
Oakhurst Dairy – New Milk Cooler**SECTION 07920 - JOINT SEALANTS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes joint sealants for the 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 precast and cast-in-place concrete.
 - b) Control and expansion joints in unit masonry.
 - c) Joints between different materials listed above.
 - d) Perimeter joints between materials listed above and frames of doors windows and louvers.
 - e) Perimeter joints around glass block infills.
 - f) 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) 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) Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions.
 - d) Perimeter joints between interior wall surfaces and frames of interior doors, windows.
 - e) Joints between metal panels and concrete curbs.
 - f) Other joints as indicated.
- B. Related Sections include the following:
1. Division 4 Section "Unit Masonry Assemblies" for masonry control and expansion joint fillers and gaskets.
 2. Division 8 Section "Glazing" for glazing sealants.
 3. Division 8 Section "Aluminum Curtain Wall Systems" and for sealing curtain wall frames to adjacent materials at perimeter.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 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.
- C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Warranties: Special warranties specified in this Section.

1.5 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. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period preceding the commencement of the Work.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
 - 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
 - 3. Test other joint sealants for compliance with requirements indicated by referencing standard specifications and test methods.

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.
 - 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. Special Installer's Warranty: Installer's standard form in which Installer agrees 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.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees 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.
- C. 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 Engineer 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 non-staining 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. Single-Component Neutral- and Basic-Curing Silicone Sealant ES-1:

Oakhurst Dairy – New Milk Cooler

1. Available Products:
 - a) GE Silicones; SilPruf SCS2000.
 - b) Pecora Corporation; 864.
 - c) Pecora Corporation; 890.
 - d) Polymeric Systems Inc.; PSI-641.
 - e) Sonneborn, Division of ChemRex Inc.; Omniseal.
 - f) Tremco; Spectrem 3.
 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.
 - a) Use O Joint Substrates: Coated glass color anodic aluminum steel coated with a high-performance coating, galvanized steel.
 6. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.
- D. Single-Component Mildew-Resistant Acid-Curing Silicone Sealant ES-2:
1. Available Products:
 - a) Dow Corning Corporation; 786 Mildew Resistant.
 - b) GE Silicones; Sanitary SCS1700.
 - c) Tremco; Tremsil 200 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.
 - a) Use O Joint Substrates: Vitreous china.
- E. Single-Component Nonsag Urethane Sealant ES-3:
1. Available Products:
 - a) Pecora Corporation; Dynatrol I-XL.
 - b) Polymeric Systems Inc.; Flexiprene 1000.
 - c) Polymeric Systems Inc.; PSI-901.
 - d) Tremco; DyMonic.
 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: M, G, A, and, as applicable to joint substrates indicated, O.
 - a) Use O Joint Substrates: Color anodic aluminum, steel coated with a high-performance coating, galvanized steel.

Oakhurst Dairy – New Milk Cooler

- F. Single-Component Pourable Urethane Sealant ES-4:
 - 1. Available Products:
 - a) Bostik Findley; Chem-Calk 950.
 - b) Pecora Corporation; Urexpan NR-201.
 - c) Polymeric Systems Inc.; Flexiprene 952.
 - d) Tremco; Tremflex S/L.
 - e) Tremco; Vulkem 45.
 - 2. Type and Grade: S (single component) 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.
 - a) Use O Joint Substrates: galvanized steel.

2.4 SOLVENT-RELEASE JOINT SEALANTS

- A. Butyl-Rubber-Based Solvent-Release Joint Sealant SRS-1: Comply with ASTM C 1085.
 - 1. Available Products:
 - a) Bostik Findley; Bostik 300.
 - b) Fuller, H. B. Company; SC-0296.
 - c) Fuller, H. B. Company; SC-0288.
 - d) Pecora Corporation; BC-158.
 - e) Polymeric Systems Inc.; PSI-301
 - f) Sonneborn, Division of ChemRex Inc.; Sonneborn Multi-Purpose Sealant.
 - g) Tremco; Tremco Butyl Sealant.

2.5 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. 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.

2.6 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.

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.
 - 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) Porcelain enamel.

Oakhurst Dairy – New Milk Cooler

- 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. 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.
- 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 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. Retain one or more of three subparagraphs and associated subparagraph below to suit joint configurations required for Project. First subparagraph makes concave configuration the default requirement; second and third subparagraphs and associated subparagraph require that other configurations be indicated on Drawings. Revise if one of the latter two configurations needs to become the default requirement.

Oakhurst Dairy – New Milk Cooler

4. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
5. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
6. 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.

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 vertical and horizontal nontraffic construction joints in pre-cast and cast-in-place concrete.
 1. Joint Sealant: Single-component nonsag urethane sealant ES-3.
- B. Joint-Sealant Application: Interior horizontal fill of pipe sleeves
 1. Joint Sealant: Single-component pourable urethane sealant ES-4.
- C. Joint-Sealant Application: Exterior vertical control and expansion joints in unit masonry.
 1. Joint Sealant: Single-component nonsag urethane sealant ES-3.
- D. Joint-Sealant Application: Exterior joints between metal panels, trim and masonry.
 1. Joint Sealant: Single-component nonsag urethane sealant ES-3.
- E. Joint-Sealant Application: Exterior perimeter joints between masonry and frames of doors, windows, and louvers.
 1. Joint Sealant: Single-component neutral-curing silicone ES-1.
- F. Joint-Sealant Application: Exterior perimeter joints between pre-cast concrete and glass block infills.

Oakhurst Dairy – New Milk Cooler

1. Joint Sealant: Single-component neutral-curing silicone ES-1.
- G. Joint-Sealant Application: Vertical control and expansion joints on exposed interior surfaces of exterior walls.
1. Joint Sealant: Single-component neutral-curing silicone ES-1.
- H. Joint-Sealant Application: Interior perimeter joints of exterior openings.
1. Joint Sealant: Single-component neutral-curing silicone ES-1.
- I. Joint-Sealant Application : Interior horizontal joints at top of curbs between cast-in-place concrete curbs and insulated panel walls.
1. Joint Sealant: Single-component nonsag urethane sealant ES-3.
- J. Joint-Sealant Application : Interior horizontal construction joints in floors between cast-in-place concrete and insulated panel walls.
1. Joint Sealant: Single-component pourable urethane sealant ES-4.
- K. Joint-Sealant Application: Interior joints between plumbing fixtures and adjoining walls, and floors.
1. Joint Sealant: Single-component mildew-resistant acid-curing silicone sealant ES-2.
- L. Joint-Sealant Application: Perimeter joints between interior wall surfaces and frames of interior doors and windows.
1. Joint Sealant: Single-component neutral-curing silicone ES-1.
- M. Joint-Sealant Application: Setting bed of thresholds.
1. Joint Sealant: Butyl-Rubber-Based Solvent release sealant SRS-1.

END OF SECTION 07920