SECTION 07 92 00
JOINT SEALANTS

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PART 1 GENERAL

1.1 SECTION INCLUDES

A. Exterior sealants.

B. Exterior EIFS sealants.

C. Exterior and interior polyether traffic sealants.

D. Interior sealants.

E. Interior USDA food contact sealants.

F. Interior sanitary silicone sealants.

G. Metal lap joint sealants.

H. Threshold and sheet metal bedding sealants.

I. Joint accessories.

1.2 RELATED SECTIONS

A. Section 07 24 00 - Exterior Insulation and Finish Systems.

B. Section 08 83 13 - Mirrored Glass Glazing.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM C 510 - Standard Test Method for Staining and Color Change of Single or Multi-component Joint Sealants.
2. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).
3. ASTM C 794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
4. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
5. ASTM C 1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
6. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
7. ASTM C 1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
8. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic ElastomersTension.
9. ASTM D 679 - Methods of Testing and Tolerances for Certain Fine Staple Cotton

Gray Goods.
10. ASTM D 816 - Standard Test Methods for Rubber Cements.
11. ASTM D 1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal).
12. ASTM D 2203 - Standard Test Method for Staining from Sealants.
13. ASTM D 2240 - Standard Test Method for Rubber Property Durometer Hardness

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Test Reports:
1. Submit results of laboratory pre-construction testing.
2. Submit results of field pre-construction testing.
3. Submit manufacturer's recommendations for joint preparation, priming, and joint accessory materials based on test results.
4. Submit manufacturer's recommended installation procedure modifications resulting from field adhesion tests.

D. Shop Drawings: Submit details to show installation and interface between sealants and adjacent work.

E. Selection Samples: For each finish product specified, two complete sets of color charts for each sealant type for initial selection.

F. Verification Samples: For each finish product specified, two samples, standard cured color samples for each sealant type illustrating selected colors.

G. Manufacturer's Certificate:
1. Certify products are suitable for intended use and products meet or exceed specified requirements.
2. Certify applicator is approved by manufacturer.

H. Qualifications Data:
1. Submit applicator's qualifications, including reference projects of similar scope and complexity, with current phone numbers and contact names of architects and owners for verification.

I. Manufacturer's Field Reports:
1. Indicate time present at project site.
2. Include observations; indicate compliance with manufacturer's installation instructions, and supplemental instructions provided to installers.

J. Operation and Maintenance Data:
1. Submit recommended inspection intervals.
2. Submit instructions for repairing and replacing failed sealant joints.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 10 year experience manufacturing similar products.

B. Applicator Qualifications:
1. Company specializing in performing work of this section with minimum three years

documented experience, minimum three successfully completed projects of similar scope and complexity, and approved by manufacturer.

2. Designate one individual as project foreman who shall be on site at all times during installation.

C. Laboratory Pre-Construction Testing:

1. Test sealants, joint accessories, and joint substrates in accordance with the following, before starting work of this section:
   a. Obtain samples of joint substrate products specified in other sections.
   b. Adhesion: ASTM C 794 and ASTM C 719; determine surface preparation and required primer.
   c. Compatibility: ASTM C 1087; determine materials forming joints and adjacent materials do not adversely affect sealant materials and do not affect sealant color.
   d. Staining: ASTM D 2203, ASTM C 510, or ASTM C 1248; determine sealants will not stain joint substrates.
2. Pre-construction testing is not required when sealant manufacturer can furnish data acceptable to Architect based on previous testing for materials matching those of the Work.

D. Field Pre-Construction Testing:

1. Test each elastomeric sealant and joint substrate in accordance with the following, before beginning work of this section:
   a. Install sealants in field samples and mockups using joint preparation methods determined by laboratory pre-construction testing.
   b. Remove existing sealant, clean joint, and install new sealant using manufacturer's recommended joint preparation methods.
   c. Install field-test joints in inconspicuous location as approved by Architect].
   d. Test Method: Manufacturer's standard field adhesion test to verify joint preparation and primer required to obtain optimum adhesion of sealants to joint substrate.
   e. When test indicates sealant adhesion failure, modify joint preparation, primer, or both and retest until joint passes sealant adhesion test.

E. Mockup:

1. Install sealants in mockups specified in other sections including sealant and joint accessories to illustrate installation quality and color.
2. Incorporate accepted mockup as part of Work.
3. Repair seal joint mockups used for field adhesion testing.

1.6 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Store primers and sealants in cool dry location with ambient temperature range of 60 to 80 degrees F (15 to 27 degrees C).

C. Handling: Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits

recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

B. Optimal application temperature is 32 degree F (0 degree C) and rising.
   1. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

1.9 SEQUENCING

A. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.

B. Ensure sealants are cured before covering with other materials.

C. Ensure that Work of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Provide manufacturer's signed standard limited warranty, against adhesive and cohesive failure of sealant and against infiltration of water and air through sealed joint for period of 1 year from date of completion.
   1. Manufacturer's standard warranty covering sealant materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Chem Link, which is located at: 353 E. Lyons St.; Schoolcraft, MI 49087 ; Toll Free Tel: 800-826-1681; Tel: 269-679-4440 ; Fax: 269-679-4448 ; Email:request info (sales@chemlink.com); Web:www.chemlink.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 POLYETHER SEALANTS

A. Type: 100% solids one-component, gun grade, polyether-base material. The sealant shall cure under the influence of atmospheric moisture to form an elastomeric joint material.
   1. Regulatory Compliance:
      a. Conforms to OTC Rule for Sealants
      b. Meets requirements of California Regs: CARB, BAAQMD and SCAQMD
      c. Product does not contain cancer causing chemicals listed in California Proposition 65.

B. Product: M-1 Structural Adhesive/Sealant as manufactured by Chem Link.
   1. ASTM C 920, Type S, Grade NS, Class 35, Use T1, NT, M, A, G and O.
   2. Federal Specification TT-C-0230C, Type II, Class B.
   3. CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N, No. 81026.
   4. Conforms to USDA requirements for Non-food Contact.
   5. VOC Content: Less than 20 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
   6. Performance Requirements:
      a. Tensile Properties (ASTM D-412) at 21 days: Tensile Stress: 370-psi minimum. Elongation at Break: 525%.

b. Shear Strength (ASTM D-1002): 390 psi.
c. Shore A Hardness (ASTM D-2240) at 21 days: 45.
d. Adhesion in Peel (TT-S-00230C, ASTM C 794).
e. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
f. The sealant shall conform The sealant shall be non-staining.
g. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

C. Product: DuraLink 35 Siding - Window - Door - Roof Sealant as manufactured by Chem Link.
1. ASTM C 920, Type S, Grade NS, Class 35, Use T2, NT, M, A, G and O.
2. Federal Specification TT-C-0230C, Type II, Class B.
3. VOC Content: Less than 24 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
4. Performance Requirements:
a. Initial Cure (ASTM D-679): 45 minutes
b. Properties (ASTM D-412) at 21 days: Tensile Stress - 230-psi minimum. Elongation at Break - 420%.
c. Shore A Hardness (ASTM D-2240) at 21 days: 31.
d. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
e. The sealant shall be non-staining.
f. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

D. Product: DuraLink 50 Siding - Window - Door - Roof Sealant as manufactured by Chem Link.
1. ASTM C 920, Type S, Grade NS, Class 50, Use T1, NT, M, A, G and O.
2. Federal Specification TT-C-0230C, Type II, Class A.
3. ASTM C 1382 for use with EIFS.
4. VOC Content: Less than 24 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
5. Performance Requirements:
a. Initial Cure (ASTM D-679): 45 minutes
b. Properties (ASTM D-412) at 21 days: Tensile Stress - 250-psi minimum. Elongation at Break - 750%. Modulus of 100%: 43 psi (0.30 MPa).
c. Shore A Hardness (ASTM D-2240) at 21 days: 20 +/-3
d. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
e. The sealant shall be non-staining.
f. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

E. Product: NovaLink 35 Concrete - Masonry Sealant as manufactured by Chem Link.
1. ASTM C 920, Type S, Grade NS, Class 35, Use T1, NT, M, A, G and O.
2. Federal Specification TT-S-00230C, Type II, Class B.
3. CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N.
4. Conforms to USDA requirements for Non-food Contact.
5. VOC Content: Less than 24 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
6. Performance Requirements:
a. Initial Cure (ASTM D-679): 60 minutes
b. Properties (ASTM D-412) at 21 days: Tensile Stress - 145-psi minimum. Elongation at Break - 445%.

c. Shore A Hardness (ASTM D-2240) at 21 days: 21.
d. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
e. The sealant shall be non-staining.
f. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

F. Product: NovaLink SL Self-Leveling Construction Sealant as manufactured by Chem Link.
1. ASTM C 920, Type S, Grade P, Class 25, Use T2, NT, M.
2. CAN/CGSB-19.13-M87, Classification C-1-40-B-N and C-1-25-B-N, No. 81028.
3. Conforms to USDA requirements for Non-food Contact.
4. VOC Content: Less than 24 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
5. Performance Requirements:
a. Initial Cure (ASTM D-679): 120 minutes
b. Properties (ASTM D-412) at 21 days: Tensile Strength at break: minimum 120 psi. Elongation at Break - Minimum 350%.
c. Shore A Hardness (ASTM D-2240) at 21 days: 15 +/- 3.
d. Adhesion in Peel (ASTM C-794).
e. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
f. The sealant shall be non-staining. Final Cure: 7 to 10 days.
g. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

G. Product: Clear General Purpose Sealant as manufactured by Chem Link.
1. ASTM C920, Type S, Grade NS, Class 25; Uses NT, T2, M, G, A and O.
2. Federal Specification TT-S-00230-C Type II, Class B.
3. Corps of Engineers CRD-C-541, Type II, Class B.
4. Canadian Standards Board CAN 19, 13-M82.
5. Conforms to USDA Requirements for Non-food Contact.
6. VOC Content: Less than 14 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
7. Performance Requirements:
a. Initial Cure/Tack Free (ASTM D-679): 20 +/- 10 minutes.
b. Shrinkage: No visible shrinkage after 14 days.
c. Low Temperature Flex (ASTM D-816): Pass -10 degree F (-23 degree C) 1/4 inch (6.4 mm) mandrel.
d. Shear Strength (ASTM D-1002): 200 psi.
e. Properties (ASTM D-412) at 21 days: Tensile Strength: 230 psi. Elongation at Break - Minimum 400%.
f. Shore A Hardness (ASTM D-2240) at 21 days: 14 +/- 2.
g. Service Range: -40 degree to 200 degree F (-40 degree to 93 degree C).
h. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

2.3 SILICONE SEALANTS

A. Type: Single component neutral cure (RTV) silicone, adhesive sealant.
1. Regulatory Compliance:
a. Conforms to OTC Rule for Sealants
b. Meets requirements of California Regs: CARB, BAAQMD and SCAQMD

c. Product does not contain cancer causing chemicals listed in California Proposition 65.

B. Product: DuraSil Neutral Cure High Performance Adhesive/Sealant as manufactured by Chem Link.
1. ASTM C920, Type S, Grade NS, Class 50; Uses NT, T2, M, G, A and O.
2. Federal Specification TT-S-00230-C Type II, Class A
3. Corps of Engineers CRD-C-541, Type II, Class A
4. Canadian Standards Board CAN 19, 13-M82.
5. Conforms to USDA Requirements for Non-food Contact.
6. VOC Content: Less than 33 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
7. Performance Requirements:
   a. Initial Cure/Tack Free (ASTM D-679): 10 +/- 5 minutes.
   b. Shrinkage: No visible shrinkage after 14 days.
   c. Low Temperature Flex (ASTM D-816): Pass -10 degree F (-23 degree C) 1/4 inch (6.4 mm) mandrel.
   d. Shear Strength (ASTM D-1002): 75 +/-5 psi.
   e. Properties (ASTM D-412) at 21 days: Tensile Strength: 135 psi. Elongation at Break - Minimum 600%.
   f. Shore A Hardness (ASTM D-2240) at 21 days: 10 +/- 3.
   g. Service Range: -80 degree to 400 degree F (-62 degree to 204 degree C).
   h. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

C. Product: MetaLink Neutral Cure Metal Roof Sealant as manufactured by Chem Link.
1. ASTM C920, Type S, Grade NS, Class 50; Uses NT, T2, M, G, A and O.
2. Federal Specification TT-S-00230-C Type II, Class A
3. Corps of Engineers CRD-C-541, Type II, Class A
4. Canadian Standards Board CAN 19, 13-M82.
5. Conforms to USDA Requirements for Non-food Contact.
6. VOC Content: Less than 33 grams / liter ASTM D2369 EPA Method 24 (tested at 240 degree F / 115 degree C).
7. Performance Requirements:
   a. Initial Cure/Tack Free (ASTM D-679): 10 +/- 5 minutes.
   b. Shrinkage: No visible shrinkage after 14 days.
   c. Low Temperature Flex (ASTM D-816): Pass -10 degree F (-23 degree C) 1/4 inch (6.4 mm) mandrel.
   d. Shear Strength (ASTM D-1002): 75 +/-5 psi.
   e. Properties (ASTM D-412) at 21 days: Tensile Strength: 135 psi. Elongation at Break - Minimum 600%.
   f. Shore A Hardness (ASTM D-2240) at 21 days: 10 +/- 3.
   g. Service Range: -80 degree to 400 degree F (-62 degree to 204 degree C).
   h. Optimal application temperature 32 degree F (0 degree C) and rising. Maintain sealant at room temperature before applying. If temperatures are below 32 degrees F (0 degrees C) contact manufacturer's customer service for application guidelines.

2.4 ACCESSORIES

A. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

B. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

C. Joint Backing: Round foam rod compatible with sealant; oversized 25 to 50 percent larger than joint width; recommended by sealant manufacturer to suit application

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Masking tape: Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.
   1. Verify joint surfaces are clean and dry.
   2. Ensure concrete surfaces are fully cured.

B. Report unsatisfactory conditions in writing to the Architect;

C. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Prepare joints in accordance with ASTM C 1193 and manufacturer's instructions.

B. Clean joint surfaces to remove dirt, dust, oils, wax, paints, and other contamination capable of affecting primer and sealant bond.
   1. Clean concrete joint surfaces to remove curing agents and form release agents.

C. Protect elements surrounding the Work of this section from damage or disfiguration. Apply masking tape to adjacent surfaces when required to prevent damage to finishes from sealant installation.

3.3 EXISTING WORK

A. Mechanically remove existing sealant.

B. Clean joint surfaces of residual sealant and other contaminates capable of affecting sealant bond to joint surface.

C. Allow joint surfaces to dry before installing new sealants.

3.4 SEALANT INSTALLATION

A. Install primer and sealants in accordance with ASTM C 1193 and manufacturer's instructions.

B. Install joint backing to maintain the following joint ratios:
   1. Joints up to 1/2 inch (13 mm) Wide: 1:1 width to depth ratio.
   2. Joints Greater than 1/2 inch (13 mm) Wide: 2:1 width to depth ratio; maximum 1/2 inch joint depth.

C. Install bond breaker where joint backing is not used.

D. Apply primer where required for sealant adhesion.

E. Install sealants immediately after joint preparation.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Tool exposed joint surface flat.

3.5 MANUFACTURER'S FIELD SERVICES

A. Require sealant manufacturer to be present at project site to:
   1. Observe sealant mockup installation and to issue reports of observations.
   2. Conduct field pre-construction testing.

3.6 CLEANING

A. Remove masking tape. Clean adjacent surfaces soiled by sealant installation.

3.7 SCHEDULE - SEALANT JOINTS

A. Exterior Sealant Joint [Type A]:
   1. Applications: Control and expansion joints in cast-in-place concrete.
      a. Joints between architectural and structural precast concrete units.
      b. Control and expansion joints in unit masonry.
      c. Control and expansion joints in stone masonry.
      d. Butt joints between metal panels.
      e. Joints between different materials listed above.
      f. Perimeter joints between materials listed above and frames of doors, windows, storefronts, louvers and similar openings.
      g. Control and expansion joints in soffits and overhead surfaces.
      h. Other exterior joints in vertical surfaces and non-traffic horizontal surfaces for which no other sealant is specified.
   2. Single Component Polyether Sealants:
      a. M-1
      b. DURALINK 50
      c. DURALINK 35
      d. NOVALINK 35
      e. CLEAR
   3. Single Component Silicone Sealants:
      a. DURASIL
      b. METALINK

B. Exterior Sealant Joint [Type B]:
   1. Applications:
      a. Metal roofs, gutters, downspouts, and other metal architectural surfaces.
   2. Single Component Silicone Sealants:
      a. METALINK

C. EIFS Sealant Joint [Type C]:
   1. Applications:
      a. Control and expansion joints.
      b. Butt joints between prefabricated panels.
      c. Joints between EIFS and other materials.
      d. Perimeter joints between EIFS and frames of doors, windows, storefronts, louvers and similar openings.
      e. Other joints within or abutting EIFS materials.
   2. Single Component Polyether Sealants:
      a. NOVALINK 35
      b. DURALINK 50
   3. Single Component Silicone Sealants:
      a. DURASIL

D. Interior Sealant Joint [Type D]:

1. Applications:
    a. Control and expansion joints on exposed interior surfaces of exterior walls.
    b. Perimeter joints on exposed interior surfaces of exterior openings.
    c. Joints on precast beams and planks.
    d. Perimeter joints between interior wall surfaces and frames of interior doors, windows, storefronts, louvers, elevator entrances and similar openings.
    e. Other interior joints in vertical surfaces and non-traffic horizontal surfaces subject to movement for which no other sealant is specified.
2. Single Component Polyether Sealants:
    a. M-1
    b. NOVALINK 35
    c. DURALINK 35
    d. DURALINK 50
    e. CLEAR
3. Single Component Silicone Sealants:
    a. DURASIL

E. Traffic Sealant Joint [Type E]:
1. Excludes Highways & Parking Ramps
2. Applications:
    a. Control, expansion and isolation joints in cast-in-place concrete.
    b. Control, expansion and isolation joints in structural precast concrete units.
    c. Joints between architectural precast concrete paving units.
    d. Tile control and expansion joints.
    e. Joints between different materials listed above.
    f. Other interior and exterior traffic bearing joints in horizontal and sloped traffic surfaces
3. Single Component Polyether Sealants:
    a. NOVALINK 35
    b. NOVALINK SL
    c. M-1
4. Single Component Silicone Sealants:
    a. DURASIL

F. Interior Indirect Food Contact Sealant Joint [Type F]:
1. Applications:
    a. Joints between food service surrounding construction.
    b. Other interior joints, where incidental food contact may occur.
2. Single Component Polyether Sealants:
    a. M-1
    b. NOVALINK 35
    c. DURALINK 35
    d. DURALINK 50
    e. CLEAR
3. Single Component Silicone Sealants:
    a. DURASIL

G. Concealed Bedding Sealant Joint [Type G]:
1. Applications:
    a. Bedding joints under metal thresholds and saddles.
    b. Bedding joints between sheet metal flashing and other materials.
2. Single Component Polyether Sealants:
    a. M-1
    b. NOVALINK 35
    c. DURALINK 35
    d. DURALINK 50

3. Single Component Silicone Sealants:
   a. DURASIL

END OF SECTION