

Dow Corning® 790 Silicone Building Sealant

1. PRODUCT NAME

Dow Corning® 790 Silicone Building Sealant

2. MANUFACTURER

Dow Corning Corporation
Midland, Michigan 48686-0994
Phone: (517) 496-6000
FAX: (517) 496-4586

3. PRODUCT DESCRIPTION

Dow Corning 790 Silicone Building Sealant is a one-part silicone formulation that cures in the presence of atmospheric moisture to produce a durable, fire-resistant, flexible and ultra-low-modulus silicone rubber building joint seal.

Because of its ultra-low modulus, high elongation, compression/extension recovery, and its ability to form strong, durable bonds with most building materials, this sealant provides excellent performance, even in building joints that experience extreme movement. It is recommended as a remedial sealant for joints in which other materials have badly weathered or failed due to excessive movement. The high joint movement ability of Dow Corning 790 Silicone Building Sealant allows the repair of failed joints, generally with no joint widening – saving time and labor costs.

Basic Uses: Dow Corning 790 Silicone Building Sealant offers outstanding unprimed adhesion to masonry and is particularly effective for sealing expansion and control joints, precast concrete panel joints, Exterior Insulation and Finish Systems (EIFS) joints, curtainwall joints, mullion joints, stone pavers and many other construction joints.

The sealant forms a durable, flexible, watertight bond with most building materials in any combination: stone, masonry, ceramics, granite, wood, steel, aluminum and plastics. Several manufacturers of EIFS (including Dryvit Systems and others) specify the use of

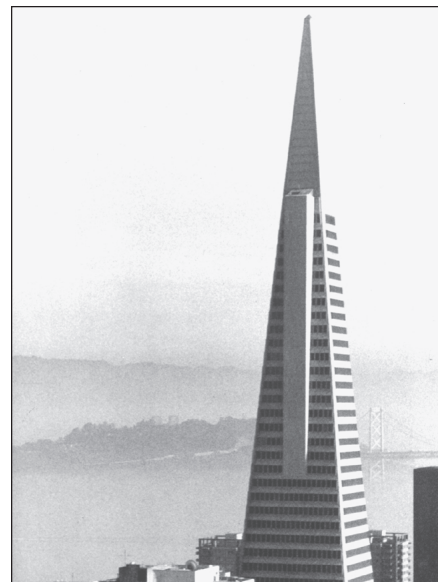
Dow Corning 790 Silicone Building Sealant for new and remedial applications. (For priming and backer rod recommendations, please refer to Dow Corning's *Weatherproofing Sealant Guide*, Form No. 62-433. In many cases, no prime coat is required. For more information specific to EIFS repair, consult the Dow Corning EIFS Restoration Guide, Form No. 62-510.)

Dow Corning 790 Silicone Building Sealant is USDA authorized in six colors for sealing non-food contact areas in USDA-regulated facilities.

Dow Corning 790 Silicone Building Sealant passes a UL Fire Resistance test in an exterior joint configuration sealing system without a steel cover plate. The material also stands up to a high-pressure water force without a protective cover plate.

Limitations: Dow Corning 790 Silicone Building Sealant should not be applied:

- Below grade.
- On brass.
- To surfaces that are continuously immersed in water.
- For use as an interior penetration firestop sealing system.
- To building materials that bleed oils, plasticizers or solvents – materials such as impregnated wood, oil-based caulks, green or partially vulcanized rubber gaskets or tapes or bituminous below-grade waterproofing and asphalt-impregnated fiberboard.
- In totally confined spaces because the sealant requires atmospheric moisture for cure.
- To surfaces that will be painted. The paint film will not stretch with the extension of the sealant and may crack and peel.
- To surfaces in direct contact with food. This sealant has not been tested to determine its status under Federal Food and Drug Administration regulations. (For food contact use, Dow Corning® 999-A Silicone Building & Glazing Sealant is recommended.)



Dow Corning 790 Silicone Building Sealant was specified on San Francisco's Transamerica Pyramid after the original sealants failed.

- To wet or frost-laden surfaces. This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Composition and Materials: Dow Corning 790 Silicone Building Sealant is an ultra-low-modulus, one-part, ready-to-use material that has the consistency of toothpaste. This consistency remains uniform over a wide temperature range, allowing the sealant to be applied easily at most temperatures.

Primer is not required with concrete, glass, limestone, granite and most porous surfaces. Most aluminum substrates (painted, mill, anodized, etc.) and other nonporous surfaces require use of a primer. See Table I and consult Dow Corning for priming recommendations on other materials.

In all cases, a sample should be tested and/or test joints should be installed on the project.

Packaging: Dow Corning 790 Silicone Building Sealant is packaged in 10.3-fl oz (305-mL) disposable

TYPICAL PROPERTIES

These values are not intended for use in preparing specifications.

As Supplied

	Colors	11 colors, custom colors also available
ASTM C 679	Tack-Free Time, 50% RH, hours	1
	Curing Time, 50% RH, at 25°C (77°F), days	7-14
	Full Adhesion, days	14-21
	Flow, Sag or Slump, in 3-inch-wide joint	None
	Working Time, minutes	10-20
	VOC Content, g/L (11 colors)	39
	VOC Content, g/L (custom colors)	43

As Cured – After 7 days at 25°C (77°F) and 50% RH

ASTM C 661	Durometer Hardness, Shore A, points	15
ASTM D 412	Ultimate Tensile Strength, maximum elongation, psi, (kgf/mm ²)	100 (0.07)
ASTM D 412	Elongation, percent maximum	1600
ASTM C 794	Peel Strength, lb/in (kg/cm)	25 (4.46)
ASTM C 1135	Tensile Adhesion, psi at 25% extension	15
	at 50% extension	20
ASTM C 1135	Weathering, after 22,400 hours in QUV Weatherometer ASTM G 53, psi at 25% extension	30
	at 50% extension	40
ASTM C 719	Joint Movement Capabilities, percent, Extension	+100
	Compression	-50
ASTM C 1248	Staining, after 14 days of 50% compression, at 70°C (158°F) on concrete, granite, limestone and brick	None
UL 263	Fire Endurance, hours	2
ASTM E 119		

Specification Writers: Please obtain a copy of the Dow Corning Sales Specification for this product, and use it as a basis for your specifications. It may be obtained from any Dow Corning Sales Office, or from Dow Corning Customer Service in Midland, MI. Call 1-800-322-8723.

- Fire Tests of Building Construction and Materials, UL 263 (ASTM E 119)
- Canadian Specification CAN2-19.13-M82

Data from an independent test lab and SWRI validation is available from Dow Corning and the SWRI.

4. TECHNICAL DATA

Dow Corning 790 Silicone Building Sealant is virtually unaffected by sunlight, rain, sleet, snow, ultraviolet radiation and temperature extremes. Its unique weatherability enables it to retain its original design properties even after years of exposure. Joint performance does not change significantly with aging or exposure to weather.


Dow Corning 790 Silicone Building Sealant does not contain PCBs or asbestos. Additionally, *Dow Corning 790 Silicone Building Sealant* has low VOC content (see Typical Properties).

Dow Corning 790 Silicone Building Sealant is an ultra-low-modulus material; therefore, joint movement places only a low stress on the sealant/substrate bond line. The material also shows good recovery from extension and compression. It is this unique blend of properties that enables this sealant to perform well, even in joints that experience movement extremes.

When applied according to instructions, this material typically provides joints that can be stretched 100 percent or compressed up to 50 percent of original joint width without affecting the integrity of the seal or bond. However, joints should never be designed at the sealant's ultimate movement capability. Recommended joint movement should be 50 percent of total movement, based upon initial joint width.

Cured sealant stays rubbery during temperature extremes normally experienced on buildings without tearing, cracking or becoming brittle. It is virtually unaffected by time or the elements.

Dow Corning 790 Silicone Building Sealant has been tested by UL for performance when exposed to flames (see Table II). The material, when in a joint configuration sealing system without a protective cover plate, meets the two-hour fire resistance ratings with or without the use of mineral wool as a backer. This is in accordance with Standard UL 263 (ASTM E 119). *Dow Corning 790 Silicone Building Sealant* also holds up when exposed to a high-pressure water force without a protective cover plate.



SWRI SEAL OF VALIDATION

994002

The SWRI Seal has been graded through validation that this product performs according to the SWRI Priority Performance Properties Profile as indicated below:

<p>ASTM C719 Adhesion/Cohesion (Hockman Cycle)</p> <p>Extension <u>+100%</u> Compression <u>-50%</u></p> <p>Pass <u>X</u> Fail _____</p> <p>Substrate: Glass (Non-Primed), Aluminum (Primed) Mortar (Non-Primed)</p> <p><small>Complete test data available promptly upon request from SWRI</small></p>	<p>ASTM C794 Adhesion in Peel Rating <u>21.3</u></p> <p>Pass <u>X</u> Fail _____</p> <p>ASTM C661 Hardness - Shore "A" Durometer</p> <p>Rating <u>15</u></p> <p>Accepted Range: 15 - 50</p>
---	---

**Sealant,
Waterproofing &
Restoration
Institute**

cartridges that fit ordinary caulking guns, 20-fl oz (590-mL) E-Z Pak foil sausages that fit caulking guns, and also in 2.0- and 4.5-gal (7.5- and 17-L) bulk pails. It can be dispensed by many air-operated guns and most types of bulk dispensing equipment.

Colors: *Dow Corning 790 Silicone Building Sealant* is available in 11 colors: black, precast white, gray, natural stone, bronze, adobe tan, blue spruce, rustic brick, sandstone, charcoal

and dusty rose. Custom colors are available upon request.

Application Standards: *Dow Corning 790 Silicone Building Sealant* exceeds the durability requirements of:

- ASTM Specification C 920, Type S, Grade NS, Class 25, Use T, NT, M, G, A and O
- Federal Specification TT-S-001543A for silicone building sealants
- Federal Specification TT-S-00230C for one-component building sealants

Table I: Dow Corning 790 Silicone Building Sealant Surface Preparation and Priming Recommendations¹

<u>Substrate</u>	<u>Surface Preparation</u>	<u>Recommended Primer</u>
Concrete and masonry surfaces, such as brick, concrete, mortar and grout.....	Abrade/dust	None
Stone surfaces, such as granite, limestone and sandstone	Abrade/dust	None
Siliconized polyester paint	Oil-free solvent wipe ²	None
Glass, glazed surfaces, tile	Oil-free solvent wipe	None
Mill-finished aluminum	Abrade/oil-free solvent wipe	Dow Corning® 1200 Prime Coat or Dow Corning® 1593 Cleaner/Primer
Anodized aluminum or aluminum coated with fluoropolymer-based paint	Oil-free solvent wipe	Dow Corning 1200 Prime Coat or Dow Corning 1593 Cleaner/Primer
Steels: carbon, stainless	Oil-free solvent wipe	Dow Corning 1200 Prime Coat or Dow Corning 1593 Cleaner/Primer
EIFS base and top coats	Abrade	Dow Corning 1200 Prime Coat or Dow Corning 1593 Cleaner/Primer

¹For more information, refer to Dow Corning’s Weatherproofing Sealant Guide, Form No. 62-433.

²Please follow the solvent manufacturer’s safe handling recommendations and local, state and federal regulations regarding solvent usage.

Note: Use cleaning solvents sparingly near Dow Corning 790 Silicone Building Sealant because its unique curing chemistry can be affected if the solvents are not allowed to completely evaporate prior to sealant installation.

5. INSTALLATION

Joint Design: A thin bead of silicone sealant will accommodate more movement than a thick bead (see Figure 1). Dow Corning 790 Silicone Building Sealant should be no thicker than 3/8 inch (9.6 mm) and no thinner than 1/8 inch (3.2 mm). Ideally, the ratio of joint width to sealant depth should be about 2:1.

Closed-cell expanded polyethylene backer rod or non-gassing polyolefin backer rod are the recommended back-up materials for horizontal and vertical joints with porous substrates; polyethylene tape is recommended for joints too shallow to allow placement of foam rod. Open-cell polyurethane backer rod is required with nonporous substrates to allow curing from both sides of the sealant. These permit application of a thin bead and act as bond breakers that allow the silicone sealant to stretch freely with the joint.

Joint Dimensions: The joint width should not be less than 1/4 inch (6.4 mm). The joint depth should allow a sealant depth of 1/8 inch (3.2 mm) to a maximum of 3/8 inch (9.6 mm). The silicone sealant bead depth should be less than the joint width. Ideally, the ratio of joint width to sealant depth should be about 2:1 (see Figure 1 and Table III).

Fire Rating: In a properly designed joint, Dow Corning 790 Silicone

Table II: UL Fire Resistance Rating for Joints Using Dow Corning 790 Silicone Building Sealant (Per UL 263, ASTM E 119)

<u>Maximum Joint Width, inches</u>	<u>Exterior Joint Sealant Thickness, inches</u>	<u>Forming Material</u>	<u>Forming Material Thickness (Item 2), inches</u>	<u>Rating, hours</u>
1	1 1/2 ⁽¹⁾	Backer Rod	–	1.5
3	1/2	Mineral Wool	3	2

¹This is not a typical joint design. Cure time for such a design will be considerably lengthened, but the sealant will still seal. This is not a recommended design for dynamic joint applications.

Table III: Estimating Requirements¹

Linear Feet Per Gallon of Dow Corning 790 Silicone Building Sealant for Various Joint Sizes									
Width, Inches									
Depth, Inches		1/4	3/8	1/2	5/8	3/4	1	2	3
	1/8	616	411	307	–	–	–	–	–
	3/16	411	275	205	164	–	–	–	–
	1/4	307	205	154	123	103	–	–	–
	3/8	–	137	103	82	68	51	25	17
	1/2	–	–	77	62	51	39	20	13

¹Installation yields (linear feet/gallon) are based on calculations for an exact sealant shape-factor. Actual yield will vary depending on deviation from calculated bead shape, tooling techniques, backer material placement, waste, and applicator experience.

Building Sealant can be applied without a cover plate and with or without a mineral wool backer material, yet still be fire resistant (see Table II and Figure 2). See UL Fire Resistance Directory Design U 900 D.

Preparatory Work: Clean all concrete, masonry and stone joints of all contaminants and impurities. Concrete form release agents, water repellents, laitance, surface dirt and rust, all old sealants and other surface treatments and protective coatings are examples of materials that must be removed from the joint surfaces to obtain proper sealant adhesion. Porous substrates should be cleaned where necessary by grinding, saw cutting, blast cleaning (sand or water), mechanical abrading or a combination of these methods as required to provide a sound, clean, dry surface for sealant application.¹ Dust, loose particles, etc., should be blown out of joints with oil-free compressed air or be vacuum cleaned.

Metal and glass surfaces adjacent to masonry should be cleaned by wiping with an oil-free absorbent cloth saturated with solvent such as xylene or toluene. *Do not use alcohols as they inhibit the cure.*

Follow the solvent manufacturer's safe handling recommendations and local, state and federal regulations regarding solvent usage.

Priming: Primer should be applied before installing the backer rod. Refer to Table I for priming recommendations. Applying a bead of silicone sealant to the substrate material to test adhesion prior to general use is always recommended.

Masking: Areas adjacent to joints may be masked to ensure neat sealant lines. Do not allow masking tape to touch clean surfaces to which the silicone sealant is to adhere. Tooling should be completed in one continuous stroke immediately after sealant application and before a skin forms. Masking should be removed immediately after tooling.

Method of Application: Dow Corning 790 Silicone Building Sealant should be applied in a continuous operation. A positive pressure adequate to properly fill and seal the joint width should be employed. Tool or strike Dow Corning 790 Silicone Building Sealant with light pressure to spread the material against the back-up material and the joint surfaces. *Do not use soaps, oil or alcohols as tooling aids as they inhibit the cure.*

Use a tool with a concave profile to keep Dow Corning 790 Silicone Building Sealant within the joint. The sealant can be applied at outdoor temperatures as low as -29°C (-20°F), provided that surfaces are clean, dry and frost-free. As a general rule, condensation or frost should not be a problem above 4.4°C (40°F).

It is imperative that uncured silicone sealants are not allowed to contact nonabradable surfaces such as polished granites, metal or glass. Because excess silicone sealant cannot be completely removed with organic or chlorinated solvents, these surfaces must be masked or extreme care taken to prevent any silicone sealant from contacting them during sealant application. Once an uncured sealant contacts the surface, it will leave a film that may change the aesthetic surface characteristics of that substrate.

In cases where excess uncured sealant is inadvertently applied to adjacent surfaces, the sealant should be cleaned from nonporous surfaces before curing, using a commercial solvent such as xylene. Follow the solvent manufacturer's safe handling recommendations and local, state and federal regulations regarding solvent usage.

Safe Handling Information: PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. 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 FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY WRITING TO DOW CORNING CUSTOMER SERVICE, OR BY CALLING (517) 496-6000.

Storage and Shelf Life: When stored at or below 32°C (90°F), Dow Corning 790 Silicone Building Sealant has a shelf life of 12 months from date of manufacture. Refer to product packaging for "Use By" date.

6. AVAILABILITY AND COST

Availability: Dow Corning 790 Silicone Building Sealant is marketed throughout the United States, Canada, Europe, Latin America, Australia and Japan through construction product distributors.

Cost: Prices per gallon depend on volume of purchase. Contact a local Dow Corning distributor.

7. WARRANTY

Limited Weatherseal Warranty: Dow Corning Corporation produces and sells a full line of silicone construction sealants and adhesives. These products offer a variety of physical characteristics and adhesion properties. Dow Corning 790 Silicone Building Sealant is part of that line and, when used in vertical applications with compatible substrates and when applied within the stated shelf life and according to manufacturer's recommendations for application and joint design, Dow Corning warrants that it will perform as a watertight weatherseal for a period of 20 years from the date of purchase.² Warranty for horizontal applications varies by project.³

In addition to maintaining the integrity of the weatherseal, the sealant will not change color when used with back-up materials and substrates that have been approved for compatibility by Dow Corning either after specific testing or noted in a current Dow Corning publication.

Limitations: This warranty specifically excludes failure of the sealant due to:

- Natural causes that exceed design specifications
- Movement of the structure resulting in stresses on the sealant that exceed Dow Corning's published specifications for elongation and/or compression for the sealant, whether due to structural settlement, design error or construction error
- Use in a structural application
- Disintegration of the underlying substrates
- Mechanical damage to the sealant caused by individuals, tools or other outside agents
- Changes in the appearance of the sealant from the accumulation of dirt or other contaminants deposited on the sealant from the atmosphere

¹Note: Dow Corning's recommendations for removal of existing sealants, substrate cleaning, joint preparation and installation of Dow Corning® brand silicone building sealants are not intended and may not be appropriate for remedial work involving existing sealants and/or joints containing PCBs or other potentially hazardous substances. If you know or suspect that the existing sealants and/or joints contain PCBs or other hazardous substances, contact a knowledgeable authority on appropriate removal, handling and disposal procedures.

²Note: In some specific product applications, Dow Corning may offer a specific warranty in lieu of the 20-year Weatherseal Limited Warranty. Please consult your local Dow Corning Sales Specialist for details on how to obtain a specific warranty.

³Horizontal applications requiring a warranty must be reviewed by a Dow Corning Sales Specialist.

Remedies: In the event of a claim under this warranty, you must notify Dow Corning Corporation in writing within 30 days of the occurrence of the claimed defect and provide Dow Corning with the opportunity to inspect. Dow Corning's sole responsibility shall be to furnish sufficient silicone replacement material to restore the integrity of the weatherseal. Any labor or other costs associated with the repairs are the responsibility of the owner. DOW CORNING SHALL NOT BE LIABLE FOR AND EXPRESSLY DISCLAIMS ANY LIABILITY FOR DAMAGE TO THE CONTENTS OF THE STRUCTURE OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGE, WHETHER IN CONTRACT OR IN TORT, INCLUDING NEGLIGENCE. THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR ORAL, EXPRESS OR IMPLIED WARRANTIES AND DOW CORNING SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.

Silicone Structural Adhesives: Dow Corning 790 Silicone Building Sealant is not intended for use as a structural adhesive and Dow Corning Corporation disclaims any express or implied warranty of fitness for use in structural applications. Dow Corning® 795 Silicone Building Sealant, Dow Corning® 995 Silicone Structural Adhesive and Dow Corning® 983 Silicone Glazing and Curtainwall Adhesive/Sealant may be used for structural applications after compatibility and adhesion testing and print/specification review by Dow Corning. For details on how to obtain the structural warranty, please contact a Dow Corning Sales Specialist.

8. MAINTENANCE

If the sealant becomes damaged, replace the damaged portion. Dow Corning 790 Silicone Building Sealant will adhere to cured silicone sealant with only a preparatory solvent wipe to remove accumulated dirt. The cured sealant can easily be cleaned with soap and water.

9. TECHNICAL SERVICES

Complete technical information and literature are available from authorized Dow Corning distributors. Laboratory facilities, technical service and a list of distributors are available from Dow Corning. For assistance, please call 1-800-322-8723.

Figure 1: Recommended Joint Design and Typical Joint Sealing Configurations (See Weatherproofing Sealant Guide, Form No. 62-433)

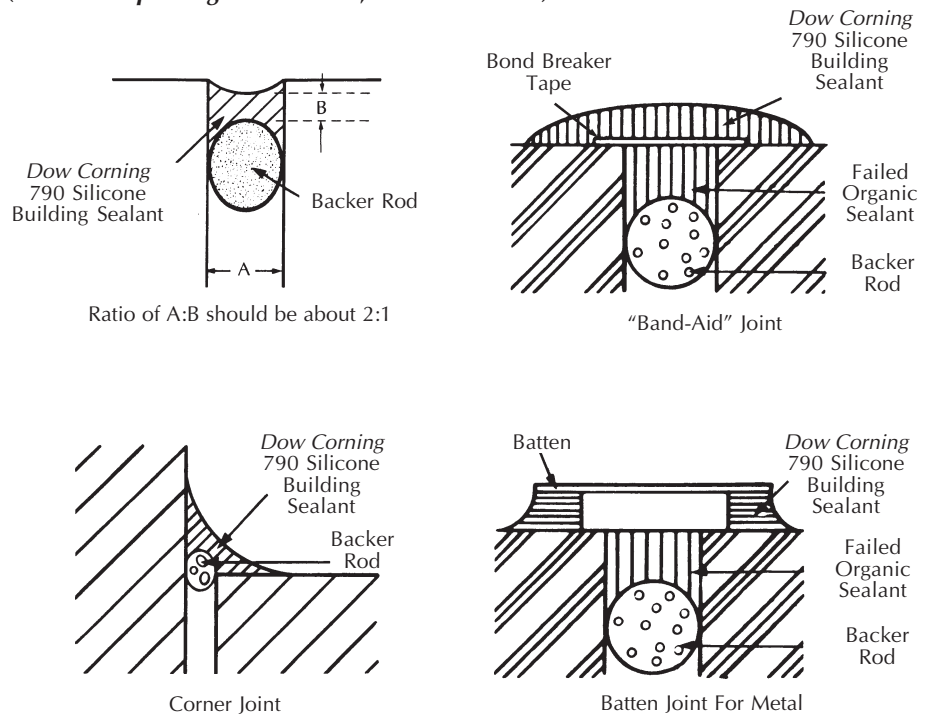
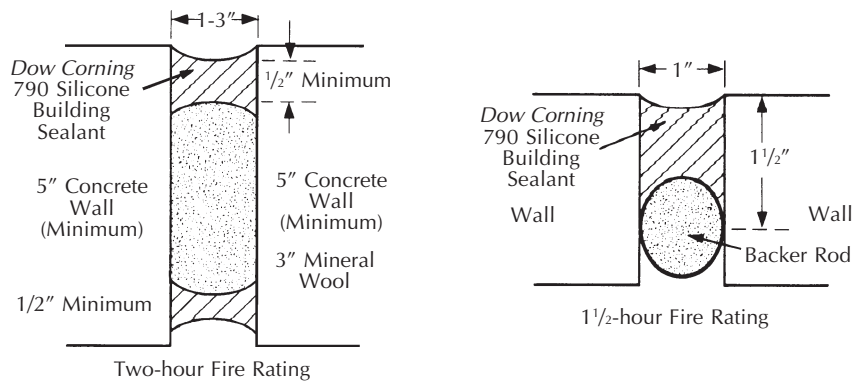


Figure 2: Exterior Joint Sealing Configurations and Fire Ratings (Per UL 263, ASTM E 119)



See UL Fire Resistance Directory Design U 900 D.

10. FILING SYSTEMS

- Sweet's Catalogs Section 07900/DOW
- General Building
- Industrial Construction and Renovation
- Mechanical Engineering
- Civil Engineering
- Engineering Comprehensive
- Architectural specifications and complete technical literature are available upon request. Contact Dow Corning for specific bulletins.

How To Contact Us

Dow Corning has sales offices, manufacturing sites, as well as science and technology laboratories around the globe. Telephone numbers of locations near you are available on the world wide web at www.dowcorning.com, or by calling one of our primary locations listed below.

Your Global Connection

Asia

Dow Corning Asia Ltd. – Japan

Tel: +81 3 3287 1151

Dow Corning Asia – Singapore

Tel: +65 253 6611

Australia & New Zealand

Dow Corning Australia Pty. Ltd.

Tel: +61 1300 360 732

Europe

Dow Corning Europe

Tel: +32 2 655 2111

North America

Dow Corning Corporation

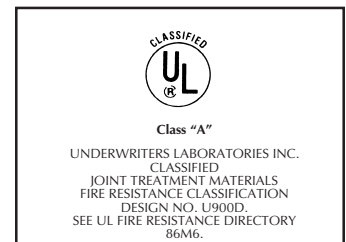
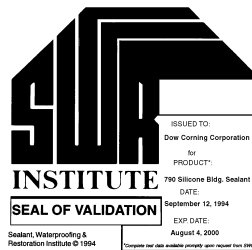
World Headquarters

Tel: +1 517 496 6000

South America

Dow Corning do Brasil

Tel: +55 11 3759 4300



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. 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. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of uses should not be taken as inducements to infringe any particular patent.

Dow Corning is a registered trademark of Dow Corning Corporation.

WE HELP YOU INVENT THE FUTURE is a trademark of Dow Corning Corporation.

©2000 Dow Corning Corporation. All rights reserved.

Printed in USA

FPH21459

Form No.61-884G-01

DOW CORNING

**WE HELP YOU INVENT
THE FUTURE.™**

www.dowcorning.com