



BUILDING TRUST



## PRODUCT DATA SHEET

# DSM System

*Watertight Joint System for Decks, Walkways, Ramps, Roadways and Below-Grade Applications*



DSM System sample shown here is displayed in substrate mock-up

### Product Description

The [DSM System](#) by Sika Emseal builds on a track record of over 30 years of sealing horizontal plane and below-grade joints with impregnated foam sealants.

The system is comprised of precompressed, sealant and impregnated-foam hybrid installed into field-applied epoxy adhesive on the joint faces with the sealant bellows locked to the joint face. (see Figure 1).

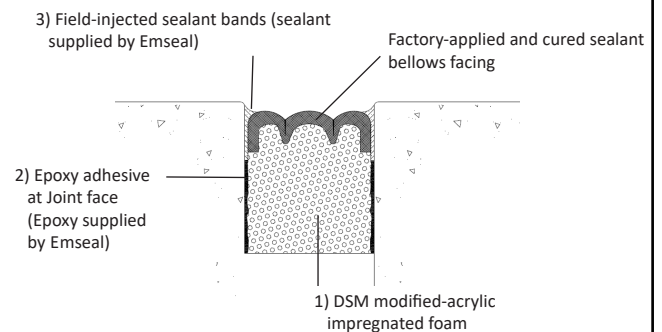
The DSM System features an innovation in sealant technology in the form of an acrylic adhesive infused into the cellular foam base material. This new chemistry incorporates a hydrophobic microsphere component never before available in a sealant formulation.

The material features sealing performance significantly greater than any acrylic impregnated predecessor. In addition, it is odorless, clean handling, UV stable, non-staining, and features low temperature flexibility not previously available in asphalt, wax, or isobutylene-based predecessors.

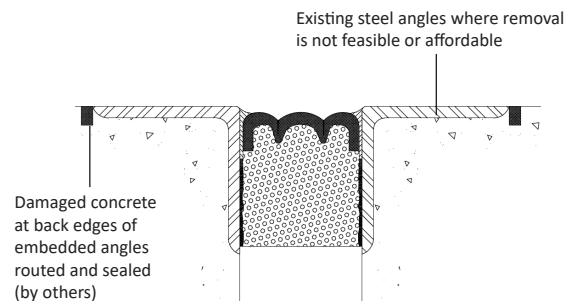
The result is extension of the usability of the product to applications where asphalt and wax-based predecessors did not work well under conditions of thermal shock (rapid opening and closing of joints during large temperature swings). These applications include joint-face adhered installations on top decks as well as intermediate decks.

Suitability is further extended to horizontal-plane joint applications in colder geographical regions to which asphalt and wax-based predecessors have not previously been recommended.

**Figure 1: DSM System in Typical Installation — New or Retrofit**



**Figure 2: DSM System in Existing Steel Angles — Retrofit**



### Uses

- Ideal for new construction and retrofit of old or failed joint systems in concrete or in embedded metal angles where demolition and removal of the metal angles is not feasible or affordable.
  - Ideal for lasting replacement of tee-to-tee caulk joints in precast parking decks and stadiums or where pedestrian or vehicular traffic is expected.
- |                          |                                     |                                  |
|--------------------------|-------------------------------------|----------------------------------|
| • <a href="#">Decks</a>  | • Runways                           | • <a href="#">Stadiums</a>       |
| • Mall bridge connectors | • <a href="#">Parking decks</a>     | • <a href="#">Airport aprons</a> |
| • <a href="#">Arenas</a> | • <a href="#">Below-grade walls</a> | • Roadways                       |
| • Sidewalks              | • <a href="#">Ice-floors</a>        | • Tunnel walls                   |
| • Stair towers           | • Perimeter joints                  |                                  |

## Features

**Watertight** – The tensionless sealant 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 with the DSM System. This includes embedded pins, anchors, screws, bolts or tracks, trays or rails. The system is locked to the joint faces by means of the 1) [backpressure](#) of the foam; 2) the epoxy adhesive, and 3) the injected sealant band at the joint face to foam and sealant or bellows interface.

**Continuity of Seal** – As in all Emseal expansion joint systems, continuity of seal through changes in plane and direction is an essential performance differentiator. Details for watertight, field-fabricated transitions from deck to wall, at curbs, sidewalks, parapets, tees, and crosses are available from Emseal.

**Movement Capability** – +50% and -50% (Total 100%) of nominal material size (see “Performance”).

**Aesthetics & Versatility** – Standard color is gray (other colors available), uniform bellows appearance, fuel resistance, and an enhanced ability to handle variations in joint size are among other system features.

## Performance

- Movement capable of +50%, -50% (100% total) of nominal material size.
- Substrates must be parallel, plumb and capable of resisting approx. 2.5 psi backpressure from the foam.
- Standard sizes from 1/2” (12mm) to 4” (100mm).  
*For joint openings 4-inches (100mm) and larger, where an integral coverplate is preferred, consider [SJS SYSTEM](#).*
- Fuel Resistance – Sealant is not degraded by contact with fuel. Some swelling of the material will normally occur, but it will return to original shape upon evaporation of fuel.

## Composition

- DSM is produced by coating an impregnated cellular foam with highway-grade sealant.
- The sealant external facing is factory applied to the foam at a width greater than maximum joint extension and is cured before final compression.
- Sealant application and curing takes place in a factory-controlled environment. In contrast to field applied liquid sealant and backer rod installations, no movement takes place during curing that can cause deformation or stresses in the material.
- 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 sealant material.

- The foam provides a resilient backing to the sealant coating, making the system capable of resisting reasonable transient point loads (see Performance).
- DSM System is supplied in 6.56 LF (2m) shrink-wrapped lengths (sticks). It is precompressed to less than the joint size for easy insertion. After removal from the shrink-wrap and hard board restraining packaging, it expands gradually.

## Installation

*IMPORTANT: The following instructions are a summary. Refer to “[DSM System Install Data](#)” and job-specific instructions of an Sika Emseal technician for complete procedures.*

- Store indoors at room temperature. Expansion is quicker when warm, slower when cold.
- Ensure material nominal size matches joint size.
- Mix epoxy and trowel a thin layer onto the joint faces to at least the depth of the DSM foam
- Apply a thin layer of epoxy to both sides of the joint face.
- Remove shrink-wrap packaging and hardboard. Allow partial expansion until snug when inserted into epoxied joint faces.
- Insert material into joint until bellows is flush with (below-grade or deck-to-wall) or recessed by 1/4” (6mm) in traffic applications.
- Join lengths by pushing sealant coated ends firmly together.
- Wipe sealant facing using 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 sealant band. Tool overflow sealant into a cove bead between the top of the sealant bellows and the substrate. Tool sealant between joined lengths so that bellows is not restrained by excess sealant.

## CAD & Guide Specs

[Guide specifications](#) and [CAD details](#) are available online at [emseal.com](#) or by [contacting Emseal](#).

## Warranty

Standard or project-specific warranties are available from Sika Emseal on request.

## Availability & Price

DSM System is available for shipment internationally. Prices are available from local representatives and/or directly from the manufacturer. Sika Emseal reserves the right to modify or withdraw any product without prior notice.



**Table 1: Typical Physical Properties of DSM Foam**

Property	Value	Test Method
Base material	Cellular, high density, polyurethane foam	N/A
Impregnation	Proprietary, modified, water-based, acrylic	N/A
Tensile strength	19.6 psi min; 136 kPa	ASTM D3574 E
Elongation — ultimate	150% min	ASTM D3574 E
Temperature service range High Low	185°F (85°C) -40°F (-40°C)	N/A
UV Resistance	No Changes – 2000 hours	ASTM G155-00A
(Accelerated Weatherometer) resistance to aging	No Changes – 2000 hours	ASTM G155-00A
Bleeding: -40°F to 180°F (-40°C 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°F (85°C) for 3 hours	

**Table 3: DSM System Sizing**  
(see "Performance" for movement capabilities & limitations)

Nominal Material Size (Joint Size at Mean T°F)	Depth of Seal
1/2" (12mm)	1 3/4" (45mm)
3/4" (20mm)	1 3/4" (45mm)
1" (25mm)	2" (50mm)
1-1/4" (30mm)	2" (50mm)
1-1/2" (40mm)	2 1/2" (65mm)
1-3/4" (45mm)	2 1/2" (65mm)
2" (50mm)	2 1/2" (65mm)
2-1/4" (55mm)	2 1/2" (65mm)
2-1/2" (65mm)	2-3/4" (70mm)
2-3/4" (70mm)	3-1/4" (80mm)
3" (75mm)	3-1/4" (80mm)
3-1/4" (85mm)	3-1/2" (90mm)
3-1/2" (90mm)	3-1/2" (90mm)
3-3/4" (95mm)	4" (100mm)
4" (100mm)	4" (100mm)

- For joint openings 4-inches (100mm) and larger, where an integral coverplate is preferred, consider [SIS SYSTEM](#).
- For sizes not shown consult [Sika Emseal](#).
- Select nominal material size to correspond to joint-gap size at mean temperature.
- Material supplied in shrink-wrapped sticks of 6.56 ft. (2M).

**Table 2: Typical Physical Properties of Sealant**

Property	Value	Test Method
Color	Deck Gray Standard	N/A
<i>Following tests conducted on Sealant Cured after 7 days at 25°C (77°F) and 50% RH:</i>		
Shore A Hardness	25	ASTM C661
Tensile Strength	200 psi (1.38 MPa)	ASTM D412
Elongation at Break	700%	ASTM D412
UV Exposure	Excellent - Ozone/UV Resistance	ASTM D1149

**EMSEAL JOINT SYSTEMS, LTD**  
25 Bridle Lane  
Westborough, MA 01581 USA  
Phone: 508.836.0280  
Fax: 508.836.0281  
[www.emseal.com](http://www.emseal.com)

**EMSEAL, LLC**  
111 Royal Group Crescent  
Woodbridge, ON L4H 1X9 Canada  
Phone: +1-416-740-2090  
Fax: +1-416-740-0233  
[www.emseal.com](http://www.emseal.com)

**SIKA CORPORATION**  
201 Polito Avenue  
Lyndhurst, NJ 07071 USA  
Phone: +1-800-933-7452  
Fax: +1-2019336225  
[www.usa.sika.com](http://www.usa.sika.com)

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