



SILICOFLEX PREFORMED SILICONE JOINT SEALING SYSTEM

DESCRIPTION

The work shall consist of furnishing and placing the Silicoflex Preformed Silicone Joint Sealing System as detailed and as shown on the plans.

All necessary components, materials and equipment required for the installation shall be obtained through an approved supplier. Components of the joint sealing system shall come from the same manufacturer and may not be substituted with others.

The approved supplier shall furnish a qualified, experienced technical representative to advise the engineer and contractor concerning proper installation procedures.

DEFINITIONS

The following definitions shall apply:

Joint Seal – The Silicoflex preformed silicone joint seal.

Locking Adhesive – A non-sag, one-part, medium-modulus, moisture curing silicone adhesive.

Primer - A two-part component to enhance adhesion of joint seal to concrete and steel surfaces.

MATERIALS

Silicoflex Joint Seal – The material shall be made of silicone, preformed by extrusion, and shall meet or exceed the following physical requirements.

<u>Property</u>	<u>Test Method</u>	<u>Typical Value</u>
Durometer (Shore A)	ASTM D2240	55 ± 5
Tensile (psi)	ASTM D412	1,000 psi min. (6.89 MPa)
Elongation (%)	ASTM D412	400% min.
Tear (die B ppi)	ASTM D624	100 ppi min. (17 kN/m)
Compression Set	ASTM D395	30% max.
At 212°F 70 hrs.		
Heat Aged Properties	ASTM D573	
70 hrs @ 212°F		
Durometer		5 max. points loss
Tensile Strength, max, % loss		10 max. % loss
Elongation, max, % loss		10 max. % loss

Silicoflex Locking Adhesive – The material shall consist of a non-sag, one-part, medium-modulus, moisture curing silicone adhesive that cures quickly. It shall adhere to concrete, elastomeric concrete, polymer concrete, steel and Joint Seal and shall meet the following physical requirements.

<u>Property</u>	<u>Test Method</u>	<u>Typical Value</u>
Tensile Strength	ASTM D412	200 psi min. (1.38 MPa) 450%
Elongation	ASTM D412	min
Tack Free Time (77° F 50% R.H.)	ASTM C679	20 min. max.
Cure Time ¼” bead	ASTM C679	16 hrs. max.
Resistance to U.V.	ASTM C793	No cracking, & Ozone chalking or Degradation



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Primer P-200 - The material shall consist of two components, part A and part B (1:1) ratio thoroughly mixed together to be effective. Neither component is a primer by itself.

<u>Property</u>	<u>Test Method</u>	<u>Typical Value</u>
Viscosity (centipoises)	ASTM D2196	44
Color		Light Amber
Solids (%)	ASTM D4209	41
Specific Gravity	ASTM D1217	0.92
Flash Point (°F, T.C.C.)	ASTM D56	48
VOC (g/l)	ASTM D3960	520*

*Not for use on non-porous surfaces in areas requiring VOC Levels less than those listed. Always consult local VOC regulations before use.

CYCLIC MOVEMENT TEST

The Joint Seal shall be pre-qualified by undergoing and passing a CYCLIC MOVING TEST. The device shall be a joint testing machine that is owned and operated by a Certified Testing Authority and has been used for similar tests in the past. It shall allow a 2 foot sample of the joint seal to be fully installed with adhesive on a steel or concrete surface, simulating a bridge joint. It shall be installed at the median opening which is half way between the design minimum and maximum opening. The minimum and maximum opening shall be at least 50% lower than the Median and 50% higher than the Median, respectively. The device shall be hydraulically powered with an actuator which cycles the joint seal to minimum and maximum opening at a 45° skew angle. After completing and passing the test at room temperature, the same sample shall be stored at -20°F for 24 hours. It shall be removed and within 60 minutes subjected to an additional 200 cycles at a 45° skew angle.

Test Sample Length	2 feet min.
Joint Skew	45°
Number of Cycles	200 min.
Joint Opening	Median Opening
Minimum Opening	Min. 50% lower than Median Opening
Maximum Opening	Min. 50% higher than Median Opening
Movement	Min. to Max. Opening
Temperature	Room Temperature and -20°F

Any rips, tears, or bond failure will be cause for rejection. Manufacturer must provide documentation signed by 3rd party to verify testing.

PREVIOUS EXPERIENCE

Manufacturer must provide documentation of at least 5 years experience with preformed silicone joint seals and have at least 10 installations.

BASIS OF ACCEPTANCE

Joint Seal – Acceptance shall be by manufacturer certifications.

Cyclic Movement Test – Must have document signed by 3rd party to verify testing.

Previous Experience – Must provide project names, bridge owner/authority, contractor/installer name, date, contact and phone number of contractor/installer.



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CONSTRUCTION DETAILS

Do not start installing the Joint Seal on the project until a trained factory representative is on the job site to provide direction and assistance throughout the installation work. Notify the Joint Seal manufacturer of the scheduled installation a minimum of 2 weeks in advance. The factory representative must be present for the installation of the first Joint Seal and succeeding Joint Seals until the Contractor becomes proficient in the work.

The minimum temperature in which you can install the Joint Seal is 40° F and rising ambient air temperature. The joint surface must be completely dry before installing the Joint Seal. The Joint Seal cannot be installed immediately after precipitation or if precipitation is forecasted for the day. Joint preparation and installation of Joint Seal must be done during the same day. Traffic must not be allowed to pass over a joint after sandblasting has occurred.

For new primed steel joint installations, wipe vertical faces of joint clean with a rag saturated in denatured alcohol - no sandblasting is necessary. For new concrete joint installations, roughen concrete surface and wipe vertical faces of joint clean with a rag saturated in denatured alcohol. Roughening can be done by sandblasting, wire brushing or other mechanical methods approved by R.J. Watson. For joint seal replacements to existing joints, sandblast the vertical faces of the joint and wipe clean with a rag saturated in denatured alcohol. Using oil and water-free compressed air, blow joint area clean to remove all debris. Wipe clean armor plate with a cloth saturated in De-Natured Alcohol. Mix together A and B components of Primer and then apply to the vertical joint interfaces. Allow primer 30 minutes to dry. Unroll joint seal and place adjacent to joint opening. Clean the seal with a cloth saturated with De-Natured Alcohol, focusing on each side of the seal (top and bottom) where the adhesive will be bonded. Joint preparation, priming and installation of Joint Seal must all be done the same day. Traffic shall not be allowed to pass over a primed joint surface.

Using a standard caulking gun, a 3/8" diameter bead of Locking Adhesive shall be applied to both sides of the vertical face of the joint. This bead of adhesive shall be applied in accordance to chosen model (see installation instructions). Tool adhesive to ensure contact with header prior to inserting joint seal.

Insert the Joint Seal into the joint opening in an inverted "V" shape by folding it by hand. The Joint Seal shall be inserted above the 3/8" bead of locking adhesive. Gently push the Joint Seal downward while maintaining contact of the sides of the joint seal to the joint header. Position the Joint Seal to the proper depth which is when the top of the Joint Seal is between 1/2" and 1" below top of the road surface. Apply a second bead of locking adhesive along each side of the Joint Seal to the top of the serrations, and no higher. This second bead of adhesive should be in contact with the seal and the joint wall. The Locking Adhesive must be 'tooled' at least twice with a tongue depressor to ensure complete contact with the vertical edge. The second bead of adhesive should look smooth with no air voids or bubbles. In the event of a visible air void, more adhesive must be applied. Allow 60 minutes before allowing traffic over a newly installed Joint Seal, unless directed otherwise by an approved representative.

Vertical curbs, directional changes and field splices require the Locking Adhesive as a bonding agent.

STORAGE

The Joint Seal, Adhesive and Primer must be stored indoors and kept away from moisture. Do not allow Adhesive or Primer to freeze.

METHOD OF MEASUREMENT

The work shall be measured as the total linear feet of Joint Seal incorporated into the completed work.

BASIS OF PAYMENT

The unit price bid per linear foot of Joint Seal shall include the cost of furnishing all labor, materials and equipment necessary to complete the work in accordance with the Joint Seal manufacturer's recommendations.