Technical Data Sheet

DOWSIL™ 902 RCS Joint Sealant

Rapid-cure, self-leveling, two-part silicone rubber sealant designed to seal expansion joints

Features & Benefits

- Rapid cure
- Easy to use
- Convenient disposal pak
- High movement capability
- Seals irregular surfaces
- Ultra-low modulus
- Fully elastic
- Good weatherability
- Long-life reliability
- All-temperature gunnability
- Bonds to itself
- Curbs – while self-leveling, can be installed in vertical curb joints when proper damming techniques are used

Composition

- Two-part silicone rubber

Applications

- DOWSIL™ 902 RCS Joint Sealant is primarily intended for use in expansion joints found on bridges that vary in width from 1 to 3 inches (25 to 76 mm) at the time of sealing. Wider joints can be sealed; contact your representative for recommendations. The substrate may be concrete/concrete, concrete/steel or steel/steel.
- DOWSIL 902 RCS Joint Sealant can be used as the original sealant in new construction or as a remedial repair sealant in existing construction. In new construction, it provides a long-lasting seal that will prolong the life of the structure.
- For use in repair or remedial applications where other joint sealing materials have failed, it can be used to seal irregularly shaped or minor spalled joints.

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test[1]	Property	Unit	Result
	As Supplied – Part A		
	Color		Dark gray
	Flow, Sag or Slump		Self-leveling
ASTM C 1183	Extrusion Rate	g/minute	354
ASTM D 1475	Specific Gravity		1.3
	Volatile Organic Compounds (VOC)	g/L	34
	As Supplied – Part B		
	Color		White
	Flow, Sag or Slump		Self-leveling
ASTM C 1183	Extrusion Rate	g/minute	308
ASTM D 1475	Specific Gravity		1.3
	Volatile Organic Compounds (VOC)	g/L	0
	As Installed – At 25°C (77°F) and 50 Percent Relative Humidity		
	Skin-Over Time at 25°C (77°F)	minutes	12
ASTM C 679	Tack-Free Time at 25°C (77°F)	minutes	50
ASTM D 412 Die C	Joint Elongation[2]	%	> 1200
ASTM D 412 Die C	Joint Modulus[2] at 150 percent	psi (kPa)	9.9 (68.2)
ASTM C 719	Joint Movement Capability[2] 10 cycles	%	+100/-50
ASTM C 793	Accelerated Weathering, 5000 hours QUV exposure		Pass

1. ASTM: American Society for Testing and Materials.
2. Joint size = ½ inch x ½ inch x 2 inches (13 mm x 13 mm x 51 mm).

Description

DOWSIL 902 RCS (Rapid Cure Silicone) Joint Sealant is a self-leveling, cold-applied, rapid-cure, two-part, easy-to-install, ultra-low-modulus, 100 percent silicone rubber sealant designed to seal expansion joints that experience both thermal and/or vertical movements due to traffic loading. DOWSIL 902 RCS Joint Sealant can be used for new and remedial applications. Its rapid cure is especially well suited for maintenance work, such as bridge joint resealing, where resealing must be completed within a short time period (i.e., less than 8 hours) to minimize traffic disruption.

The ultra-low modulus of DOWSIL 902 RCS Joint Sealant allows it to accommodate the high degree of movement associated with expansion joints on bridges. Its rapid cure means it will cure fast enough to accommodate typical daily thermal movements and/or differential joint movement caused by traffic without being damaged (see Figure 1). In comparison, one-part sealants typically require 7 to 21 days to cure and often are prematurely damaged due to excessive movement prior to complete cure.

DOWSIL 902 RCS Joint Sealant is self-leveling, allowing it to conform to irregularly shaped joints. In many instances, this may eliminate the need for minor joint refacing, reducing repair time and cost.

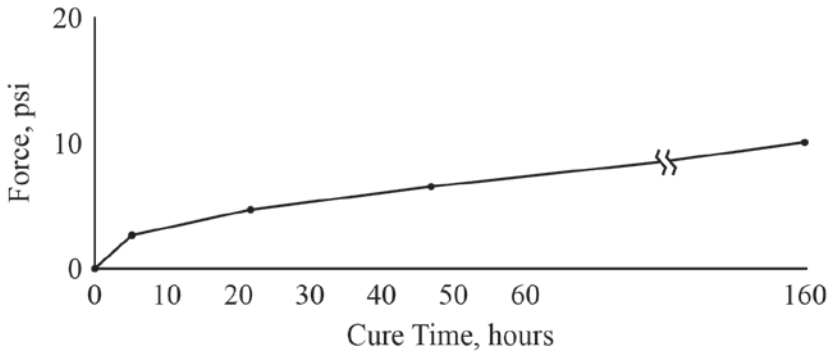


Figure 1: Cure Rate of DOWSIL 902 RCS Joint Sealant.[1]

[1]1½-inch (13mm) wide joint modulus at 100 percent.

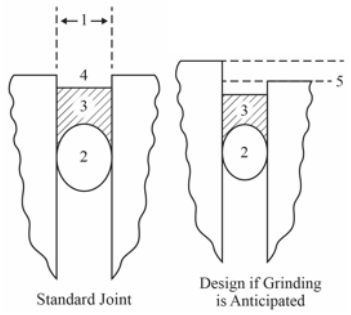
Benefits

- Rapid cure – Develops sufficient integrity within 8 hours to accommodate movements associated with bridges
- Easy to use – Self-leveling (no tooling), a two-part formulation with the ease of one-part installation; no pre-mixing or measuring required
- Convenient disposal pak – Available in EZ Pak sausages; easy to load, use and dispose, minimizing waste
- High movement capability – Once cured, the sealant will accommodate movements +100/-50 percent of joint size for joints 1 to 3 inches (25 to 76 mm) wide at the time of installation; the sealant accommodates up to ±50 percent of joint size for joints 3 to 4 inches (76 to 102 mm) wide at the time of installation
- Seals irregular surfaces – Self-leveling characteristics make the sealant ideal for sealing irregular joint surfaces by providing adequate contact to the substrate with no tooling
- Ultra-low modulus – Easily stretches in the joint with little stress on the bond line or joint wall, maximizing the probability of a successful seal with continuous or gradual joint movement
- Fully elastic – Recovers 90 percent or greater of its original dimension under repeated extension and/or compression without cracks or splits
- Good weatherability – The 100 percent silicone rubber is virtually unaffected by sunlight, rain, snow, ozone or temperature extremes; unlike organics, DOWSIL 902 RCS Joint Sealant will not stiffen in cold temperatures or soften in warm weather – it will not degrade or crack with sunlight
- Long-life reliability – Under normal conditions, cured sealant stays rubbery from -45 to 149°C (-50 to 300°F) without cracking, tearing or becoming brittle
- All-temperature gunnability – Consistency and self-leveling characteristics are relatively unchanged over normal installation temperature range
- Bonds to itself – Ideal for maintenance applications where only one traffic lane can be sealed at a time, but a continuous seal is required when the adjacent lanes are sealed
- Curbs – While self-leveling, can be installed in vertical curb joints when proper damming techniques are used

How To Use

Joint Design

A thin bead of silicone sealant will accommodate more movement and result in less bond line stress than a thick bead. DOWSIL 902 RCS Joint Sealant should be installed no thinner than ⅜ inch (9 mm) and no thicker than ½ inch (13 mm). See Table 1 and Figure 2 for proper bead thickness, joint design and recommended movement ranges.



1. Joint width wide enough to accommodate movement.
2. Proper backer rod placement to prevent three-sided adhesion.
3. Sealant installed to proper depth and width.
4. Sealant recessed a minimum of ½ inch (13 mm) below pavement surface.
5. 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.

Figure 2: Recommended Joint Designs.

Table 1: Movement Range and Usage Rate.

Joint Width		Movement Rating	Maximum Sealant Bead Thickness		Linear Yield, 40-oz Kit		Linear Yield, 9-gal Kit	
Inches	mm	Percent	Inches	mm	ft	m	ft	m
1	25	+100/-50	½	13	9	2.74	260	79.3
1¼	32	+100/-50	½	13	7.5	2.29	210	64.0
1½	38	+100/-50	½	13	6	1.83	160	48.8
1¾	44	+100/-50	½	13	5	1.52	135	41.1
2	51	+100/-50	½	13	4.5	1.37	120	36.6
2¼	57	+100/-50	½	13	4	1.22	110	33.5
2½	63	+100/-50	½	13	3.5	1.07	100	30.5
2¾	70	+100/-50	½	13	3	0.91	75	22.9

Table 1: Movement Range and Usage Rate. (Cont.)

Joint Width[1]		Movement Rating	Maximum Sealant Bead Thickness		Linear Yield[2], 40-oz Kit		Linear Yield[3], 9-gal Kit	
Inches	mm	Percent	Inches	mm	ft	m	ft	m
3	76	+100/-50	½	13	2.5	0.76	60	18.3
3¼	83	±50	½	13	2.25	0.69	55	16.8
3½	89	±50	½	13	2.1	0.64	50	15.2
3¾	95	±50	½	13	2	0.61	45	13.7
4	102	±50	½	13	1.5	0.46	40	12.2

1. Joint width as measured at the time of installation.
2. Yield based on one kit containing two 20 floz EZ Pak sausages. Yield will vary depending on joint design, tooling, backer, placement, waste and experience.
3. Yield based on one kit containing two 4.5 gallon pails. Yield will vary depending on joint design, tooling, backer, placement, waste and experience.

How To Use (Cont.)

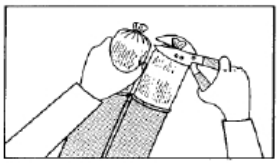
Application Method

DOWSIL 902 RCS Joint Sealant comes in kits consisting of two 20 fl oz EZ Pak sausages: Part A (black) and Part B (white). With a dual sausage pneumatic gun (such as Model 635-1 supplied by Albion Engineering Co., Inc.[1]), load Parts A and B into the designated sides so that the crimped end is approximately ½ inch (13 mm) above the end of the cylinder. To open the sausage pak (see Figure 3), cut off the exposed crimped end of Part B. Repeat this step for Part A. Quickly attach the rear housing and static mixer.

The materials are then dispensed at a predetermined ratio of 1:1 by volume through the static mixer and into the joint. The extruded material must be gray in color.

Guidelines for the proper use of DOWSIL 902 RCS Joint Sealant include:

- The inlet air pressure to the gun should not exceed the gun manufacturer's recommendation.
- The recommended static mixer should have a minimum ½ inch (13 mm) inside diameter and sufficient mixing elements to give the desired color. An example of a typical static mixer that can be used is one that has a 12 inch (305 mm) long plastic shell by ½ inch (13 mm) inside diameter, with a minimum of 8 inches (203 mm) of mixing elements.
- Prior to attaching the static mixer to the gun, dispense a small amount of material (A and B) to ensure the gun is dispensing both parts.
- To continue using the same static mixer, do not allow elapsed time to exceed 5 minutes when changing kits. The mixer should not remain inactive for longer than 5 minutes.



Cut off and remove the metal-clipped end of EZPak sausage.

Figure 3: How to Load the EZ-Pak Sausage

[1]Albion Engineering Co., Inc., 1250 North Church St., Moorestown, NJ 08057-1102, (856) 235-6688.

Installation Procedures

When installing DOWSIL 902 RCS Joint Sealant, it is critical that the joint be clean and dry prior to and during installation. DOWSIL 902 RCS Joint Sealant is primarily intended for Portland cement concrete surfaces or steel joint surfaces.

If other substrate surfaces, such as polymer concrete and asphalt, are to be sealed, contact technical service and development for recommendations.

The detailed recommended installation procedures found in the Installation Guide for Silicone Pavement Sealants (Form No. 61-507) and DOWSIL 902 RCS Joint Sealant Installation Guidelines (Form No. 62-272) apply to this product. A brief outline of the installation procedures for DOWSIL 902 RCS Joint Sealant is included in “Remedial Applications.”

Primer Recommendations

When using primers, consult local and state laws for VOC compliance.

For concrete substrates, uniformly coat the entire surface with DOWSIL™ 1200 OS Primer or DOWSIL™ P5200 Adhesion Promoter using a clean cloth or brush. Over-application may affect adhesion. Allow a minimum of 10 minutes for the primer to dry prior to sealant application.

For carbon steel substrates, after sandblasting to “white metal,” apply Carboline® Carboguard 635. Please refer to the Installation Guidelines, form 62-272 or contact your local representative for specific installation information.

Backer Recommendations

For joints greater than 3 inches (76 mm) in width at the time of sealing, it may be difficult to obtain backer rod that will stay in place during sealant cure and not be so large that it tears or is punctured during backer installation. Two options for this condition are:

1. Use of a soft, open-cell rod with an impervious skin that will readily compress to smaller joint widths without damage.
2. Increase the size of a standard backer rod by splicing it open and inserting a smaller diameter rod – a practice known as “hot-dogging” (see Figure 4).

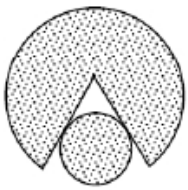


Figure 4: Enlarging Backer Rod by “Hot-Dogging”

Remedial Applications

1. Completely remove existing joint materials from the joint. The technique selected will depend on the material currently in the joint.
2. Clean the joint faces to remove residual contaminants. If wet sawing is used, immediately water wash to remove sawing residue, and sandblast after the concrete has dried. Sawing must be deep enough to accommodate proper sealant depth, backer rod and proper sealant recess. For steel, sandblast to a “near white” (SSPC-SP 10 of the Steel Structures Painting manual). Perform sandblasting in two passes – one pass per joint face. Sandblasting should comply with federal and local state laws. Proper protective equipment must be worn.
3. Blow out dust, loose particles and other debris from the joints in only one direction with oil- and water-free compressed air.[2] Surfaces must be clean, dry, frost-free and dust-free and can be checked by running a finger along the joint face. If a white, chalky dust appears on the finger, the joint must be recleaned.
4. Apply recommended primer.
5. Install a backer rod that is a minimum 25 percent oversized into the joint approximately 1 inch (25 mm) below the surface. The backer rod should be continuous. If two pieces must be joined, abut the two ends and tape them together to prevent sealant “run down.”
6. Install the sealant in a manner so that the bead thickness is ⅜ inch (9 mm) minimum and ½ inch (13 mm) maximum and the sealant is recessed a minimum ½ inch (13 mm) below the surface to prevent traffic abrasion (see Table 2). To maximize joint wall wetting, install DOWSIL 902 RCS Joint Sealant using a multi-pass technique with the initial passes along each joint wall. All passes should be made in the same direction to minimize air entrapment.
7. When the vertical curb joints are to be sealed, the sealant should also be recessed to damage, especially on bridge joints where snow plows are used.

The bottom and outer joint edges must be dammed to prevent sealant from “running out” of the joint. The lower end of the vertical joint can be dammed by using a non-sag sealant, such as DOWSIL™ 888 Silicone Joint Sealant. For the vertical section, damming materials should be positioned so that the installed sealant is sandwiched between the backer rod and the outer damming material. The outer damming material may be another piece of backer rod positioned and held in place with masking tape. Fill the cavity from the bottom up. Allow the sealant to cure prior to removal of outer damming material.

NOTE: If vertical curbs are to be sealed, these should be sealed first. This will allow sufficient time for the sealant to cure so that damming materials can be removed prior to leaving the job site.

[2]OSHA Regulation. General Rules, Part 1, R-408.10036 Paragraph 1.

Table 2: Recommended Backer Rod Installation (Standard Joint).

Measured in Inches					
Joint Width	1	1½	2	2½	3
Recessed Below Surface, minimum	½	½	½	½	½
Sealant Thickness, maximum	½	½	½	½	½
Backer Rod Diameter	1¼	2	2¼	3	3½
Total Joint Depth, minimum	2¼	3	3¼	4	4½
Measured in Millimeters					
Joint Width	25	38	51	63	76
Recessed Below Surface, minimum	13	13	13	13	13
Sealant Thickness, maximum	13	13	13	13	13
Backer Rod Diameter	32	51	57	76	89
Total Joint Depth, minimum	57	76	83	102	114

Handling Precautions

The product contains a proprietary acetamidosilane 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 SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life And Storage

When stored in original, unopened containers between 0 and 32°C (32 and 90°F), DOWSIL 902 RCS 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 Information

DOWSIL 902 RCS Joint Sealant is supplied in kits consisting of two 20 fl oz (592 mL) EZ Pak sausages. It is also available in kits consisting of two 4.5 gal (17 L) bulk plastic pails upon request.

Limitations

DOWSIL 902 RCS Joint Sealant is not recommended for continuous water immersion. The sealant should not be installed under totally confined conditions.

DOWSIL 902 RCS Joint Sealant must be recessed below the pavement surface to prevent traffic abrasion or snow plow damage. It must not be installed in joints that cause the sealant to come in contact with traffic or exceed its stated capability. For joints expected to be used in pedestrian areas and parking structures, proper engineering practices must be followed.

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 has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

http://www.consumer.dow.com