SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. General:

1. This Section specifies general requirements, definition of joint sealer types, and application requirements for sealant work specified within other individual specification sections.

B. Prepare sealant substrate surfaces.

C. Furnish and install sealant and backing materials.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY.

B. Section 07 84 00 - FIRESTOPPING: Firestopping sealants and related backing materials.

C. Section 08 80 00 - GLAZING: Sealant used in conjunction with setting glass.

D. Section 09 29 00 - GYPSUM BOARD: Application of concealed acoustical sealant used in conjunction with gypsum board work at abutting surfaces (perimeter of partitions and walls).

E. Section 09 91 00 - PAINTING: Caulks used in preparation of applied finish coatings.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASTM C 717 - Standard Terminology of Building Seals and Sealants.
2. ASTM C 790 – Guide for Use of Latex Sealants
3. ASTM C 804 - Use of Solvent-Release Type Sealants.
4. ASTM C 834 - Latex Sealing Compounds.
5. ASTM C 919 - Use of Sealants in Acoustical Applications.
6. ASTM C 920 - Elastomeric Joint Sealants.
7. ASTM C 962 - Use of Elastomeric Joint Sealants.
8. ASTM C 1193 - Guide for Use of Joint Sealants.
9. ASTM C 1247 - Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.
10. ASTM D 1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
11. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
12. FS TT-S-00227E - Sealing Compound: Elastomeric Type, Multi-Component.

13. FS TT-S-00230C - Sealing Compound: Elastomeric Type, Single-Component.
14. FS TT-S-001543A - Sealing Compound, Silicone Rubber Base.

B. The following reference materials are hereby made a part of this Section by reference thereto:

1. SWRI – Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, chemical and physical properties and installation instructions for each item furnished hereunder.
2. Selection Samples: Sample card indicating Manufacturer's full range of colors available for selection by Architect.
3. Verification Samples: 12 inch long samples of sealant for verification of color, installed where directed by Architect.
4. Certificates: Manufacturer's certification that the Products supplied meet or exceed specified requirements.
5. Test and Evaluation Reports:
   a. Compatibility and adhesion test reports: Test reports from sealant manufacturer indicating that sealant proposed for use have been tested for compatibility and adhesion with actual samples of substrates to be used on this project. Include sealant manufacturer’s interpretation of test results, and recommendations for primers and substrate preparation specific to this Project.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Bonds and Warranty Documentation: Manufacturer’s standard Warranties and Guarantees.

1.5 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Provide sealants from a single manufacturer for all work of this Section to the greatest extent possible. Each individual type of sealant installed in the Work shall be from a single manufacturer.

C. Qualifications:

1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

1.6 DELIVERY, STORAGE AND HANDLING

A. Each container and package must bear an unbroken seal, test number and label of the manufacturer upon delivery to the site. Failure to comply with these requirements shall be sufficient cause for rejection of the material in question, by the Architect and his requiring its removal from the site. New material conforming to said requirements shall be promptly furnished at no additional cost to the Contract.

1.7 SITE CONDITIONS

A. Do not install single component solvent curing sealant in enclosed building spaces.

B. Environmental Requirements: Maintain temperature and humidity recommended by the sealant manufacturer during and 24 hours after installation. Do not proceed with installation of joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are below 40 degrees F.
2. When joint substrates are wet due to rain, frost, condensation, or other causes.

C. Do not proceed with installation of joint sealers until contaminates capable of interfering with their adhesion are removed from substrates.

1.8 WARRANTY

A. Provide 5 year warranty under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Warranty shall include coverage of installed sealant and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Specified Manufacturers and Products: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the products specified under this section for each individual sealant type, for the applications scheduled at the end of Section, and as may be additionally identified on the Drawings.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. BASF Construction Chemicals (Sonneborn), Shakopee MN.
2. Chem Link Inc., Schoolcraft, MI.
3. Dow Corning Corporation, Midland MI.
4. Momentive Performance Materials (GE Silicones), Waterford NY.
5. Pecora Corporation, Harleysville PA.
6. Sika Corp, Lyndhurst NJ.
7. STS Coatings, Inc., Comfort TX.
8. Tremco, Inc., Beachwood OH.
9. United States Gypsum Company (USG), Chicago IL.
10. York Manufacturing, Inc., Sanford ME.

2.2 SEALANT MATERIALS

A. Sealant Materials, General Requirements:

1. Only use sealant and primers that comply with the following limits for VOC content:
   a. Architectural Sealants: 250 g/L.
   b. Roofing Sealants: 450 g/L.

c. Roadway Sealants: 250 g/L.

d. Sealant primer: 250 g/L.

2. Sealants containing aromatic solvents, fibrous talc, formaldehyde, halogenated solvents, mercury, lead, cadmium, chromium and their compounds, are not permitted.

B. Joint Sealer Type AA (Acrylic acoustical): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.

1. Tremco, product “Tremco Acoustical Sealant”.
2. USG, product “USG Acoustical Sealant”.
3. Pecora, product “AC-20 FTR”.

C. Joint Sealer Type AP (Acrylic painters caulk): One component acrylic latex caulking compound, conforming to FS 19-TP-21M and ASTM C 834 Type P, Grade NF, paintable within 24 hours after application, with a minimum movement capability of ±12.5 percent, equal to one of the following:

1. BASF (Sonneborn), product, “Sonolac”.
2. Tremco, product, “Tremflex 834”.
3. Bostik, product, “Chem-Calk 600”.
4. Pecora, product “AC-20+”.

D. Joint Sealer Type HL2 (Horizontal-self-Leveling, 2-component): Pouring grade self-leveling multi-component urethane sealant, conforming to FS TT-S-000227E, Type I, Class A, and ASTM C 920, with a minimum movement capability of ±25 percent, equal to the following:

1. BASF (Sonneborn), product, “SL2”.
2. Sika, product, “Sikaflex 2CSL”.
3. Tremco, product, “THC-900 / THC-901”.

E. Joint Sealer Type HT (Horizontal-Trowel): Trowel grade multi-component modified-urethane or neutral-cure silicone paste sealant, conforming to FS TT-S-000227E, Type I, Class A, and ASTM C 920, with a minimum movement capability of ±25 percent, equal to the following:

1. BASF (Sonneborn), product “SL2 (slope grade)” (urethane).
2. GE silicones, product “Tosseal 811” (silicone).
3. Pecora, product “Dynatred” (urethane).
4. Sika, product “Sikaflex 2CTG” (urethane).
5. Tremco, product “THC-901” (urethane).

F. Joint Sealer Type P2 (Polyurethane, Multi-component): Low modulus type, Multi-component non-sagging gun-grade polyurethane sealant, conforming to FS TT-S-000227E, Type II, Class A, and ASTM C 920, Type M, Class 25, Grade NS, use NT,M, A and O with a minimum movement capability of ±25 percent, equal to the following:

1. BASF (Sonneborn), product “Sonolastic NP2”.
2. Tremco, product “Dymeric 240 / Dymeric 240FC”.
3. Pecora, product “Dynatrol II”.
4. Sika, product “Sikaflex 2CNS”.

G. Joint Sealer Type SC (Silicone, general construction): One-part medium modulus, natural cure, synthetic sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, NS, Class 25, use NT, G, A, M, O with a minimum movement capability of ±50 percent, equal to the following:

1. Dow Corning, product, “791”.
2. GE Silicones, product, “Silpruf”.
3. Pecora, product, “895”.
4. Sika, product, “Sika Sil-C 995”.
5. Tremco, product, “Spectrem 2”.

H. Joint Sealer Type SG (Silicone butt-joint Glazing): One-part low modulus, moisture curing, synthetic rubber sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, NS, Class 50, FS TT-S-001543A, Type Non-Sag, Class A, in black or clear color, as selected by Architect:

1. Dow Corning, product “999-A”.
2. GE Silicones, product “SilPruf SCS2000”.
3. Tremco, product “Spectrem 2”.

I. Joint Sealer Type SM (Silicone, Mildew-resistant): USDA approved one component acetoxy silicone rubber, mildew resistant, acceptable to local health officials, conforming to U.S. Food and Drug Administration regulation 21 CFR 177.2600, FS TT-S-001543A, Type Non- Sag, Class A, and FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Class 25, Grade NS, use NT,G and A with a minimum movement capability of ±25 percent, and a Shore A hardness of 20, equal to the following:

1. BASF (Sonneborn), product "Sonolastic - OmniPlus".
2. Dow Corning, product "786".
3. GE Silicones, product "Sanitary 1700".
4. Tremco, product "Tremsil 200".
5. Pecora, product "898".

2.3 ACCESSORIES

A. Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin or polyurethane foam rod complying with ASTM C 1330, Type C, 1/3 greater in diameter than width of joint. Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. Provide one of the following, or equal.

1. Nomaco, Inc., Zebulon, NC, product “Green Rod”.
2. Industrial Thermo Polymers Ltd., Brampton, Ontario CN, product “ITP Standard Backer Rod”.
3. BASF Construction Chemicals (Sonneborn), Shakopee MNtrem, product "Sonolastic Closed Cell Backer Rod".
4. W.R. Meadows Inc., Hampshire, IL, product “Sealtight Kool-Rod”.

B. Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function.

C. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application,

and completely free from contaminants which would adversely affect the sealant and caulking materials.

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. General:

1. Weather conditions must be dry and of the temperature, as recommended by sealant manufacturer, during application operations.
2. Surface receiving work of this section must be absolutely dry and dust free. All joints receiving sealant/caulking materials and primers shall be subject to the approval of the sealant manufacturer for proper use of specified materials.

B. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.

1. Clean ferrous metals of all rust and coatings by wire brush, grinding or sandblasting. Remove oil, grease and protective coatings with cleaners recommended by sealant manufacturer.

C. Prime joint substrates**,** as recommended in writing by joint-sealant manufacturer**,** as based on preconstruction joint-sealant-substrate tests or as based upon 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.

D. Verify that joint backing and release tapes are compatible with sealant.

E. Perform preparation in accordance with ASTM C 804 and C 790 for solvent and latex base solvents, respectively.

3.3 INSTALLATION

A. General: Conform to SWRI requirements, and sealant manufacturer’s written requirements for installation.

B. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.

1. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
2. Do not stretch back-up material into joints.

C. Install bond breaker in joints where shown in the Drawings and wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such

bond might impair the Work.

D. Apply masking tape or other precautions to prevent migration or spillage of materials onto adjoining surfaces.

E. Apply urethane sealant and latex caulking materials into joints in accordance with manufacturer's instructions, using mechanical or power caulking gun equipped with nozzle of appropriate size, with sufficient pressure to completely fill the joints.

1. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
2. Maintain the outer edge of the sealant and caulking materials, where side faces of joints are in the same plane, back 1/8-inch from the faces.
3. Apply sealant in continuous beads without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
4. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
5. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

F. Apply pouring self-leveling urethane sealant (Sealant designation **HL**) into horizontal joints in accordance with manufacturer's instructions, to a level approximately 1/16 inch below adjacent surfaces.

1. Apply sealant without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
2. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
3. Remove the temporary masking tape immediately after tooling, and before the sealant has taken initial set.

3.4 CLEANING

A. Clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealant and caulking materials with solvents which will not damage the surfaces in any way.

3.5 PROTECTION

A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.6 SCHEDULE

A. General: Seal joints indicated and all interior and exterior joints, seams, and intersections between dissimilar materials.

B. Sealant Colors:

1. Colors for Sealant Types “P2” and “HL2”: Match colors furnished by the Architect, or match other building materials as directed. Should such custom

colors not be available from the approved manufacturer, except at additional charge, provide all such colors at no change in Contract Sum.

2. Colors for Sealant Types “HT”, “SC”, “SE”, “SG”, and “SM”: As selected by the Architect from manufacturer’s standard colors.
3. Color for Sealant Types “AA” and “AP”: White.
4. In concealed installation, and in partially or fully exposed installation where so approved by the Architect, standard gray or black sealant may be used.

C. Interior joints (Listed by primary building material abutting sealant joints):

1. Interior Concrete:

Joint Condition	Sealant Type
a. Concrete to concrete, vertical joints:	SC
b. Concrete to concrete: horizontal walkable surfaces:	HL2
c. Concrete and non-bituminous pavement ramps (5 to 12 Percent) horizontal joints at abutting vertical concrete or masonry surfaces:	HT
d. Concrete to all items which penetrate concrete walls, including, but not necessarily limited to, door frames, louver frames, pipes, vents, and similar items:	SC

2. Interior Masonry:
* Includes interior side of exterior masonry walls.

Joint Condition	Sealant Type
a. Masonry to masonry control joints*:	P2
b. Masonry to gypsum board:	SC
c. Masonry to all items which penetrate masonry walls, including, but not necessarily limited to, window frames, door frames, louver frames, and similar items:	SC
d. Masonry to all pipes, conduit and vents which penetrate non-rated masonry walls:	SC

3. Gypsum Board:

Joint Condition	Sealant Type
a. Gypsum board to metal or wood trim:	AP
b. Gypsum board to abutting surfaces at exposed tops and bottoms partitions and walls:	AA
c. Gypsum board to masonry:	SC
d. Gypsum board to interior door and window frames, penetrating conduits and piping, light-fixtures, electrical cover plates, building specialty items, ductwork, grilles, supply diffusers, faucets, piping, escutcheon plates and similar items:	AP
e. Gypsum board to plumbing fixtures:	SM

4. Architectural millwork:

Joint Condition	Sealant Type
a. Millwork to abutting materials, kitchens, toilet rooms	

SM and similar “wet spaces”:

b. Millwork to abutting surfaces (except in “wet” AP spaces):

5. Interior metal:

Joint Condition	Sealant Type
a. Metal to metal:	SC

6. Interior floor drains:

Joint Condition	Sealant Type
a. Floor drains to concrete slab:	SE
b. Floor drains to flooring:	SE

7. Acoustical ceilings:

Joint Condition	Sealant Type
a. Acoustical ceiling edge angle to irregular wall surface	AP

8. Tile:

Joint Condition	Sealant Type
a. Tile to tile vertical, and horizontal non-traffic joints:	SM
b. Tile to tile, horizontal pedestrian traffic joints:	HL2

9. Interior Wood:

Joint Condition	Sealant Type
a. Wood to wood (natural or stained	SC
b. finishes) Wood to wood (painted opaque	AP
c. Wood to metal	SC
d. Wood base to wall surfaces	SC

END OF SECTION