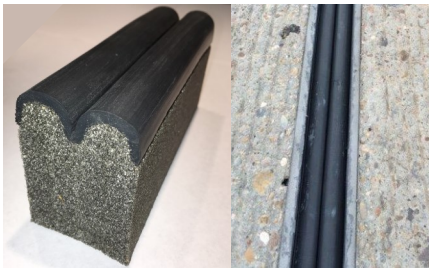
SILSPEC® SES EXPANSION JOINT SEAL



DESCRIPTION:
SILSPEC® SES SEAL is a pre-compressed, silicone-and-foam hybrid installed into a field-applied epoxy adhesive on the joint faces; with the silicone bellows locked onto the joint faces with a silicone sealant band. 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 microsphere-modified, 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 feasable for removal and the existing joint opening movement range falls with-in 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 at the deck surface.

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 +/- 60% of the nominal material size in all axis of movement.

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 Universal 90's, Kickout Terminations, and custom transitions 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. After removal from the restraining packaging, it expands gradually.

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 3/4" for reel sizes, 3/4" for 6.56' (2m) sticks if no bevel is present, 3/4" below the bottom of the bevel otherwise.
- Join lengths by pushing silicone coated ends together.
- Wipe silicone facing with a clean, lint-free rag made damp with solvent.
- Before the epoxy cures, force the tip of the sealant tube between the foam and the substrate and inject a silicone sealant band. Tool overflow sealant into a cove bead between the top of the silicone bellows and the substrate. Tool silicone between joined lengths so that the bellows is not restrained by excess silicone.

SILSPEC® SES EXPANSION JOINT SEAL

Typical Physical Properties

SILSPEC® SES SEAL		
Property	Value	Test Method
Base Material	Cellular, High Density Polyurethane Foam	N/A
Impregnation	**Proprietary, Modified, Water-Based, Acrylic**	**N/A**
Temperature Service Range		ASTM C711
High	185°F (85°C)	
Low	-40°F (-40°C)	
UV Resistance	**No-Changes— 2000 Hours**	**ASTM G155-00A**
(Accelerated Weatherometer		
Resistance To Aging	No Changes— 2000 Hours	ASTM G155-00A
Density	Min. 6 lbs/cu ft	ASTM D545
Bleeding: -40°F to 180°0F (-°40C to 85°C)	**No bleeding when compressed to minimum of claimed movement I.e. –50% of nominal size and when simultaneously heated to 180°F (85°C) for 3 hours**	
Compression Set	Material Recovers To +50% Of Nominal Size Within 24 Hours of Compression To –50% And Simultaneous Heating To 180° (85°C) For 3 Hours	

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

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) (-)60%	**Max Joint** (opens to) (+)60%
The following sizes are supplied in 12LF. (3.65 M) reels.(Recess 1/2" Below Road Surface)			
SES-012 1/2" (12mm)	**1-3/4" (45mm)**	**0.20" (5.08mm)**	**0.80" (20.32mm)**
SES-034 3/4" (20mm)	**1-3/4" (45mm)**	**.030" (7.62mm)**	**1.20" (30.48mm)**
SES-100 1" (25mm)	**1-3/4" (45mm)**	**.040" (10.16mm)**	**1.60" (40.64mm)**
SES-114 1-1/4" (30mm)	**2" (50mm)**	**.050" (12.7mm)**	**2.00" (50.8mm)**
The following sizes are supplied in sticks of 6.56 ft. (2m). (Recess 3/4" Below Road Surface)			
SES-112 1-1/2" (40mm)	**2-1/2" (65mm)**	**.060" (15.24mm)**	**2.40" (60.96mm)**
SES-134 1-3/4" (45mm)	**2-1/2" (65mm)**	**.070" (17.78mm)**	**2.80" (71.12mm)**
SES-200 2" (50mm)	**2-1/2" (65mm)**	**.080" (20.32mm)**	**3.20" (81.28mm)**
SES-214 2-1/4" (55mm)	**2-1/2" (65mm)**	**.090" (22.86mm)**	**3.60" (91.44mm)**
SES-212 2-1/2" (55mm)	**2-3/4" (70mm)**	**1.00" (25.4mm)**	**4.00" (101.6mm)**
SES-234 2-3/4" (70mm)	**2-3/4" (70mm)**	**1.10" (27.94mm)**	**4.40" (111.76mm)**
SES-300 3" (75mm)	**2-3/4" (70mm)**	**1.20" (30.48mm)**	**4.80" (121.92mm)**
SES-314 3-1/4" (85mm)	**3-1/2" (90mm)**	**1.30" (33.02mm)**	**5.20" (132.08mm)**
SES-312 3-1/2" (90mm)	**3-1/2" (90mm)**	**1.40" (35.56mm)**	**5.60" (142.24mm)**
SES-334 3-3/4" (95mm)	**3-1/2" (90mm)**	**1.50" (38.1mm)**	**6.00" (152.4mm)**
SES-400 4" (100mm)	**3-1/2" (90mm)**	**1.60" (40.64mm)**	**6.40" (162.56mm)**
For sizes not shown consult SSI Select nominal material size to correspond to joint-gap size at mean temperature			

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.

800-888-8909 • Fax 918-582-7510 • **www.ssicm.com**

For Purchase, contact SSI at the following locations:

TULSA OK (918)587-5567 ♦ OKLAHOMA CITY OK (405)524-9525 ♦ SPRINGDALE AR (479)365-8050 ♦ DALLAS TX (972)243-0676 ♦ FT WORTH TX (682)647-1881

HOUSTON (713)460-8800 ♦ AUSTIN TX (512)326-1156 ♦ SAN ANTONIO TX (210)930-6360 ♦ EL PASO TX (915)591-6800 ♦ MCALLEN TX (956)782-1341

BATON ROUGE LA (225)620-0950 ♦ NEW ORLEANS LA (504)539-3102 ♦ KANSAS CITY MO (816)561-1617 ♦ ST LOUIS MO (310)410-6801

We know you have a choice, thank you for choosing SSI.