



SILSPEC® SES EXPANSION JOINT SEAL



DESCRIPTION:

SILSPEC® SES SEAL is a fire resistant, pre-compressed, self-expanding, silicone-and-foam hydrophobic joint seal installed into a field-applied epoxy adhesive on the joint faces; with the silicone bellows locked onto the joint faces with a silicone sealant bead. The joint faces can be SILSPEC® Polymer Concrete, concrete or steel. It can be utilized in either new construction or rehabilitation of failed joint systems.

The SILSPEC® SES SEAL features an innovation in sealant technology in the form of a transportation grade silicone cover and a 100% acrylic impregnation infused into the cellular foam base material.

The material is odorless, clean handling, non-staining, and features low temperature flexibility not previously available in asphalt, wax, or isobutylene-based materials.

This technology allows the product to work well in structures subject to thermal shock (rapid opening & closing of the joint during large temperature changes). This includes joint face installations on bridge decks, wing walls, abutments, parapets/jersey barriers, precast panels, ect.

The product is suited for applications in colder geographical regions to which asphalt and wax-based materials have not been recommended.

USES:

- ◆ Watertight, traffic durable, joint-face-adhered, pre-compressed, primary seal for retrofit and new expansion joints in road bridges, wing walls, abutments, barrier walls, longitudinal joints, precast panels, ect.
- ◆ Ideal for new construction or retrofit bridge preservation of old or failed joint systems in concrete or rebuilt joint edges. SES can also be used in steel armor angle joints where it is not feasible for removal and the existing joint opening movement range falls within the movement capability of the SES seal.

FEATURES:

Watertight– the tensionless silicone bellows are installed just below the deck surface. This ensures watertightness is achieved throughout the cross-section of the seal. It does not wick water.

Non-Invasive Anchoring- there are no hard metal-to-concrete connections or anchors with the SILSPEC® SES SEAL. This includes embedded pins, anchors, screws, bolts, tracks, trays, or rails. The seal is locked to the joint faces by back-pressure of the foam; the epoxy adhesive; and the injected silicone sealant band at the joint face to foam and silicone bellows interface.

Movement Capability– SILSPEC® SES SEAL has a movement range +/- 50% of the nominal material size in all axis of movement.

Fire-Rated– SILSPEC® SES Joint Seal has a 1 hour fire rating. Tested to ASTM E 84 and DIN 18 452.

Continuity of Seal – SILSPEC® SES SEAL offers a continuity of seal through changes in plane and direction as well as non-uniform joint widths. Silicone Specialties can provide to the installer with transitions and terminations fabricated at the factory, ensuring quality control of the components. SILSPEC® SES SEAL can be installed at inside and outside corners as needed to provide a watertight seal throughout the entire movement capability of the product. Details for field-fabricated transitions from wall to deck, at curbs and sidewalks, parapets, tees, and crosses are available from SSI.

Aesthetics & Versatility – standard color is black. Uniform bellows appearance, fuel resistance, and an enhanced ability to handle variations in joint size are among other system features.

PERFORMANCE:

- ◆ Substrates must be parallel, plumb and capable of resisting approximately 2.5 psi backpressure from the SES SEAL.
- ◆ Standard sizes from 1/2" (12mm) to 4" (100mm). Other sizes available subject to review of application.
- ◆ Fuel Resistance: Silicone sealant is not degraded by contact with fuel. Some swelling of the silicone material will occur, but it will return to its original shape upon evaporation of the fuel.

COMPOSITION:

- ◆ The SILSPEC® SES Joint Seal is produced by coating an impregnated cellular foam with highway-grade silicone.
- ◆ The silicone external facing is factory applied to the foam at a width greater than maximum joint extension and is cured before final compression. This application and curing takes place in a factory-controlled environment.
- ◆ When compressed, a bellows is created in the coating. As joint movement occurs the bellows simply folds and unfolds free of tension on the bondline, and virtually free of tensile stresses in the silicone material.
- ◆ The foam provides a resilient backing to the silicone coating, making the system capable of resisting reasonable transient point loads.
- ◆ SILSPEC® SES SEAL is precompressed to less than the joint size for easy insertion. The seal expands gradually after removal from packaging.

INSTALLATION:

IMPORTANT: The following instructions are a summary. Refer to the SES SYSTEM Installation Guide, job specific instructions in the product packaging, or of an SSI technician for complete procedures.

- ◆ Store indoors at room temperature. Expansion is quicker when warm, slower when cold.
- ◆ Properly prepare substrates.
- ◆ Ensure material nominal size matches joint size.
- ◆ Mix epoxy and trowel a thin layer onto joint faces to at least the depth of the SES Seal.
- ◆ Apply a thin layer of epoxy to both joint faces.
- ◆ Remove shrink-wrap packaging, hardboard. If necessary, heat using torch to expand material to a snug fit in the joint opening.
- ◆ Recess seal into joint 1/2" for narrow joints (<1"), 3/4" for wider joints (>1").
- ◆ Join lengths by applying bonder then pushing the coated ends together.
- ◆ Wipe silicone facing with a clean, lint-free rag made damp with solvent.
- ◆ Before the epoxy cures, apply cap beads of silicone to the joint edges and tool to remove excess silicone. Excess silicone should be removed from the SES joint face.



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SILSPEC® SES EXPANSION JOINT SEAL

Typical Physical Properties

SILSPEC® SES SEAL– Base Foam		
Property	Value	Test Method
Impregnation	Proprietary, hydrophobic polymer	N/A
Surface Temperature Range	-40°F to 190°F	ASTM C711
UV Resistance	Pass	DIN 18542
Ultimate Elongation	Exceeds rated maximum extension without tension	N/A
Urethane Elongation	Exceeds maximum movement range without tension (>1000%)	N/A
Urethane Flexibility	Excellent	N/A
Temperature Stability Range	-40°F to 185°F	No transfer of sealant
Resistance to Compression Set	No bleeding when compressed to minimum of claimed movement of nominal size and when simultaneously heated to 190°F for 3 hours. <i>Full cycle tested in an environmental chamber through the stated temperature stability range.</i>	
Compression Set	Will not delaminate due to thermal shock or compression set. <i>Full cycle tested in an environmental chamber through the stated temperature stability range.</i>	

Typical Physical Properties of Silicone Coating

Color	Black
Percent Solids (minimum)	96
Specific Gravity	1.26-1.34
Properties of Sealant Cured 21 days at 77°F (25°C) and 50% RH	
Elongation Percent Minimum	1400
Joint Modulus at 50% Elongation, psi (kPa) Maximum	7(48)
Joint Modulus at 100% Elongation, psi (kPa) Maximum	8(55)
Joint Modulus at 150% Elongation, psi (kPa) Maximum	9(62)
Adhesion to Concrete, Minimum Percent Elongation	+600
Adhesion to Asphalt, Minimum Percent Elongation	+600
Joint Movement Capability, +100/-50%, 10 Cycles	No Failures
Weatherability	Unaffected by Climatic Extremes
Flexibility	Cured Sealant Stays Rubbery from -50°F to 300°F (-45°C to 149°C)

Approximate Volume Change of Silicone Coating after Exposure to Fluids

Percent Volume Swell– Visual	
JP-4	5-20 Percent
Skydrol B	None
50/50 Glycol H2O	None
Hydraulic Fluid	None
	After Drying- All Samples Passed +100/-50% Movement Testing

SILSPEC® SES JOINT SYSTEM and SES SEAL are part of the SILICONE SPECIALTIES, INC. family of transportation materials.

X.J.S.® Joint System	SILSPEC® 900PNS
SILSPEC® SSS Silicone Strip Seal	SILSPEC® FLEXPATCH
SILSPEC® 2000	SILSPEC® DECKSEAL
SILSPEC® RE-DECK	

It is the users responsibility to familiarize themselves with all safety precautions prior to use. A product SDS is provided upon request by contacting SSI at (800)888-8909.

SES System Sizing

Product Number/ Nominal Material Size (Joint Size at Mean T°F)	Depth of Seal	Min. Joint (closes to)	Max Joint (opens to)
The following sizes are supplied in sticks of 6.56 ft. (2m). (Recess 1/2" Below Road Surface)			
SES-012 1/2" (12mm)	1-3/4" (45mm)	1/4" (6mm)	3/4" (20mm)
SES-034 3/4" (20mm)	1-3/4" (45mm)	3/8" (10mm)	1-1/8" (28mm)
SES-100 1" (25mm)	1-3/4" (45mm)	1/2" (12mm)	1-1/2" (40mm)
The following sizes are supplied in sticks of 6.56 ft. (2m). (Recess 3/4" Below Road Surface)			
SES-114 1-1/4" (30mm)	2" (50mm)	5/8" (15mm)	1-7/8" (47mm)
SES-112 1-1/2" (40mm)	2-1/2" (65mm)	3/4" (20mm)	2-1/4" (55mm)
SES-134 1-3/4" (45mm)	2-1/2" (65mm)	7/8" (22mm)	2-5/8" (68mm)
SES-200 2" (50mm)	2-1/2" (65mm)	1" (25mm)	3" (75mm)
SES-214 2-1/4" (55mm)	2-1/2" (65mm)	1-1/8" (28mm)	3-3/4" (95mm)
SES-212 2-1/2" (55mm)	2-3/4" (70mm)	1-1/4" (30mm)	3-3/4" (95mm)
SES-234 2-3/4" (70mm)	2-3/4" (70mm)	1-3/8" (35mm)	4-1/8" (105mm)
SES-300 3" (75mm)	2-3/4" (70mm)	1-1/2" (40mm)	4-1/2" (115mm)
SES-314 3-1/4" (85mm)	3-1/2" (90mm)	1-5/8" (42mm)	4-7/8" (120mm)
SES-312 3-1/2" (90mm)	3-1/2" (90mm)	1-3/4" (45mm)	5-1/4" (135mm)
SES-334 3-3/4" (95mm)	3-1/2" (90mm)	1-7/8" (47mm)	5-5/8" (140mm)
SES-400 4" (100mm)	3-1/2" (90mm)	2" (50mm)	6" (150mm)

For sizes not shown consult SSI.
Select nominal material size to correspond to joint-gap size at mean temperature.
Custom sizes also available.

Detail Drawings & Guide Specifications

Detail drawings and Standard Specifications are available from SSI upon request.

Availability & Pricing

The SES Joint System is available through local representatives and/or directly from SSI. The product range is continually updated, and accordingly SSI reserves the right to modify or withdraw product.

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