

SECTION 07920

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section Includes:** Joint sealants for the applications indicated in the Joint-Sealant Schedule at the end of Part 3 and following applications, including those specified by reference to this Section:
1. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Construction joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints between metal panels.
 - d. Joints between different materials listed above.
 - e. Perimeter joints between materials listed above and frames of doors, windows and louvers.
 - f. Control and expansion joints in soffits and other overhead surfaces.
 - g. Other joints as indicated.
 2. Exterior joints in the following horizontal traffic surfaces:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 - b. Joints in stone paving units, including steps.
 - c. Joints between different materials listed above.
 - d. Other joints as indicated.
 3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical joints on exposed surfaces of interior unit masonry, stone facing and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
 - f. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - g. Other joints as indicated.
 4. Interior joints in the following horizontal traffic surfaces:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in stone flooring.
 - c. Control and expansion joints in tile flooring.
 - d. Other joints as indicated.
- B. Related Sections include the following:**
1. Division 2 Section "Pavement Joint Sealants" for sealing joints in pavements, walkways, and curbing.
 2. Division 3 Section 03300, "Cast-in-Place Concrete"
 3. Division 4 Section "Unit Masonry Assemblies" for masonry control and expansion joint fillers and gaskets.

4. Division 7 Section "Sheet Metal Flashing and Trim" for sealing joints in sheet metal.
5. Division 7 Section "Fire-Resistive Joint Systems" for sealing joints in fire-resistance-rated construction.
6. Division 8 Section "Glazing" for glazing sealants.
7. Division 9 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
8. Division 9 Section "Ceramic Tile" for sealing tile joints.
9. Division 9 Section "Acoustical Panel Ceilings" and "Acoustical Tile Ceilings" for sealing edge moldings at perimeters of acoustical ceilings.

1.2 PERFORMANCE REQUIREMENTS

- A. **Provide elastomeric joint sealants** that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. **Provide joint sealants** for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

- A. **Product Data:** For each joint-sealant product indicated.
- 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.
 1. Architect may select more than one color for any of the sealants depending on the location.
- C. **Samples for Verification:** For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. **Product Certificates:** For each type of joint sealant and accessory, signed by product manufacturer.
- E. **Qualification Data:** Submit qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- F. **Product Test Reports:** Based on comprehensive testing of product formulations performed by a qualified testing agency, submit the following reports:
 1. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's recommendations for primers and substrate preparation needed to obtain adhesion.
 2. Product test reports for each type of joint sealer, evidencing compliance with requirements specified.
- G. **Warranties:** Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. **Source Limitations:** Obtain each type of joint sealant through one source from a single manufacturer.
- C. **Mockups:** Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. **Deliver materials** to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.
- B. **Store and handle materials** in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 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 (5 deg C).
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. **General Warranty:** Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. **Special Installer's Warranty:** Written warranty, signed by Installer agreeing to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion
- C. **Special Manufacturer's Warranty:** Written warranty, signed by elastomeric sealant manufacturer agreeing to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.
- D. **Exclusions:** Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
2. Disintegration of joint substrates from natural 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 - PRODUCTS

2.1 MANUFACTURERS

- A. **Available Products:** Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 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 sealant manufacturer, based on testing and field experience.
- B. **Colors of Exposed Joint Sealants:** As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

- A. **Elastomeric Sealants:** Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. **Stain-Test-Response Characteristics:** Where elastomeric 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.
- C. **Continuous-Immersion-Test-Response Characteristics:** Where elastomeric sealants will be immersed continuously in water, provide products that have undergone testing according to ASTM C 1247, including initial six-week immersion period and additional immersion periods specified below, and have not failed in adhesion or cohesion when tested with substrates indicated for Project.
 1. One additional four-week immersion period.
- D. **Suitability for Contact with Food:** Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- E. **Single-Component Neutral-Curing Silicone Sealant - Type 1:**
 1. Available Products:
 - a. Dow Corning Corporation; 795
 - b. GE Silicones; SilPruf NB SCS9000.
 - c. Pecora Corporation; 865.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, (as applicable to joint substrates indicated) O.
6. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.

F. Multicomponent Pourable Urethane Sealant - Type 2:

1. Available Products:
 - a. Pecora Corporation; Dynatrol II-SG
 - b. Sika Corporation, Inc.; Sikaflex - 2c SL.
 - c. Sonneborn, Division of ChemRex, Inc.; SL 2.
2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 25.
4. Use Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

G. Single-Component Nonsag Urethane Sealant - Type 3:

1. Available Products:
 - a. Sika Corporation, Inc.; Sikaflex - 1a.
 - b. Sonneborn, Division of ChemRex Inc.; NP 1.
 - c. Tremco; Vulkem 116.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

H. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant - Type 4:

1. Available Products:
 - a. Dow-Corning; 786 Mildew Resistant.
 - b. G.E.; Sanitary 1700.
 - c. Tremco; Tremsil 600 White.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: G, A, and as applicable to joint substrates indicated, O.

2.4 LATEX JOINT SEALANTS

A. Latex Sealant - Type 5: Comply with ASTM C 834, Type P, Grade NF.

B. Available Products:

1. Pecora Corporation; AC-20+.
2. Sonneborn, Division of ChemRex Inc.; Sonolac.
3. Tremco; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

- A. **Acoustical Sealant for Exposed and Concealed Joints - Type 6:** Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 2. Available Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2.6 PREFORMED JOINT SEALANTS

- A. **Preformed Foam Sealant - Type 7:** Manufacturer's standard preformed, precompressed, open-cell foam sealant that is manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; is factory produced in precompressed sizes in roll or stick form to fit joint widths indicated; is coated on one side with a pressure-sensitive adhesive and covered with protective wrapping; develops a watertight and airtight seal when compressed to the degree specified by manufacturer; and complies with the following:
1. Available Products:
 - a. EMSEAL Joint Systems, Ltd.; Emseal 25V.
 - b. illbruck Sealant Systems, Inc.; Wilseal 600.
 - c. Polytite Manufacturing Corporation; Polytite Standard.
 2. Properties: Permanently elastic, mildew resistant, nonmigratory, nonstaining, and compatible with joint substrates and other joint sealants.
 - a. Density: Manufacturer's standard.

2.7 JOINT-SEALANT BACKING

- A. **General:** Provide sealant backings of material and type 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)], and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- C. **Elastomeric Tubing Sealant Backings:** Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- D. **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 where such adhesion would result in sealant failure. 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.

2.9 SEMI-RIGID EPOXY JOINT FILLER

- A. Semi-rigid epoxy joint filler for control, tooled and saw-cut construction joints in floor slabs scheduled to receive a dry-shake surface hardener finish specified in Section 03300.
 - 1. Product: 100% solids, two component, moisture insensitive, semi-rigid epoxy complying with the following:
 - a. Color: Gray.
 - b. Consistency: Self-leveling.
 - c. Shore A Hardness: 75-80.
 - d. Tensile Strength: ASTM D-638, 600 psi.
 - e. Ultimate Elongation: ASTM D-638, 35%.
 - 2. Available Products:
 - a. "Poxo-Fil (J-52)" as manufactured by Dayton Superior Chemical Division, Houston, TX 77008, (800) 745-3706 or an approved equal.

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.

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, blast cleaning, 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. Porous joint substrates include the following:
- a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
- B. Joint Priming:** Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on 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 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. Acoustical Sealant Application Standard:** Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings** of type 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.
- E. Install bond-breaker tape** behind sealants where sealant backings are not used between sealants and backs of joints.
- F. 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.

- G. **Tooling of Nonsag Sealants:** Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified 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 configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 - 4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
 - 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- H. **Installation of Preformed Tapes:** Install according to manufacturer's written instructions.
- I. **Installation of Preformed Foam Sealants:** Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.
- J. **Installation of Semi-Rigid Epoxy Joint Filler:** Comply with manufacturers written instructions for application of filler.

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 JS-1:** Exterior vertical and horizontal nontraffic construction joints in cast-in-place concrete.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- B. **Joint-Sealant Application JS-2:** Exterior horizontal traffic joints in cast-in-place concrete slabs.
 - 1. Joint Sealant (Type 2): Multicomponent pourable urethane sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

- C. **Joint-Sealant Application JS-3:** Exterior vertical control and expansion joints in unit masonry.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- D. **Joint-Sealant Application JS-5:** Exterior butt joints between metal panels.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- E. **Joint-Sealant Application JS-6:** Exterior vertical joints between different materials listed above.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- F. **Joint-Sealant Application JS-7:** Exterior perimeter joints between different materials and frames of doors, windows and louvers.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- G. **Joint-Sealant Application JS-8:** Exterior control and expansion joints in soffits and other overhead surfaces.
 - 1. Joint Sealant (Type 1): Single-component neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- H. **Joint-Sealant Application JS-10:** Vertical control and expansion joints on exposed interior surfaces of exterior walls.
 - 1. Joint Sealant (Type 3): Single-component nonsag urethane sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- I. **Joint-Sealant Application JS-11:** Interior perimeter joints of exterior openings.
 - 1. Joint Sealant (Type 5): Latex sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- J. **Joint-Sealant Application JS-12:** Interior ceramic tile expansion, control, contraction, and isolation joints in horizontal traffic surfaces.
 - 1. Joint Sealant (Type 2): Multicomponent pourable urethane sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- K. **Joint-Sealant Application JS-13:** Interior joints between plumbing fixtures and adjoining walls, floors, and counters.
 - 1. Joint Sealant (Type 4): Single-component mildew-resistant neutral-curing silicone sealant.
 - 2. Joint-Sealant Color: White.
- L. **Joint-Sealant Application JS-14:** Vertical joints on exposed surfaces of interior unit masonry, concrete walls and partitions.
 - 1. Joint Sealant (Type 3): Single-component nonsag urethane sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- M. **Joint-Sealant Application JS-15:** Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.

1. Joint Sealant (Type 5): Latex sealant.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- N. Joint-Sealant Application JS-16:** Interior control, expansion, and isolation joints in horizontal traffic surfaces of dimension stone flooring. Other interior joints in horizontal traffic surfaces.
1. Joint Sealant (Type 2): Multicomponent pourable urethane sealant.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION