SECTION 07 92 00 – JOINT SEALANTS

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Immersible joint sealants.
4. Latex joint sealants.
5. Preformed joint sealants.

1.3 SUBMITTALS, GENERAL

General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently. Refer to Section 01 33 00 for submittal requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

1. Single-component, nonsag, neutral-curing silicone joint sealant.
2. Mildew-resistant, single-component, acid-curing silicone joint sealant.
3. Single-component, nonsag, urethane joint sealant.
4. Single-component, pourable, traffic-grade, urethane joint sealant.
5. Multicomponent, pourable, traffic grade, urethane joint sealant.
6. Multicomponent, nonsag, urethane joint sealant.
7. Immersible joint sealant.
8. Latex joint sealant.
9. Preformed foam joint sealant.
10. Cylindrical sealant backings.
11. Bond-breaker tape.
12. Primer.
13. Cleaners for nonporous surfaces.
14. Masking tape.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

D. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PPRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 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.

C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

E. Colors of Exposed Joint Sealants: As selected by Owner’s Representative from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Dow Corning Corporation; 790.
2. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
3. Pecora Corporation; 890.
4. Tremco Incorporated; Spectrem 1.

B. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems; Omniplus.
2. Dow Corning Corporation; 786 Mildew Resistant.
3. GE Advanced Materials - Silicones; Sanitary SCS1700.

2.3 URETHANE JOINT SEALANTS

A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems; Sonolastic NP1.
2. Pecora Corporation; Dynatrol I-XL.
3. Sika Corporation, Construction Products Division; Sikaflex - 1a.
4. Tremco Incorporated; Dymonic.

B. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems; Sonolastic SL 1.
2. Bostik, Inc.; Chem-Calk 950.
3. Pecora Corporation; Urexpan NR-201.
4. Tremco Incorporated; Vulkem 45.

C. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems; Sonolastic SL 2.
2. Bostik, Inc.; Chem-Calk 550.
3. Pecora Corporation; Dynatrol II-SG.
4. Tremco Incorporated; THC-900/901.

D. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use NT.

Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

E. BASF Building Systems; Sonolastic NP 2.

1. Pecora Corporation; Dynatred.
2. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
3. Tremco Incorporated; Vulkem 227.

2.4 IMMERSIBLE JOINT SEALANTS

A. Polysulfide, Immersible, M, NS, 25, NT, I: Immersible, multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, polysulfide joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Uses NT and I.

B. Products:

Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Deck-O-Seal, a Division of W.R. Meadows, Inc.; Deck – O – Seal.
2. Polymeric Systems, Inc.; PSI-275.
3. PolySpec L.P.; Thiokol 2236.

2.5 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

B. Products:

Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. BASF Building Systems; Sonolac.
2. Bostik, Inc.; Chem-Calk 600.
3. Pecora Corporation; AC-20+.
4. Tremco Incorporated; Tremflex 834.

2.6 PREFORMED JOINT SEALANTS

A. Preformed Foam Joint Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.

B. Products:

Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Dayton Superior Specialty Chemicals; Polytite Standard.
2. EMSEAL Joint Systems, Ltd.; Emseal 25V.
3. Sandell Manufacturing Co., Inc.; Polyseal.

2.7 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or Type O (open-cell material), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping. Do not pull or stretch material. Produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints 1 to 2 inches wide in horizontal traffic surfaces.

1. Joint Locations:

a. Control and expansion joints in brick pavers.
b. Isolation and contraction joints in cast-in-place concrete slabs.
c. Joints between different materials listed above.
d. Other joints as indicated.

2. Joint Sealant: Multicomponent, pourable, traffic grade, urethane joint sealant.

B. Joint-Sealant Application: Exterior joints up to 1 inch wide in horizontal traffic surfaces.

1. Joint Locations:

a. Control and expansion joints in brick pavers.
b. Isolation and contraction joints in cast-in-place concrete slabs.
c. Joints between different materials listed above.
d. Other joints as indicated.

2. Joint Sealant: Single component, pourable, traffic grade, urethane joint sealant.

C. Joint-Sealant Application: Exterior joints 1 to 2 inches wide in horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints in ceilings and other overhead surfaces.
b. Other joints as indicated.

2. Joint Sealant: Multicomponent, nonsag, urethane joint sealant.

D. Joint-Sealant Application: Exterior joints up to 1 inch wide in horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints in ceilings and other overhead surfaces.
b. Other joints as indicated.

2. Joint Sealant: Single component, nonsag, urethane joint sealant.

E. Joint-Sealant Application: Exterior joints in vertical surfaces.

1. Joint Locations:

a. Construction joints in cast-in-place concrete.
b. Joints between plant-precast architectural concrete units.
c. Control and expansion joints in unit masonry.
d. Joints between different materials listed above.
e. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
f. Other joints as indicated.

2. Joint Sealant: Single component, nonsag, neutral curing, silicone joint sealant.

F. Joint-Sealant Application: Interior joints 1 to 2 inches wide in horizontal traffic surfaces.

1. Joint Locations:

    a. Isolation joints in cast-in-place concrete slabs.
    b. Other joints as indicated.

2. Joint Sealant: Multicomponent, pourable, traffic grade, urethane joint sealant.

G. Joint-Sealant Application: Interior joints up to 1 inch wide in horizontal traffic surfaces.

1. Joint Locations:

    a. Isolation joints in cast-in-place concrete slabs.
    b. Other joints as indicated.

2. Joint Sealant: Single component, pourable, traffic grade, urethane joint sealant.

H. Joint-Sealant Application: Interior joints 1 to 2 inches wide in horizontal nontraffic surfaces.

1. Joint Locations:

    a. Control and expansion joints in ceilings and other overhead surfaces.
    b. Other joints as indicated.

2. Joint Sealant: Multicomponent, nonsag, urethane joint sealant.

I. Joint-Sealant Application: Interior joints up to 1 inch wide in horizontal nontraffic surfaces.

1. Joint Locations:

    a. Control and expansion joints in ceilings and other overhead surfaces.
    b. Other joints as indicated.

2. Joint Sealant: Single component, nonsag, urethane joint sealant.

J. Joint-Sealant Application: Interior joints in vertical surfaces.

1. Joint Locations:

    a. Control and expansion joints on exposed interior surfaces of exterior walls.
    b. Perimeter joints of exterior openings.
    c. Other joints as indicated.

2. Joint Sealant: Single component, nonsag, neutral curing, silicone joint sealant.

K. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces.

1. Joint Sealant Location:

    a. Other joints as indicated.

2. Joint Sealant: Mildew-resistant, single component, acid curing silicone joint sealant.

L. Joint-Sealant Application: Interior joints in vertical surfaces. See item "3.6.13".

1. Joint Locations:

   a. Vertical joints on exposed surfaces of interior unit masonry and concrete, walls and partitions.
   b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
   c. Other joints as indicated.

2. Joint Sealant: Latex joint sealant.

M. Joint-Sealant Application: Joints in horizontal and vertical surfaces subject to full water immersion.

1. Joint Locations:

   All non-expansion horizontal joints in the floor slab, including the perimeter wall/slab joint and vertical from the slab elevation to a minimum elevation of 8" above the slab.

2. Joint Sealant: Polysulfide, Immersible, M, NS, 25, NT, I.

N. Joint-Sealant Application: Exterior joints in vertical surfaces.

1. Joint Locations: Where indicated.
2. Joint Sealant: Preformed foam joint sealant.

END OF SECTION