SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sealing all joints which will permit penetration of dust, air or moisture.

B. Related Specification Sections include but are not necessarily limited to:
   1. Division 00 - Procurement and Contracting Requirements.
   2. Division 01 - General Requirements.
   3. Section 07 84 00 - Firestopping.
   4. Section 09 96 00 - High Performance Industrial Coatings.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Concrete Institute (ACI):
      a. 302.1R, Guide for Concrete Floor and Slab Construction.
   2. ASTM International (ASTM):
      a. C834, Standard Specification for Latex Sealants.
      b. C920, Standard Specification for Elastomeric Joint Sealants.
      c. C1521, Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
   3. NSF International (NSF):
      a. 61, Drinking Water System Components -- Health Effects.
   4. Underwriters Laboratories, Inc. (UL).

B. Qualifications: Sealant applicator shall have minimum five years experience using products specified on projects with similar scope.

C. Mock-Ups:
   1. Before sealant work is started, a mock-up of each type of joint shall be sealed where directed by the Engineer.
      a. The approved mock-ups shall show the workmanship, bond, and color of sealant materials as specified or selected for the work and shall be the minimum standard of quality on the entire project.
      b. Each sample shall cure for a minimum of seven days at which time the sealant manufacturer's authorized factory representative shall perform adhesion tests on each sample joint.
         1) Perform adhesion tests per ASTM C1521.
         2) If mock-up is not acceptable or if adhesion test fails, provide additional mock-up and adhesion testing as required until acceptable to Engineer.

1.3 DEFINITIONS

A. Corrosive Areas Include: [Edit to list specific rooms or areas.]

B. Defect(ive): Failure of watertightness or airtightness.

C. Finish sealant: Sealant material per this specification applied over face of compressible sealant or expanding foam sealant specified, to provide a finished, colored sealant joint.

D. Installer or Applicator:
   1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
   2. Installer and applicator are synonymous.

E. "Interior wet areas": Toilets, showers, laboratories[, truck wash bay][, wet wells] and similar areas. [Entire area is considered wet.]

F. "Seal," "sealing" and "sealant": Joint sealant work.

1.4 SUBMITTALS

A. Shop Drawings:
   1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
      c. Manufacturer's recommendations for joint cleaner, primer, backer rod, tooling and bond breaker.
   3. Certification from sealant manufacturer stating product being used is recommended for and is best suited for joint in which it is being applied.
   4. Certification of applicator qualification.

B. Test Results:
   1. Provide adhesion test results for each sealant sample including adhesion results compared to adhesion requirements.
   2. Manufacturer's authorized factory representative recommended remedial measures for all failing tests.

C. Samples:
   1. Cured sample of each color for Engineer's color selection.
   2. Color chart not acceptable.

D. Informational Submittals:
   1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver material in manufacturer's original unopened containers with labels intact: Labels shall indicate contents and expiration date on material.

1.6 PROJECT CONDITIONS

A. Schedule installation of sealant work after completion of penetrating item installation but prior to covering or concealing of openings.

B. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

C. Do not proceed with the installation of firestop materials when the ambient temperature is outside the manufacturer’s recommended limitations for installation and curing times as printed on the product label and product data sheet.

D. During installation provide masking and drop cloths to prevent sealant materials from contaminating any adjacent surfaces.

E. Perimeter of, and all penetrations through, walls separating unclassified rooms and rooms classified per NFPA 820, shall be gas-tight to meet the definition of “Physically Separated”.
   1. Classified rooms include the following:
      a. 60-101 Pump Room.
      b. 60-202 Digester Pipe Gallery.
      c. 60-203 Ante Room.
   2. The remainder of the [building] [facility] [structure] is unclassified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Compressible sealant:
      a. Schul International Company, LLC.
      b. Emseal by Sika.
      c. Norton.
      d. Sandell Moisture Protection Systems.
   2. Expanding foam sealant:
      a. M-D Building Products, Inc.
      b. DAP Products, Inc.
      c. FAI International, Inc.
   3. Fire-resistant sealant:
      a. See Specification Section 07 84 00.
   4. Polyether sealants:
      a. BASF Corporation.
      b. Chem Link.
      c. Tremco Commercial Sealants & Waterproofing.
   5. Polysulfide rubber sealant:
      a. Pecora Corporation.
      b. BASF Corporation.
      c. PolySpec by ITW Polymers Sealants.
   6. Polyurea joint filler:
      a. Dayton Superior Corporation.
      b. Euclid Chemical Company.
      c. L&M by LATICRETE International, Inc.
      d. BASF Corporation.
   7. Polyurethane sealants:
      a. Pecora Corporation.
      b. Sika.
      c. BASF Corporation.
      d. Tremco Commercial Sealants & Waterproofing.
   8. Silicone sealants:
      a. Chem Link.
      b. GE Silicones.
      c. Dow.
      d. Tremco Commercial Sealants & Waterproofing.
   9. Backer rod, compressible filler, primer, joint cleaners, bond breaker:
      a. As recommended by sealant manufacturer.

B. Submit request for substitution in accordance with Specification Section 01 25 00.

2.2 MATERIALS

A. Sealants - General:
   1. Provide colors matching materials being sealed.
   2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
   3. Nonsagging sealant for vertical and overhead horizontal joints.
   4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.
   5. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.
   6. Sealant backer rod and/or compressible filler:
      a. Closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, non-bituminous material recommended by sealant manufacturer to:
         1) Control joint depth.

2) Break bond of sealant at bottom of joint.
3) Provide proper shape of sealant bead.
4) Serve as expansion joint filler.

B. Acoustical sealant:
1. One component siliconized acrylic latex.
2. Nonstaining, nonbleeding.
3. Compatible with paints specified for adjoining materials.
4. Meet ASTM C834.
a. Pecora - AC20+.
b. Tremco - Tremflex 834.

C. Expanding Foam Sealant:
1. One or two component moisture cured expanding urethane.
2. Shall not contain formaldehyde.
3. Density: Minimum 1.5 PCF.
4. Closed cell content: Minimum 70 PCT.
5. R-value: Minimum 5.0/IN.
6. Flame spread: Less than 25.
7. Smoke developed: Less than 25.

D. Fire-Resistant Sealant: See Specification Section 07 84 00.

E. Polyether Sealant:
1. Silyl-terminated polyether polymer.
2. ASTM C920, Type S, Grade NS, Class 50, Use NT, M, A, and O.
a. BASF MasterSeal 150.
b. Chem Link DuraLink.
c. Tremco Dymonic FC.

F. Polyurea Joint Filler:
1. Two component, semi-rigid material for filling formed or saw-cut control joints in interior concrete slabs.
a. Dayton Superior Corporation "Joint Fill, Joint Seal, Joint Saver II" as required for condition and recommended by manufacturer.
b. Euclid Chemical Company "EUCO QWIK" joint.
c. L&M "Joint Tite 750".
d. BASF MasterSeal “CR100" control joint filler.
2. Comply with ACI 302.1R performance recommendations regarding control and construction joints.
3. Color: Gray.

G. Silicone Sealant:
1. One component.
2. Meet ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, O.
a. Chem Link DuraSil.
b. GE Silpruf, Silglaze II.
c. GE Sanitary 1700 sealant for sealing around plumbing fixtures.
d. Dow 786 for sealing around plumbing fixtures.
e. Dow 7565, 790, 791, 795.
f. Tremco Spectrem 1, Spectrem 3, Tremsil 600.
3. Mildew resistant for sealing around plumbing fixtures.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before use of any sealant, investigate its compatibility with joint surfaces, fillers and other materials in joint system.

B. Use only compatible materials.

C. Where required by manufacturer, prime joint surfaces.
   1. Limit application to surfaces to receive sealant.
   2. Mask off adjacent surfaces.

D. Provide joint depth for joints receiving polyurea joint filler in accordance with manufacturer's recommendations.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions and UL requirements.

B. Clean all joints.

C. Make all joints water and airtight.

D. At changes in direction of joints, joint intersections and where sealant joints interface with other construction, install continuous sealant as necessary to ensure a weather-tight seal.

E. Make depth of sealing compounds, except expanding foam and polyurea sealant, not more than one-half width of joint, but in no case less than 1/4 IN nor more than 1/2 IN unless recommended otherwise by the manufacturer.

F. Provide correctly sized backer rod, compressible filler or compressible sealant in all joints to depth recommended by manufacturer:
   1. Take care to not puncture backer rod and compressible filler.
   2. Provide joint backer rod as recommended by the manufacturer for polyurea joint filler.

G. Apply bond breaker where required.

H. Tool sealants using sufficient pressure to fill all voids.

I. Upon completion, leave sealant with smooth, even, neat finish.

J. Where piping, conduit, ductwork, etc., penetrate wall, seal each side of wall opening.

K. Install expanding foam sealant to minimum 4 IN depth or thickness of wall being penetrated if less than 4 IN or as indicated on Drawings.
   1. Provide adequate fire rated backing material as required.
   2. Hold material back from exposed face of wall as necessary to allow for installation of backer rod and finish sealant.
      a. Allow expanding foam sealant to completely cure prior to installing backer rod and finish sealant.
   3. Trim off excess material flush with surface of the wall if not providing finished sealant.

3.3 SEALANT WORK

A. General:
   1. Work includes but is not limited to: Sealing all joints which will permit penetration of dust, air, or moisture.
   2. Refer to SCHEDULE for materials to be used.
   3. See Specification Section 07 84 00 for firestopping.

B. Concrete joints:
   1. Flooring joints.
   2. Isolation joints.
   3. Joints between paving or sidewalks and building.
   4. Construction, control and expansion joints.
   5. Joints between precast roof units and between precast roof units and walls.
   6. Joints between precast wall panels.

C. Flashing, and retainers.

D. Openings:

1. Perimeters of door and window frames, louvers, grilles, etc.
2. Door thresholds shall be set in a full bed of sealant.
3. Glass and glazing: See specification Section 08 81 00.

E. Interior finishes:
1. Perimeter and penetrations of sound insulated walls.
2. Casework and millwork: See Specification Section 06 41 00.
3. Expansion and control joints in tile work.

F. Plumbing fixtures.

G. Penetrations of walls, floors and decks.

H. Other joints where sealant, expanding foam sealant or compressible sealant is indicated.

3.4 FIELD QUALITY CONTROL

A. Adhesion Testing:
1. Perform adhesion tests in accordance with ASTM C1521 per the following criteria:
a. Water bearing structures: One test per every 1000 LF of joint sealed.
b. Exterior precast concrete wall panels: One test per every 2000 LF of joint sealed.
c. Chemical containment areas: One test per every 1000 LF of joint sealed.
d. Building expansion joints: One test per every 500 LF of joint sealed.
e. All other type of joints except butt glazing joints: One test per every 3000 LF of joint sealed.
f. Manufacturer's authorized factory representative shall recommend, in writing, remedial measures for all failing tests.

3.5 SCHEDULE

A. Furnish sealant as indicated for the following areas:
1. Exterior areas:
a. Above grade: .
b. Below grade: Polyurethane.
2. Interior areas:
a. Noncorrosive areas:
1) Wet exposure: .
a) Toilet rooms, locker rooms, janitor closets or similar areas: Mildew resistant silicone.
2) Dry exposure: , unless noted otherwise.
a) Sound insulated construction: Acoustical sealant.
b. Fire-rated construction: See Specification Section 07 84 00.
c. Casework, countertops and solid surface materials: Silicone.
1) Sinks, fixtures or other areas subject to potential splash, spillage or condensation: Mildew Resistant Silicone.
3. Exterior wall penetrations: Expanding urethane foam, with finish sealant.
a. Finish sealant:
1) Exterior side:
a) Above grade: Polyether.
b) Below grade: Polyurethane.
2) Interior side:
a) Noncorrosive area:
(1) Wet exposure: .
(2) Dry exposure: , unless noted otherwise.
4. Interior concrete slab formed or saw-cut control joints: Polyurea joint filler.

END OF SECTION