



DOWSIL™ Joint Sealants Guide Specification (Full Length Version)

To support the growing demand for innovative, high-performance and sustainable structures, Dow is continuously strengthening its suite of construction solutions and services for building professionals. Silicone-based sealants, coatings, water repellents and concrete admixtures by Dow are designed to protect, strengthen, and preserve building materials in new construction and renovation projects. For example, silicone construction sealants have a life expectancy that is typically three times longer than organic sealants used in the same applications. They waterproof, remain flexible, and resist the effects of ultraviolet (UV) light and common temperature extremes.

Structural glazing and weatherproofing silicone products by Dow can contribute to building performance improvements by increasing energy performance and extending building life. When used in combination with other construction materials, use of silicones by Dow can contribute to earning LEED® (Leadership in Energy and Environmental Design) credits as administered by the U.S. Green Building Council.

Dow provides industry professionals with product information, technical expertise, design tools and other resources to create total building system solutions, based on decades of construction industry expertise, technical service, support resources, and customized construction services. Dow offers:

- Information regarding using silicone to achieve LEED credits
- Downloadable product selection guides and data sheets
- Application and technology development education
- Evaluations to ensure proposed applications meet Dow standards for warrantable performance
- AIA Continuing Education programs

Working with leading architects and contractors, Dow has contributed to innovative designs such as the Solano County Government Center in Fairfield, California, Solano County's first LEED-certified building. The building incorporates significant sustainable design/build elements, including extensive use of solar electricity and an award-winning co-generation plant. Silicone sealants from Dow complement its energy-efficient technologies with contributions to its weatherproofing and life-cycle.

Dow provides performance-enhancing solutions to serve the diverse needs of more than 25,000 customers worldwide. A global leader in silicones, silicon-based technology and innovation, Dow offers more than 7,000 products and services via the company's DOWSIL™ and XIAMETER™ (xiameter.com) brands. More than half of Dow Consumer Solutions' annual sales are outside the United States.

We recommend you consult with your Dow construction technical representative, who can be contacted through:
The Dow Chemical Company, Midland MI; (877) SEALANT ((877) 732-5268); email: construction@dow.com;
dow.com/construction.

Products from Dow appear in the following CSI Master Format specifications sections:

- Section 07 01 91 Joint Sealant Rehabilitation and Replacement
- Section 07 92 00 Joint Sealants
- Section 08 85 00 Glazing Sealants
- Section 09 96 53 Silicone Elastomeric Coatings
- Section 32 13 73 Concrete Paving Joint Sealants

A short form version of this specification is also available.

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Liquid joint sealants.
2. Preformed joint sealants.
3. Weather barrier transitions.

B. Related Sections:

1. *Division 01 Section "Sustainable Design Requirements" for additional requirements, including LEED® product and documentation requirements.*
2. Section 07 01 91 "Joint Sealant Rehabilitation and Replacement" for renovation of exterior joint sealant applications.
3. Section 08 85 00 "Glazing Sealants" for sealants for glazing installation, glazing framing perimeters, and structural glazing.
4. Section 09 96 53 "Silicone Elastomeric Coatings" for water-repelling liquid silicone elastomeric coatings for exterior surfaces.
5. Section 32 13 73 "Concrete Paving Joint Sealants" for traffic grade joint sealants for concrete paving and parking decks.

1.2 REFERENCE STANDARDS

Specifier: If retaining References Article, edit to include only those references included in edited section.

A. ASTM International (ASTM): www.astm.org :

1. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer
2. ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
3. ASTM C834 - Specification for Latex Sealants.
4. ASTM C 920 - Specification for Elastomeric Joint Sealants.
5. ASTM C 1087 - Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
6. ASTM C 1193 - Guide for Use of Joint Sealants.
7. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
8. ASTM C 1311 - Specification for Solvent Release Sealants.
9. ASTM C 1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
10. ASTM D 412 - Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
11. ASTM D 624 - Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
12. ASTM D 2240 - Test Method for Rubber Property - Durometer Hardness.
13. ASTM E 283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
14. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

B. NSF International (NSF): www.nsf.org :

1. Standard 51: Food Equipment Materials.

C. Sealant, Waterproofing, and Restoration Institute (SWRI): www.swrionline.org :

1. SWRI Validation Program.

D. U. S. Environmental Protection Agency (EPA): www.epa.gov :

1. *40 CFR 59, Subpart D: National Volatile Organic Compound Emission Standards for Architectural Coatings.*

- E. U.S. Food and Drug Administration (FDA): www.fda.gov :
 - 1. 21 CFR 177.2600: Title 21 Part 177 Indirect Food Additives: Polymers.
- F. US Green Building Council (USGBC): www.usgbc.org
 - 1. Leadership in Energy and Environmental Design (LEED) Green Building Rating System

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate installation of joint sealants with cleaning of joint sealant substrates and other operations that may impact installation or finished joint sealant work.
- B. Preinstallation Conference: Conduct conference at Project Site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of joint sealant product specified, including:
 - 1. Preparation instructions and recommendations.
 - 2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.
- B. Joint Sealant Schedule: Indicate joint sealant location, joint sealant type, manufacturer and product name, and color, for each application. Utilize joint sealant designations included in this Section.
- C. LEED Submittals:

Specifier: Retain first paragraph below for projects requiring project documentation for LEED-NC, LEED-CI, or LEED-CS

- 1. LEED NC Credit IEQ 4.1: Product data for sealant and sealant primers applied inside the weather envelope. Including statement of VOC content.

Specifier: Retain first paragraph below for projects requiring project documentation for LEED for Schools.

- 2. LEED for Schools Credit EQ 4: Laboratory test reports for sealants and sealant primers applied inside the weather envelope, documents indicating compliance with California Department of Health Services testing and product requirements "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

- D. Samples for Color Selection: For each joint sealant type.
- E. Samples for Verification: For each exterior joint sealant product, for each color selected.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified applicator.
- B. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- C. Preconstruction compatibility and adhesion test reports.
- D. Preconstruction field-adhesion test reports.
- E. Field quality control adhesion test reports.
- F. Warranty: Sample of unexecuted manufacturer and installer special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced Installer equipped and trained for application of joint sealants required for this Project with record of successful completion of projects of similar scope.
- B. Single Source Responsibility: Provide glazing sealants by a single manufacturer responsible for testing of Project substrates to verify compatibility and adhesion of joint sealants.

Specifier: Consult Dow representative for recommendations on the extent of preconstruction testing and number of samples required for project.

- C. Preconstruction Manufacturer Laboratory Compatibility, Staining, and Adhesion Testing: Submit [four] samples of each material that will be in contact with or affect joint sealants. Test sealants with substrate materials using ASTM C794 or manufacturer's standard test methods to determine requirements for joint preparation, including cleaning and priming. Test sealants with related materials to verify compatibility.
- D. Preconstruction Field-Adhesion Testing: Prior to installing joint sealants, field test adhesion to joint substrates using ASTM C1193 Method A or method recommended by manufacturer. Verify adhesion is adequate. Modify joint preparation recommendations for failed joints and re-test. Submit written report to Architect.
- E. Mockups: Provide joint sealant application within mockups required in other sections identical to specified joint sealants and installation methods.

1.7 WARRANTY

Specifier: Coordinate Installer's warranty provisions with requirements for Contractor's period for correction of work, which is frequently extended from one year to two or more years for components of the exterior weather envelope.

- A. Special Installer's Warranty: Original statement on Installer's letterhead in which Installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified.
 - 1. Warranty Period: [Two] years from date of Substantial Completion.

Specifier: Verify warranty provisions for specified products. Dow typically offers warranty periods of up to 20 years for exterior silicone sealants materials.

- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or failure under normal use within warranty period specified.
 - 1. Warranty Period for Silicone Sealants: [20] years date of Substantial Completion.
- C. Warranty Conditions: Special warranties exclude deterioration or failure of joint sealants in normal use due to structural movement resulting in stresses on joint sealants exceeding sealant manufacturer's written specifications, joint substrate deterioration, mechanical damage, or normal accumulation of dirt or other contaminants.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

Specifier: Retain option for substitutions below when required for project.

- A. Basis-of-Design Product: Provide joint sealant products manufactured by The Dow Chemical Company, Midland MI; (877) SEALANT ((877) 732-5268); email: construction@dow.com; dow.com/construction.
[or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements].

2.2 MATERIALS, GENERAL

Specifier: Paragraph and related subparagraphs below apply to LEED-NC, LEED-CI, and LEED-CS Credit IEQ 4.1.

- A. VOC Content for Interior Applications: Provide sealants and sealant primers complying with the following VOC content limits per 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.

Specifier: Paragraph and related subparagraphs below apply to LEED for Schools Credit IEQ 4.

- B. Low-Emitting Sealants for Interior Applications: Provide sealants and sealant primers complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Compatibility: Provide joint sealants and accessory materials that are compatible with one another, with joint substrates, and with materials in close proximity under use conditions, as demonstrated by sealant manufacturer by testing and related experience.
- D. Joint Sealant Standard: Comply with ASTM C 920 and other specified requirements for each liquid-applied joint sealant.
- E. Stain Test Characteristics: Where sealants are required to be nonstaining, provide sealants tested per ASTM C 1248 as non-staining on porous joint substrates indicated for Project.
- F. Food Contact Suitability: Where sealants are required to be suitable for contact with food provide sealants complying with 21 CFR 177.2600.

Specifier: ASTM C 920 Joint Sealant Use Types, Grades, Classes, and Uses that are used in reference specifications below are as follows:

Type S: Single component
Type M: Multi-components
Grade P: Pourable
Grade NS: Non-sag
Class XX: Movement capability, percent
Class XX/YY: Movement capability, percent, expansion/contraction
Exposure Use T: Traffic
Exposure Use NT: Non-traffic
Substrate Use G: Glass
Substrate Use M: Mortars
Substrate Use A: Aluminum
Substrate Use O: Other

2.3 LIQUID JOINT SEALANTS

Specifier: **DOWSIL™ 790 Silicone Building Sealant** is a one-component, ultra-low modulus, neutral-cure silicone sealant for above-grade high movement expansion and control joints of most building materials and for both new and remedial construction. Product is also used in certain traffic bearing applications. Product complies with GSA Commercial Item Descriptions CID A-A-272B. Product is acceptable for use in certain UL fire-resistance-rated designs; refer to www.ul.com for list and description of approved designs. Volatile Organic Compound (VOC) Content: 26 g/L maximum.

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 100/50, for Use T, NT; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 790 Silicone Building Sealant**.
 2. Hardness, ASTM C 661: 15 durometer Shore A.
 3. Volatile Organic Compound (VOC) Content: 26 g/L maximum.
 4. Staining, ASTM C 1248: None on concrete, granite, limestone, and brick.
 5. Color: [As scheduled] [As selected by Architect from manufacturer's full line of not less than 10 colors] [Match Architect's custom color].

Specifier: **DOWSIL™ 756 SMS Building Sealant** is a one-component, medium-modulus, neutral cure silicone sealant suitable for weatherproofing porous stone, metal panels, curtain wall framing, and other above-grade expansion and control joints for both new and remedial construction. Volatile Organic Compound (VOC) Content: 60 g/L maximum.

- B. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 50, for Use NT; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 756 SMS Building Sealant**.
 2. Hardness, ASTM C 661: 35 durometer Shore A.
 3. Volatile Organic Compound (VOC) Content: 60 g/L maximum
 4. Staining, ASTM C 1248: None on white marble.
 5. Color: [As scheduled] [As selected by Architect from manufacturers full line of not less than 8] [Match Architect's custom color].

Specifier: **DOWSIL™ 791 Silicone Weatherproofing Sealant** is a one-component, medium-modulus, neutral-cure silicone sealant for general glazing and above-grade weathersealing in curtainwalls and building facades for both new and remedial construction. Product complies with GSA Commercial Item Descriptions CID A-A-272B. Volatile Organic Compound (VOC) Content: 30 g/L maximum.

- C. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 50, Use NT, G, M and A; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 791 Silicone Weatherproofing Sealant**.
 2. Hardness, ASTM C 661: 34 durometer Shore A.
 3. Volatile Organic Compound (VOC) Content: 30 g/L maximum
 4. Staining, ASTM C 1248: None on concrete, granite, limestone, and brick.
 5. Color: [As selected by Architect from manufacturer's full line of not less than 6 colors].

Specifier: **DOWSIL™ 795 Silicone Building Sealant** is a one-component, medium modulus, neutral-cure, silicone sealant for structural and non-structural glazing, structural attachment for panel systems, as well as above-grade weathersealing joints with most common constructions materials for both new and remedial construction. Product complies with GSA Commercial Item Descriptions CID A-A-272B. Volatile Organic Compound (VOC) Content: 32 g/L maximum.

- D. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 50, for Use NT, G, A, and O; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 795 Silicone Building Sealant**.
 2. Hardness, ASTM C 661: 35 - 45 durometer Shore A.
 3. Volatile Organic Compound (VOC) Content: 32 g/L maximum
 4. Staining, ASTM C 1248: None on concrete, granite, limestone, and brick.
 5. Color: [As scheduled] [As selected by Architect from manufacturers full line of not less than 10] [Match Architect's custom color].

Specifier: **DOWSIL™ 995 Silicone Structural Sealant** is designed for excellent adhesion in structural applications, including factory or field glazing. It adheres to glass, reflective glass, anodized aluminum, granite and most paints, including fluoropolymer-based paints. It exhibits a medium modulus, which offers an extremely high tensile adhesion strength. Ideal for use as a glazing sealant in high-performance protective window systems that increase personal safety from flying glass. Tolerates the differential thermal and wind load movements found in structural glazing applications and the severe stresses required of an impact-resistant glazing product. Product complies with GSA Commercial Item Descriptions CID A-A-272B. Volatile Organic Compound (VOC) Content: 34 g/L maximum.

International standards: DOWSIL™ 995 Silicone Structural Sealant also meets:
Chinese National Standard GB 16776 Structural Silicone Sealant for Building
European Standard EOTA ETAG 002 Guideline for European Technical Approval for Structural Sealant Glazing Systems.
European Standard EN 13022 Glass in building. Structural sealant glazing. Assembly rules

- E. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C920, Type S, Grade NS, Class 50, for Use NT; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 995 Silicone Structural Sealant.**
 2. Hardness, ASTM D 2240: 35 - 45 durometer Shore A
 3. Volatile Organic Compound (VOC) Content: 34 g/L maximum
 4. Ultimate Tensile, ASTM C 1135: 160 psi (1.1 MPa), at 21 day cure (TA Joint).
 5. Color: [As scheduled] [As selected by Architect from manufacturers full line of not less than 3 colors].
[Match Architect's custom color.]

Specifier: **DOWSIL™ 758 Silicone Weather Barrier Sealant** is a one-component, neutral-cure silicone sealant for above-grade joints with compatibility and strong adhesion to a wide array of common construction materials, including peel-and-stick window flashings, building wraps, polyolefins, and PVCs for both new and remedial construction. Volatile Organic Compound (VOC) Content: 61 g/L.

- F. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 25, for Use NT; SWRI validation.
1. Basis of Design Product: **DOWSIL™ 758 Silicone Weather Barrier Sealant.**
 2. Hardness, ASTM D 2240: 45 durometer Shore A.
 3. Volatile Organic Compound (VOC) Content: 61 g/L maximum
 4. Color: White.

Specifier: **DOWSIL™ 999A Silicone Building & Glazing Sealant** is a one-part, weather-resistant silicone sealant formulated for a wide range of building construction applications. It is particularly effective for glazing butt and lap shear joints and sealing curtainwall and other glass, plastic and metal assemblies. It can also be factory applied as a primary seal to glass, plastic, and metal assemblies. 999-A is not suitable for structural glazing. It is compatible with acrylic and polycarbonate glazing sheets and one-part DOWSIL™ silicone construction sealants. It is also compatible with most laminated glass. A 10 year general product limited warranty is available. Volatile Organic Compound (VOC) Content: 36 g/L maximum.

- G. Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
1. Basis of Design Product: **DOWSIL™ 999A Silicone Building & Glazing Sealant.**
 2. Hardness, ASTM D 2240: 25 durometer Shore A minimum.
 3. Volatile Organic Compound (VOC) Content: 36 g/L maximum
 4. Ultimate Tensile, ASTM D 412: 325 psi (1.2 MPA) at 21 day cure (Dumbbell)
 5. Color: [As scheduled] [As selected by Architect from manufacturers full line of not less than 6] [Match Architect's custom color].

Specifier: **DOWSIL™ 786 Silicone Sealant** is a one-component, silicone rubber sealant that is mildew resistant when cured and is suitable for sealing tubs, showers, sinks, porcelain, cultured marble, glass, painted areas, and other nonporous surfaces and plumbing fixtures for both new and remedial construction. 786 is available in clear, white, translucent white, gray, and almond. Not for use in contact with brass or copper.

Mildew resistance is established by Dow based upon several test methods; contact your Dow representative for more information. Volatile Organic Compound (VOC) Content: 36 g/L maximum.

- H. Mildew-Resistant, Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant **JS#**__: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Basis of Design Product: **DOWSIL™ 786 Silicone Sealant**.
 - 2. Hardness, ASTM D 2240: 25 durometer Shore A
 - 3. Volatile Organic Compound (VOC) Content: 36 g/L maximum.
 - 4. NSF Standard 51 and FDA Regulation No. 21 CFR 177.2600 compliant.
 - 5. Color: As selected by Architect from manufacturer's standard colors.

Specifier: Latex Joint Sealants and Butyl-Rubber Based Joint Sealant are not products from Dow but are available from a variety of other manufacturers; they are included in this guide specification for your project specifying convenience.

Latex joint sealant is frequently specified for interior, non-moving, paintable joints.

Butyl rubber joint sealant is frequently specified for interior and exterior concealed joints within metal assemblies.

- I. Latex Joint Sealant: Siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
- J. Butyl-Rubber-Based Joint Sealant: ASTM C 1311.

2.4 PRE-FORMED JOINT SEALANTS

Specifier: **DOWSIL™ 123 Silicone Seal** is an extruded sheet product used for flashing and transitions in new construction and as a joint overlay in joint sealant rehabilitation work. It is available in widths of 1 - 12 inches (25 - 305 mm). Indicate required widths on drawing details. It is available in 6 standard colors and custom colors.. It is available in 6 standard colors and custom colors. Volatile Organic Compound (VOC) Content: 0 g/L

- A. Preformed Silicone Elastomer Extrusion: Highly flexible low-modulus flashing and transition material for bonding to substrates with silicone sealant. SWRI validation.
 - 1. Basis of Design Product: **DOWSIL™ 123 Silicone Seal**.
 - 2. Surface: [Smooth matte] [Textured] [Grooved to facilitate bending].
 - 3. Bonding Sealant: Manufacturer's recommended neutral-curing silicone.
 - 4. Hardness, ASTM D 2240: 25 durometer Shore A, minimum.
 - 5. Color: As selected by Architect from manufacturer's full line.

Specifier: **DOWSIL™ 123 Silicone Seal Custom Design H. C.** is preformed, custom-designed and fabricated, two- and three-dimensional, shaped silicone elastomer extrusion for repair of failed sealant joints or use in new construction splices, mitered joints (boots), and molded corners. Volatile Organic Compound (VOC) Content: 0 g/L

- B. Preformed Silicone Elastomer Custom Two- and Three- Dimension Extrusion: Highly flexible flashing and transition material for bonding to substrates with silicone sealant.
 - 1. Basis of Design Product: **DOWSIL™ 123 Silicone Seal Custom Design H. C.**
 - 2. Formulation: [General Purpose] [High Tear].
 - 3. Shape: Multi-dimensional as indicated on drawings and approved shop drawings and as required to fit and functionally seal specific application and prevent air and water penetration
 - 4. Bonding Sealant: Manufacturer's recommended neutral-curing silicone.
 - 5. Color: As selected by Architect from manufacturer's full line.

2.5 WEATHER BARRIER TRANSITIONS

Specifier: **DOWSIL™ Silicone Transition Strip (STS)** is a silicone sealant-compatible flexible membrane interface between a variety of air/vapor barrier materials and window, storefront, and curtainwall opening frames. It permanently accommodates the differential thermal movement between wall systems and metal frames, maintaining airtight- and watertight-connections necessary in high performance buildings. Coordinate with Division 07 air barrier section and Division 08 opening sections. Recommended silicone sealants for installing STS include: DOWSIL™ 758 Silicone Weather Barrier Sealant; DOWSIL™ 791 Silicone Weatherproofing Sealant; and DOWSIL™ 795 Silicone Building Sealant: DOWSIL™ STS Volatile Organic Compound (VOC) Content: 0 g/L

- A. Silicone Elastomer Weather Barrier Transition: Highly flexible clear flashing and transition strip and pre-molded corners for bonding with silicone sealant to weather barrier substrates and to adjacent curtain wall, storefront, and window frames and other transition substrates.
 - 1. Basis of Design Product: **DOWSIL™ Silicone Transition Strip (STS)**.
 - 2. Hardness, ASTM D 2240: 50 - 60 durometer Shore A.
 - 3. Color: Translucent
 - 4. Air Infiltration, ASTM E 283: Maximum 0.025 cfm/sq. ft. (0.127 L/s per sq. m) at 6.24 lbf/sq. ft. (300 Pa).
 - 5. Water Penetration under Static Pressure, ASTM E 331: None at 15 lbf/sq. ft. (720 Pa)
 - 6. Movement Capability: Not less than plus 200, minus 75 percent.
 - 7. Tensile Strength, ASTM D 412: Not less than 800 psi (5.5 MPa).
 - 8. Tear Strength, ASTM D 624: Not less than 200 psi (16 kN/m).
 - 9. Elongation, ASTM D 412: Not less than 400 percent.
 - 10. Bonding Sealant: Manufacturer's recommended neutral-curing silicone

Specifier: Air infiltration and water penetration testing above reflects performance of DOWSIL™ STS when installed according to manufacturer's installation instructions as perimeter flashing isolated on test window unit in sheathed wall. Test report copies available from manufacturer.

2.6 ACCESSORIES

- A. Joint Substrate Primers: Substrate primer recommended by sealant manufacturer for application.
- B. Cylindrical Sealant Backing: ASTM C 1330, Type B non-absorbent, bi-cellular material with surface skin, or Type O open-cell polyurethane, as recommended by sealant manufacturer for application.
- C. Bond Breaker Tape: Polymer tape compatible with joint sealant materials and recommended by sealant manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine joint profiles and surfaces to determine if work is ready to receive joint sealants. Verify joint dimensions are adequate for development of sealant movement capability. Proceed with joint sealant work once conditions meet sealant manufacturer's recommendations.

3.2 PREPARATION

- A. Joint Surface Cleaning: Clean joints prior to installing joint sealants using materials and methods recommended by sealant manufacturer.
 - 1. Remove laitance, form-release agents, dust, and other contaminants.
 - 2. Clean nonporous and porous surfaces utilizing chemical cleaners acceptable to sealant manufacturer.

3.3 SEALANT APPLICATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Masking: Mask adjacent surfaces to prevent staining or damage by contact with sealant or primer.

- C. Joint Priming: Prime joint substrates when recommended by sealant manufacturer or when indicated by preconstruction testing or experience. Apply recommended primer using sealant manufacturer's recommended application techniques.
- D. Joint Backing: Select joint backing materials recommended by sealant manufacturer to be compatible with sealant material. Install backing material at depth required to produce profile of joint sealant allowing optimal sealant movement.
 - 1. Install bond breaker tape over substrates when sealant backings are not used.
- E. Liquid Sealant Application: Install sealants using methods recommended by sealant manufacturer, in depths recommended for application. Apply in continuous operation from bottom to top of joint vertically and horizontally in a single direction. Apply using adequate pressure to fill and seal joint width.
 - 1. Tool sealants immediately with appropriately shaped tool to force sealants against joint backing and joint substrates, eliminating voids and ensuring full contact.
 - 2. Using tooling agents approved by sealant manufacturer for application.
- F. Cleaning: Remove excess sealant using materials and methods approved by sealant manufacturer that will not damage joint substrate materials.
 - 1. Remove masking tape immediately after tooling joint without disturbing seal.
 - 2. Remove excess sealant from surfaces while still uncured.

3.4 PREFORMED JOINT SEALANT APPLICATION

- A. Preparation: Prepare surfaces in accordance with sealant manufacturer's written instructions. Perform field adhesion testing to determine need for application of primer. Clean surfaces to dust free, and perform solvent wipe where recommended. Mask edges of surface to be treated.
- B. Application: Apply bead of recommended liquid joint sealant to each side of joint in bead size recommended by manufacturer. Press extrusion into sealant using roller to ensure uniform and complete contact. Lap vertical and horizontal joints as indicated in manufacturer's instructions. Trim preformed joint sealant. Remove masking tape and excess sealant.

3.5 WEATHER BARRIER TRANSITION APPLICATION

- A. Preparation: Prepare field of weather barrier surface and surface of adjacent substrate in accordance with sealant manufacturer's written instructions. Perform field adhesion testing to determine need for application of primer. Clean surfaces to dust free, and perform solvent wipe where recommended.
- B. Application: Apply bead of recommended liquid joint sealant to each side of joint in bead size recommended by manufacturer. Press transition extrusion into sealant using roller to ensure uniform and complete contact. Lap vertical and horizontal joints as indicated in manufacturer's instructions. Trim transition material. Remove excess sealant.

3.6 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Perform adhesion tests in accordance with manufacturer's instructions and with ASTM C 1193, Method A.
 - 1. Perform [5] tests for the first [1000 feet (300 m)] of joint length for each kind of sealant and joint substrate, and one test for each [1000 feet (300 m)] of joint length thereafter or 1 test per each floor per building elevation, minimum.
 - 2. For sealant applied between dissimilar materials, test both sides of joint.
- B. Remove sealants failing adhesion test, clean substrates, reapply sealants, and re-test. Test adjacent sealants to failed sealants.
- C. Submit report of field adhesion testing to Architect indicating tests, locations, dates, results, and remedial actions taken.

Specifier: Edit sealant schedules below to reflect Project requirements. Delete items not required for Project. Identify joint sealant products by description and by identifier used in Part 2. Coordinate color requirements; certain Silicone Sealants by Dow can be custom matched for particular color requirements, while others are available in an array of standard colors only.

3.7 EXTERIOR JOINT-SEALANT SCHEDULE

A. Exterior construction joints in cast-in-place concrete.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Match Architect's custom color] [insert color].

B. Exterior movement joints in concrete unit masonry.

Specifier: Recommended products are DOWSIL™ 790 Silicone Building Sealant or DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Match Architect's custom color] [insert color].

C. Exterior movement joints in brick masonry.

Specifier: Recommended products are DOWSIL™ 790 Silicone Building Sealant or DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color, Vertical Joints: [As selected by Architect from manufacturer's full range]
[Match brick at vertical joints] [Match Architect's custom color] [insert color].
3. Joint-Sealant Color, Horizontal Joints: [As selected by Architect from manufacturer's full range]
[Match mortar at horizontal joints] [Match Architect's custom color] [insert color].

D. Exterior movement joints in stone masonry.

Specifier: Recommended products are DOWSIL™ 790 Silicone Building Sealant, DOWSIL™ 756 SMS Building Sealant, or DOWSIL™ 795 Silicone Building Sealant. For stain-sensitive stone such as marble, use DOWSIL™ 756 SMS Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Match Architect's custom color] [insert color].

E. Exterior joints within exterior insulation finish systems (EIFS).

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Match Architect's custom color] [insert color].

F. Exterior exposed joints in metal panel cladding systems.

Specifier: Recommended product is DOWSIL™ 756 SMS Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Match Architect's custom color] [insert color].

G. Exterior concealed watertight joints in cladding systems.

Specifier: Recommended product is DOWSIL™ 791 Silicone Weatherproofing Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.

H. Exterior joints between different materials listed above.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant, DOWSIL™ 756 SMS Building Sealant, DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range] [Match Architect's custom color] [insert color].
3. Multiple colors required to match several conditions.

I. Exterior perimeter joints at frames of doors, windows, storefront frames, curtain wall frames, and louvers.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant, DOWSIL™ 756 SMS Building Sealant, DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range] [Match Architect's custom color] [insert color].
3. Multiple colors required to match several conditions.

J. Exterior joints within aluminum storefront framing, curtain walls, and window systems:

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant, DOWSIL™ 756 SMS Building Sealant, DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing non-staining silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range] [Match Architect's custom color] [insert color].

K. Exterior joints within structural glazing: Refer to Division 08 Section ["Glazing Sealants"] ["Structural-Sealant-Glazed Curtain Walls"].

L. All other exterior non-traffic joints.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.

M. Exterior horizontal traffic and traffic isolation joints [: Refer to Division 32 Section: Concrete Paving Joint Sealants].

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant.

1. Joint Sealant: Single-component pourable silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range] [Match Architect's custom color] [insert color].

3.8 INTERIOR JOINT-SEALANT SCHEDULE

A. Interior movement joints in exterior concrete and unit masonry.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant or 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range] [Custom match wall color] [Multiple colors required].

B. Interior perimeter joints of exterior frames.

Specifier: Recommended product is DOWSIL™ 791 Silicone Weatherproofing Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.

2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Custom match wall color] [Custom match frame color] [Multiple colors required].

C. Interior movement joints in interior unit masonry.

Specifier: Recommended product is DOWSIL™ 795 Silicone Building Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Custom match wall color] [Multiple colors required].

D. Interior perimeter joints of interior frames.

Specifier: Recommended product is DOWSIL™ 791 Silicone Weatherproofing Sealant.

1. Joint Sealant: Single-component neutral-curing silicone sealant **JS#**__.
2. Joint-Sealant Color: [As selected by Architect from manufacturer's full range]
[Custom match wall color] [Multiple colors required].

E. Interior sanitary joints between plumbing fixtures and food preparation fixtures and casework and adjacent walls, floors, and counters.

Specifier: Recommended product is DOWSIL™ 786 Silicone Sealant.

1. Joint Sealant: Mildew-Resistant, Single-Component, nonsag, acid-curing silicone joint sealant **JS#**__.
2. Joint-Sealant Color: As selected by Architect from manufacturer's full range to match multiple conditions.

F. Interior traffic joints in floor and between floor and wall construction.

Specifier: Recommended product is DOWSIL™ 790 Silicone Building Sealant.

1. Joint Sealant: Single-component, nonsag, neutral-curing silicone joint sealant **JS#**__.
2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

G. Interior non-moving joints between interior painted surfaces and adjacent materials.

1. Joint Sealant: Siliconized acrylic latex.
2. Joint-Sealant Color: White; paintable.

H. Interior concealed sealants at thresholds and sills.

1. Joint Sealant: Butyl-rubber-based joint sealant.

I. Interior exposed and non-exposed acoustical applications:

1. Joint Sealant: Acoustical sealant specified in Division 09 finishes sections

END OF SECTION

Additional Specifier's Notes

Substitution Reviews: When reviewing substitution requests for other products for compliance with this specification, Dow recommends particular attention to the following issues:

Primer Requirements: Dow's experience often results in requiring priming of joint sealant substrates when other manufacturers waive priming requirements as a cost-saving provision that may benefit the contractor but not the owner. Make certain that field testing of joint sealants is carried out to ensure long term adhesion.

SWRI Certification: This respected industry certification is an additional layer of Dow's quality assurance provided by an independent agency.

Laboratory Testing: Dow provides laboratory testing of joint sealants on proposed substrates when requested for a project – another quality assurance process that helps protect the long-term integrity of your building.

Silicone vs. Urethane Substitutions: Organic-based urethane sealants are not a substitute for silicone technology. The limited warranty periods available for urethane sealants indicate that their expected life is significantly less than that of silicone sealants.

Coordination: Make sure you coordinate the following:

- Profile of typical joints to accept joint sealant. Special attention to perimeter joints at wall openings.
- Compatibility of joint sealant chemistry with substrates in contact. Special attention to air barrier membranes and accessories.
- Extent of each type of joint sealant applications through drawing identification or editing of the joint sealant schedules.
- Cross-reference to applicable specification sections for joint sealant requirements written under other sections.
- Submittal requirements for color matching to samples of products specified in other sections.

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