Cracking or Chalking
		Heat Aging % Weight Loss		0.91%	<7.00%
ASTM C679		Tack Free Time	Plastic	1 hour	<72 hours
ASTM C510	100 hours QUV-A 340 - Cycle 1	Stain & Color Change	7 days	No Stain or Color Change	No Stain or Color Change
ASTM C793	250 hours QUV-A 340 - Cycle 1	Accelerated Weathering - UV Exposure & Freezing	21 days	No Cracking or Chalking Rating = 0	No Cracking or Chalking
ASTM C719	Mortar Substrate	Bond Durability	21 days	0.0 in^2	<1.5 in^2 debonded – cumulative 3 specimens
ASTM C794	Mortar Substrate	Adhesion in Peel Peel Force (lbf./in.)	21 days	16.2	>5 lbf/in.

Table 3 – ASTM C661 – Shore A Hardness Test Results

Specimen Identification	Area 1	Area 2	Area 3	Average
SSP EZ Pour	76	78	77	**77**
	78	76	77	
	77	76	77	

Table 4 – ASTM C1246 – Heat Aging

Specimen Identification	Uncoated Aluminum Substrate Weight (g)	Initial Weight (g)	Final Weight (g)	Weight Loss (%)	Average Weight Loss (%)	Visual Observations
SSP EZ Pour	60.78	70.39	70.30	0.9	**0.9**	No cracking or chalking
	60.51	70.08	69.99	0.9		No cracking or chalking

Table 5 – ASTM C794 – Adhesion-in-Peel

Specimen Identification	Peel Distance in 1 Minute (in.)	Failure Mode	Peel Force (lbf)	Average Peel Force (lbf/in.)
SSP EZ Pour Mortar Substrate	1.05	Cohesive	14.9	**16.72**
	1.11	Cohesive	18.1	
	1.01	Cohesive	18.2	
	1.17	Cohesive	15.7	

Testing, Engineering and Consulting Services, Inc. appreciates the opportunity to provide our professional services for this important project. If you have any questions regarding this report, or if we can be of further assistance please contact us at 770-995-8000.

Sincerely,

TESTING, ENGINEERING & CONSULTING SERVICES, INC.

Geoffrey T. Uhal
Project Manager

James G. McCants III
Laboratory Manager, Chemist

Attachments: Photos 1 - 9

Photo 1 – Product As Received

Photo 2 – Fabricated Test Samples

Photo 3 – Adhesion & Peel Test Specimens

Photo 4 – ASTM C793 Specimens after UV Exposure – No Cracking

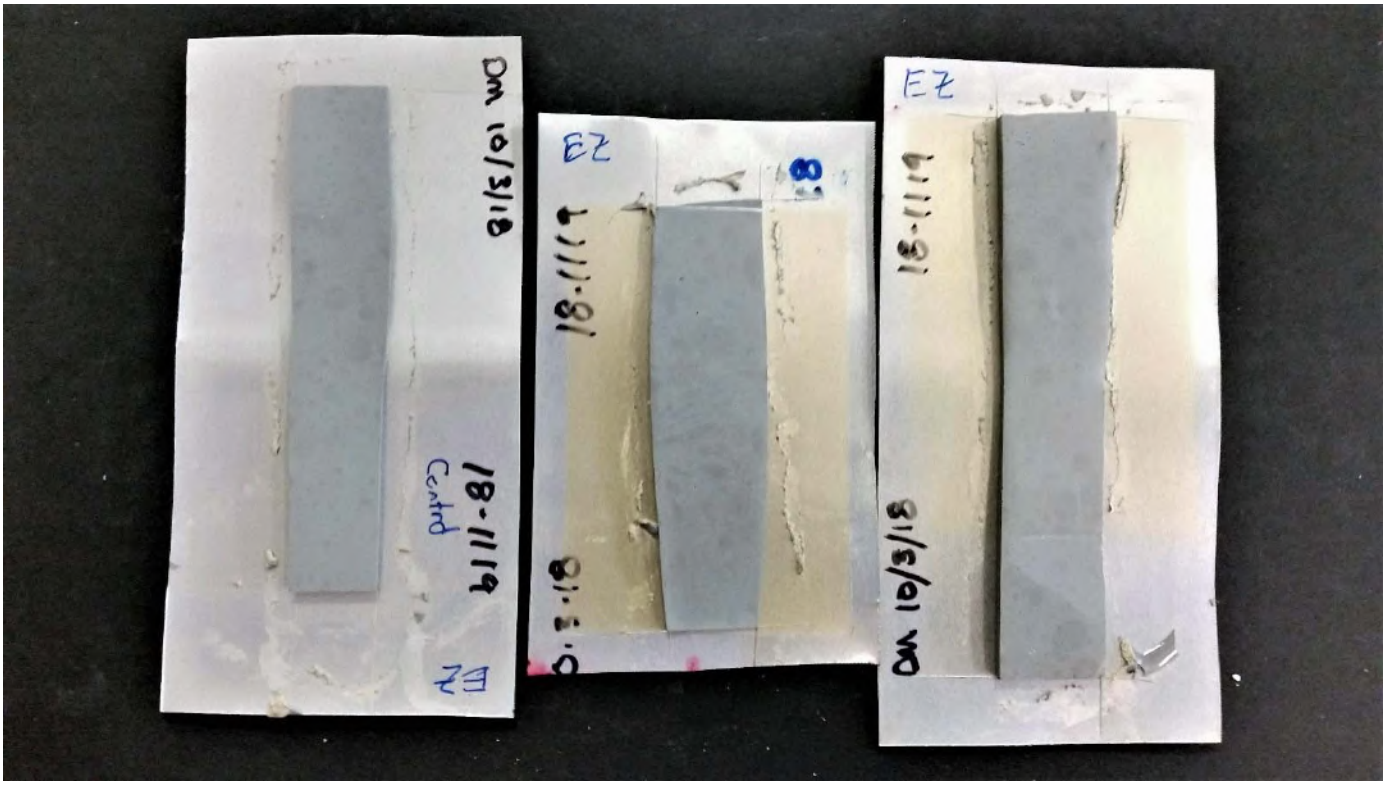

Photo 5 – ASTM C793 Specimens after 24 hrs Freezing & Mandrel Bend – No Cracking

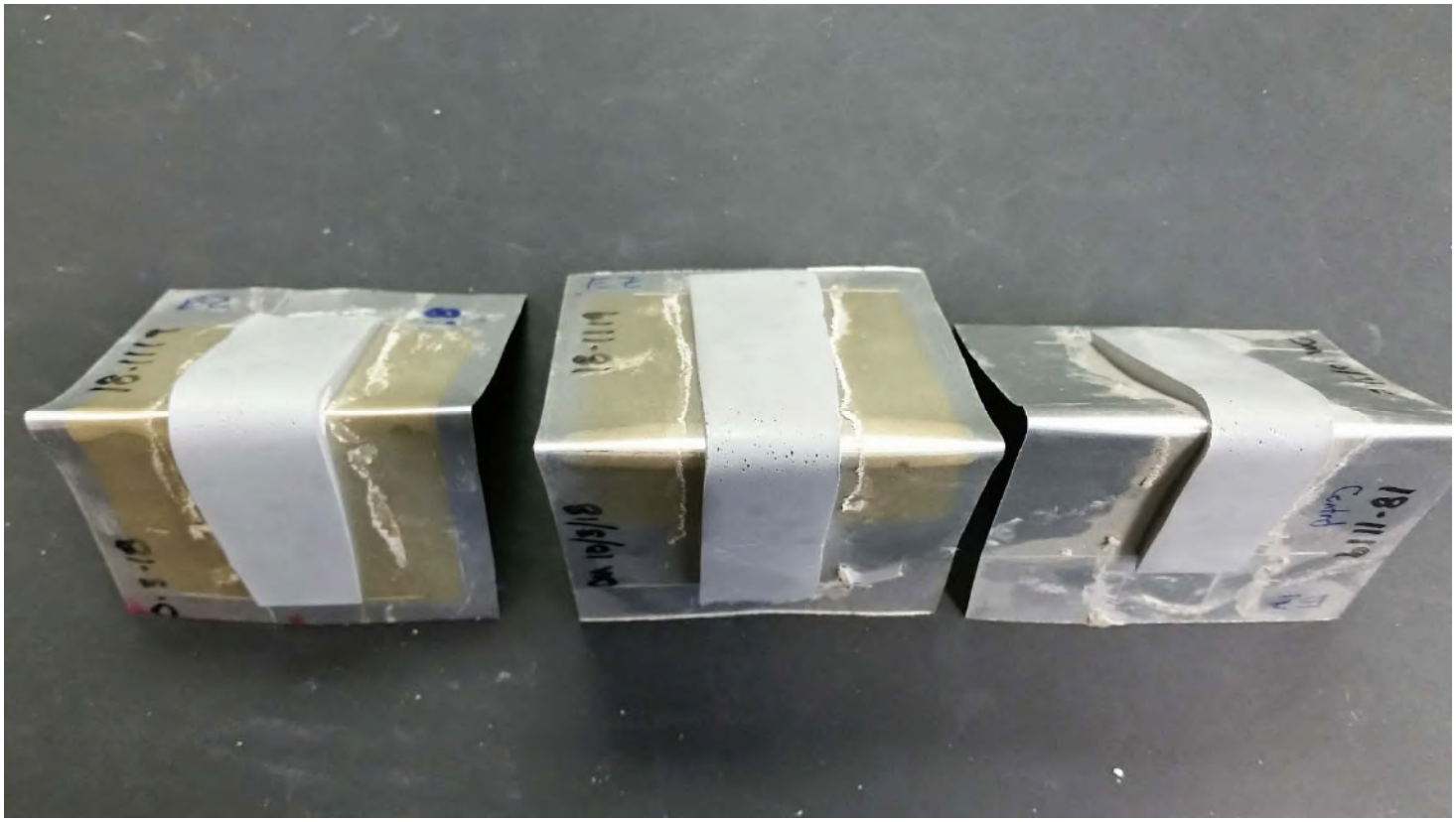

Photo 6 – ASTM C1246 Specimens after Heat Aging – No Cracking or Chalking

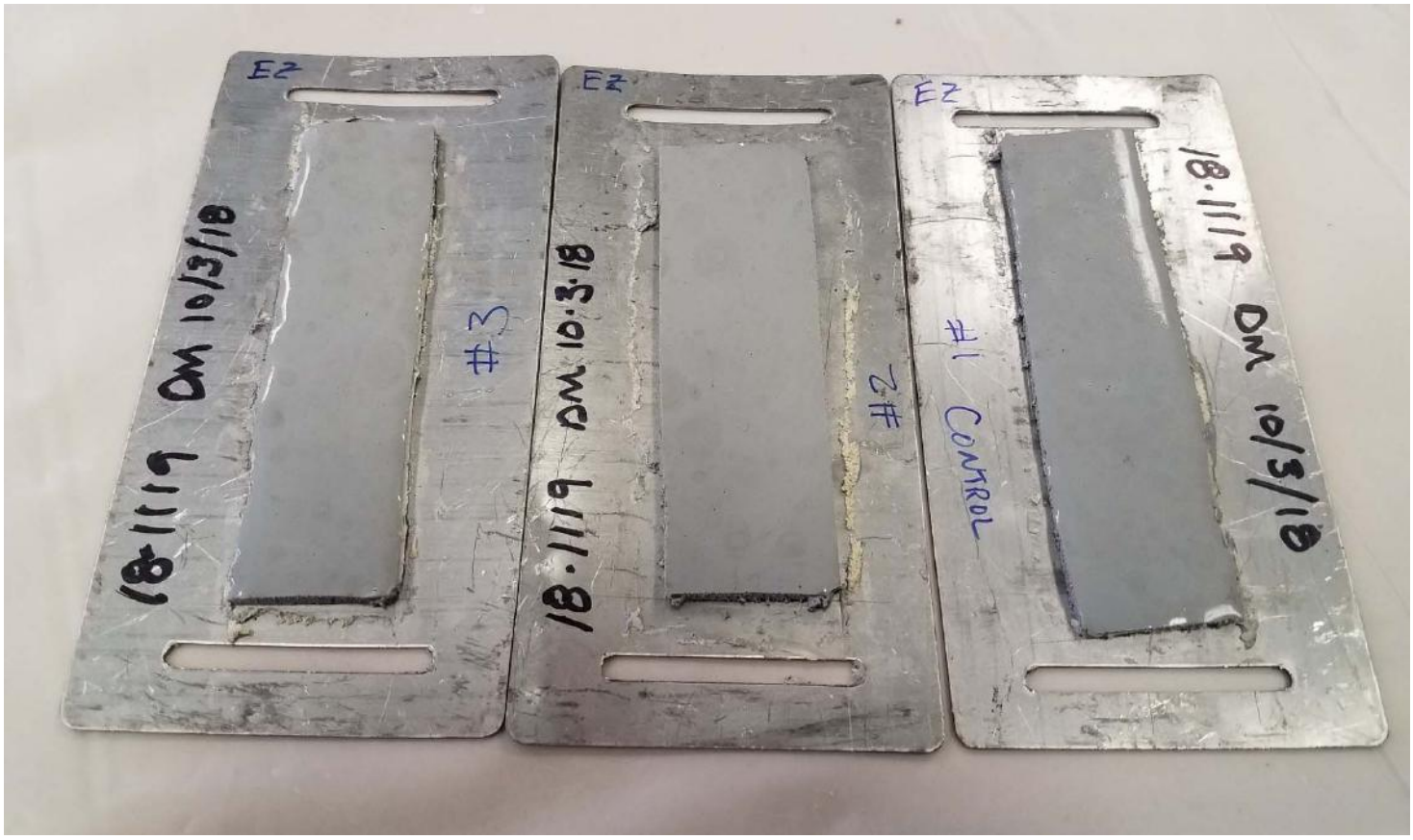

Photo 7 – ASTM C510 Specimens after UV Exposure – No Stain or Color Change

Photo 8 – ASTM C719 Specimens following Extension/Compression Cycles