

Silicone Sealants

Dow Corning® 890-SL Self-Leveling Silicone Joint Sealant

FEATURES

- Easy to use – self-leveling, no tooling
- All-temperature gunnability
- Unprimed adhesion to asphalt or Portland cement concrete
- Seals irregular surfaces without need for tooling
- High movement capability – continuous joint movement of +100/-50 percent
- Ultra-low modulus
- Fully elastic and resilient
- Good weatherability
- Short cure time (typically one hour or less) allows roads to be opened to traffic soon after sealing
- Long-life reliability

COMPOSITION

- One-part, self-leveling silicone

Self-leveling silicone sealant for sealing joints in asphalt and/or concrete pavements

APPLICATIONS

Dow Corning® 890-SL Self-Leveling Silicone Joint Sealant can be used in new highway construction or as a remedial or repair sealant in old construction. In new construction, it provides a long-lasting seal that will prolong the life of the pavement and prevent water and noncompressibles from entering into the joint and damaging the pavement and foundation.

For use in repair or remedial applications where other joint sealing materials have failed because of excessive movement or poor weatherability, *Dow Corning 890-SL Self-Leveling Silicone Joint Sealant* can be used to seal irregularly shaped and/or spalled joints.

TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning Sales Application Engineer or Dow Corning Customer Service before writing specifications on this product.

Test	Unit	Result
As Supplied		
Color		Dark gray
Flow, Sag or Slump		Self-leveling
Extrusion Rate	g/min	275-550
Percent Solids, minimum	percent	96
Specific Gravity		1.26-1.34
Skin-Over Time, at 25°C (77°F), maximum	minutes	60
Cure Time, at 25°C (77°F)	days	14
Full Adhesion	days	14-21
As Cured – after 21 days at 25°C (77°F) and 50 percent RH		
Elongation, minimum	percent	1400
Joint Modulus, at 50 percent Elongation, maximum	psi (kPa)	7 (48)
Joint Modulus, at 100 percent Elongation, maximum	psi (kPa)	8 (55)
Joint Modulus, at 150 percent Elongation, maximum	psi (kPa)	9 (62)
Adhesion to Concrete, minimum Elongation	percent	+600
Adhesion to Asphalt, minimum Elongation	percent	+600
Joint Movement Capability, +100/-50 percent, 10 cycles		No failure

DESCRIPTION

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is a one-part, cold-applied, easy-to-use, self-leveling silicone material that cures to an **ultra-low-modulus** silicone rubber upon exposure to atmospheric moisture. The cured silicone rubber

remains flexible over the entire temperature range expected in pavement applications.

Asphaltic paving materials have low tensile strengths. This requires a sealant that can seal the joint while placing only minimal stress on the asphaltic joint face.

Table I: Recommended Backer Rod Installation (Shallow Cut)

Joint Width, inch	1/4	3/8	1/2	3/4	1
Recessed Below Surface, inch	3/8	3/8	3/8	3/8	3/8-1/2
Sealant Thickness, inch	1/4	1/4	1/4	3/8	1/2
Backer Rod Diameter, inch	3/8	1/2	5/8	7/8	1 1/4
Total Joint Depth, inch	1 - 1 1/8	1 1/8 - 1 1/4	1 1/4 - 1 3/8	1 5/8 - 1 3/4	2 1/4 - 2 3/8

¹On road surfaces where grinding is planned at a later date, the sealant and backer rod should be installed so that sealant is approximately 3/8 inch below the road surface after grinding is complete. An additional small amount should be added to allow for surface imperfections on the bottom and to provide room for old sealant to pump up from below during rehabilitation work in the summer months.

Table II: Recommended Backer Rod Installation (Shallow Cut) – Metric Equivalents

Joint Width, mm	6.35	9.53	12.7	19.1	25.4
Recessed Below Surface, mm	9.53	9.53	9.53	9.53	9.53 - 12.7
Sealant Thickness, mm	6.35	6.35	6.35	9.53	12.7
Backer Rod Diameter, mm	9.53	12.7	15.9	22.2	31.8
Total Joint Depth, mm	25.4 - 28.6	28.6 - 31.8	31.8 - 34.9	41.3 - 44.5	57.2 - 60.3

¹On road surfaces where grinding is planned at a later date, the sealant and backer rod should be installed so that sealant is approximately 9.53 mm below the road surface after grinding is complete. An additional small amount should be added to allow for surface imperfections on the bottom and to provide room for old sealant to pump up from below during rehabilitation work in the summer months.

Because of its **ultra-low-modulus** characteristics and good extension/compression recovery (+100/-50 percent of original joint width), *Dow Corning 890-SL Self-Leveling Silicone Joint Sealant* gives outstanding performance in highway, airport and bridge joints in which extreme movement occurs.

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is designed to perform as a durable joint seal for asphalt and/or concrete pavements.

Because of its ability to firmly adhere to asphalt and concrete pavements, *Dow Corning 890-SL Self-Leveling Silicone Joint Sealant* is particularly suitable for long-term sealing of asphalt to concrete shoulder joints, while its primary use is for asphalt-to-asphalt and concrete-to-concrete expansion joints. (See Limitations.)

Benefits

- Easy to use – self-leveling (no tooling step), one-component, cold-applied, ready-to-use as supplied; dispensed directly from the bulk container into the joint by hand or with an air-powered pump.
- All-temperature gunnability – consistency and self-leveling characteristics are relatively unchanged over normal installation temperature range.
- Unprimed adhesion – primer is not required for bonding to asphalt or

Portland cement concrete. For optimum adhesion, the surface must be clean, dry and frost-free.

- Seals irregular surfaces – the sealant’s self-leveling characteristics make it ideal for sealing irregular joint surfaces by providing adequate contact to the substrate without the need for tooling.
- High movement capability – the sealant will perform in a continuous joint movement of +100/-50 percent.
- Ultra-low modulus – the sealant stretches to 100 percent in the joint with very little stress on the bond line or joint wall. This maximizes the probability of a successful seal with continuous or gradual joint movement. Joint movement caused by temperature, shrinkage, traffic, etc., requires a sealant that does not strongly resist stress and/or shear.
- Fully elastic – the sealant can be stretched to 100 percent or compressed to 50 percent of the joint width and held there. When released, it will recover 95 percent or greater of the original dimension. The extension and/or compression can be repeated many times and the sealant will resume its original shape without splits or cracks.
- Resilient – once cured, the sealant prevents stones and other noncompressibles from entering the joint by “squeezing” them out as soon as the force pushing the noncompressibles into the sealant is removed.

- Good weatherability – its 100 percent silicone rubber is virtually unaffected by sunlight, rain, snow, ozone or temperature extremes. Most organic sealants stiffen in cold temperatures and soften in warm weather. Organics also degrade and crack in sunlight.
- Cure time – typically, the sealant will have a skin-over time of one hour or less. With a recessed joint design, the road can be opened to traffic soon after sealing in most applications.
- Long-life reliability – under normal conditions, cured sealant stays rubbery from -45 to 149°C (-50 to 300°F) without tearing, cracking or becoming brittle.

Applicable Standards

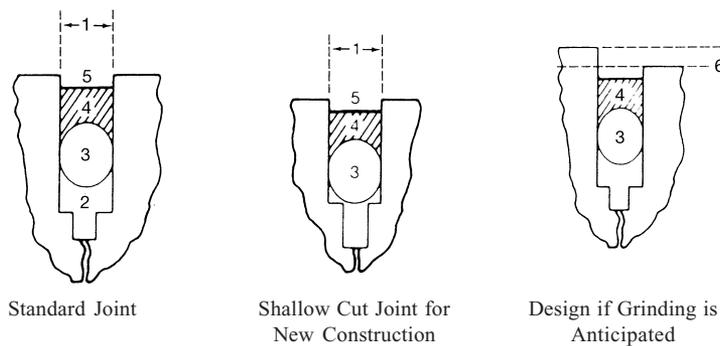
Meets and/or exceeds ASTM D 5893-96 “Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements,” Type SL (Self-Leveling) and approximately 29 Department of Transportation (DOT) specifications that require a low-modulus, self-leveling sealant with high movement capability.

HOW TO USE

Joint Design

Ultra-low-modulus *Dow Corning 890-SL Self-Leveling Silicone Joint Sealant* easily withstands extreme joint movement when properly applied. The

Figure 1. Good Joint Designs



1. Joint width wide enough to accommodate movement. (For additional information on joint width, see papers by Spells and Klosowski, "Silicone Sealants for Use in Concrete Construction," Vol. 1, No. 1, *American Concrete Institute*, SP-70, 1981; J.B. Cook, "Construction Sealants and Adhesives," Wiley-Interscience, 1970; and J.M. Klosowski, "Sealants in Construction," Marcel Dekker, 1989.)
2. Joint sawed deep enough to allow backer rod/sealant placement and space for pumping of old sealant compounds. NOTE: This applies to standard joints only; void space beneath backer rod in new construction is not needed.
3. Proper backer rod placement to prevent three-sided adhesion.
4. Sealant installed to proper depth and width.
5. Sealant recessed a minimum of 3/8 inch to 1/2 inch (9.53 mm to 12.7 mm) below pavement surface.
6. Depth of lowest slab determines the amount of recess required if grinding is anticipated; once grinding is complete, the sealant will have proper recess below the pavement surface.

sealant will withstand 100 percent extension and 50 percent compression of the original joint width. However, the recommended movement design is for +50 percent and -25 percent and not at the sealant limits. This difference ensures a successful seal when job site joint widths are different than designed widths. Therefore, the joint design dimensions should be less than the ultimate sealant capability.

A thin bead of silicone sealant will accommodate more movement and result in less bond line stress than a thick bead. *Dow Corning* 890-SL Self-Leveling Silicone Joint Sealant should be no thicker than 1/2 inch (12.7 mm) and no thinner than 1/4 inch (6.4 mm). Within these limits, the sealant width-to-depth ratio should be 2:1.

In all cases, the sealant must be recessed below the road surface at least 3/8 inch (9.53 mm) with 1/2 inch (12.7 mm) recess being acceptable in wider joints. (See Tables I and II.)

Application

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is an easy-to-

use, self-leveling sealant that does not require a separate tooling step as conventional, non-sag sealants do. Because the sealant is self-leveling, it cannot be used on vertical surfaces.

Before attempting to seal joints in new asphalt, the asphalt must be given sufficient time to cool and to "cure," so that damage will not result from sawing. This time will depend upon a number of factors, such as mix design, time of year for placement, geographic location and past experiences. The asphalt must also be completely dry prior to sealant installation.

In new construction where the joint is a new cut, a shallow cut may be used where the backer rod is placed on the bottom of the joint. (See Figure 1.) A shallow cut saves time and saw blades.

In repair or remedial work where previous sealant materials have failed, care should be taken to completely remove the failed sealant from the joint faces. A standard joint design is recommended in which the backer rod is slightly above the shelf. Extra space

should be provided to allow for possible "pumping" of old failed joint sealant that may have fallen below the joint.

When *Dow Corning* 890-SL Self-Leveling Silicone Joint Sealant is used for sealing reflection cracks in asphalt pavements, additional joint preparation steps must be used. Cracks that have formed in the asphalt pavement must be totally removed by saw cutting along both sides of the crack, exposing freshly cut and sound asphalt joint faces.

When *Dow Corning* 890-SL Self-Leveling Silicone Joint Sealant is used to seal asphalt-to-concrete shoulder joints, care must be taken to ensure that the asphalt is completely removed from the concrete face to which the sealant will be bonding. This can be accomplished by saw cutting tightly along the concrete. A fresh and sound joint face must also be prepared in the asphalt by saw cutting.

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is part of a system that must include the proper backer rod and proper installation procedures. Please refer to *Dow Corning's Installation Guide for Silicone Pavement Sealants* (Form No. 61-507) for more information on applications, preparation and installation.

HANDLING PRECAUTIONS

Caution: Before handling sealant, read product and material safety data sheets for detailed use and health information.

The product contains a proprietary acetamidasilane that liberates N-methyl acetamide (N-MA) during cure. N-MA may cause birth defects based on animal data. Toxicology studies indicate that repeated, prolonged overexposure to N-MA causes an adverse reproductive effect in laboratory animals. Avoid breathing vapors. Do not use in poorly ventilated spaces. Avoid prolonged skin contact. KEEP OUT OF REACH OF CHILDREN.

Fully cured sealant is nonhazardous.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT WWW.DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

USABLE LIFE AND STORAGE

When stored in original, unopened containers at or below 32°C (90°F), *Dow Corning* 890-SL Self-Leveling Silicone Joint Sealant has a shelf life of 12 months from date of manufacture. Refer to product packaging for “Use By” date. Keep containers tightly closed.

PACKAGING

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is supplied in 29-fl oz (857-mL) disposable plastic cartridges, 4.5-gal (17-L) bulk pails, and 50-gal (189-L) bulk drums.

LIMITATIONS

Dow Corning 890-SL Self-Leveling Silicone Joint Sealant is not recommended for continuous water immersion. It should not be applied in totally confined spaces where the sealant is not exposed to atmospheric moisture. The sealant should never be applied to wet or damp asphalt or concrete pavements or installed during inclement weather.

New concrete must be allowed to cure and dry for at least 7 days of good drying weather. For each day of rain that occurs during that period, an additional day should be added to the 7-day drying time.

For “Fastrack” or high early concrete mixes, please contact your Dow Corning technical service representative.

The sealant bead must be recessed below the highway surface to prevent abrasion from traffic and snow removal equipment.

The asphalt and concrete pavements should be sound and without signs of deterioration. If the asphalt pavement shows signs of deterioration, sealing the joint may result in further damage to the asphalt.

Several variables can affect the suitability of an asphalt pavement for joint sealing, including thickness, mix type compaction, age and overall structural integrity of the asphalt pavement.

In addition, pavements with poor base conditions, including numerous patches, misaligned slabs and mid-slab cracking, are not candidates for saw and sealing techniques¹.

Suitability of *Dow Corning* 890-SL Self-Leveling Silicone Joint Sealant for sealing asphalt expansion joints should be determined by thoroughly testing the product in your specific applications. For further details, please contact your Dow Corning technical service representative.

Joints should be prepared by saw cutting and not routing. Routing of asphalt and concrete pavements can cause microfractures in the pavement that can lead to poor joint performance.

Dow Corning does not promote or warrant the use of *Dow Corning*[®] brand sealants in applications associated with spill containment areas of any kind.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

SHIPPING LIMITATIONS

None.

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, www.dowcorning.com, or consult your local Dow Corning Sales Application Engineer.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer’s tests to ensure that Dow Corning’s products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning’s sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

¹Highway & Heavy Construction, June 1988, p. 53.