SP-155062
(New)

SPECIAL PROVISIONS
FOR
JOINT SEALANTS

Des Moines County
EDP-0977(653)--7Y-29

Effective Date
June 15, 2021

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

155062.01 DESCRIPTION.

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A. Summary.
Section Includes silicone joint sealants.

B. Action Submittals.
Submit product data for each joint-sealant product indicated.

C. Quality Assurance.

1. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

2. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

D. Project Conditions.
Do not proceed with installation of joint sealants under the following conditions:

- When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer [or are below 40°F].
- When joint substrates are wet.
- Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
- Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

E. Warranty.

1. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within 1 year from date of Substantial Completion.

2. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   a. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
   b. Disintegration of joint substrates from natural causes exceeding design specifications.
   c. Mechanical damage caused by individuals, tools, or other outside agents.
   d. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

155062.02 MATERIALS.

A. General.

1. 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 joint-sealant manufacturer, based on testing and field experience.

2. VOC Content of Sealants:
   a. Sealant shall have a VOC content of 250 g/L or less.
   b. Formaldehyde emissions shall not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

3. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

4. Suitability for Immersion in Liquids. Where sealants are indicated for use on joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

5. Stain-Test-Response Characteristics: Where 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.

6. Colors of Exposed Joint Sealants: As selected by Engineer from manufacturer's full range.

B. Silicone Joint Sealants.

1. Sealant JS-S1 - Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant:
   a. ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
   b. Products: Subject to compliance with requirements, provide products from the following table that has a validation certificate from the Sealant, Waterproofing and Restoration Institute (SWRI).

			Substrate Primer Required: Yes/No/Test			
Manufacturer	Product	Manufacturer Rated Movement Capability (CLASS)	Mortar*	Anod. Alum.	Uncoated Glass	Other**
Dow Corning	791	± 50%	Yes	Test	No	Test

Manufacturer	Product	Manufacturer Rated Movement Capability (CLASS)	Substrate Primer Required: Yes/No/Test			
			Mortar*	Anod. Alum.	Uncoated Glass	Other**
Dow Corning	795	± 50%	No	Yes	No	Test
Dow Corning	756 SMS	± 50%	No	Yes	No	Test
May National Associates, Inc.	Bondaflex Sil 295	± 50%	Yes	Test	No	Test
Momentive Performance Materials, Inc.	Silpruf SCS2000	± 50%	Yes	Test	No	Test
Momentive Performance Materials, Inc.	Silpruf NB SCS 9000	± 50%	Yes	Test	No	Test
Pecora Corporation	864	± 50%	Yes	Test	No	Test
Pecora Corporation	895	± 50%	Yes	Test	No	Test
Tremco Incorporated	Spectrum 3	± 50%	Yes	Test	No	Test
Tremco Incorporated	Spectrum 4-TS	± 50%	Yes	Test	No	Test

Table Notes:
* Indicates substrates with a cement component, such as concrete, that require use of a primer.
** Indicates that other substrates shall be tested for adhesion to determine if a primer will be required.

2. Sealant JS-S2 - Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant:
- **a.** ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
- **b.** Products: Subject to compliance with requirements, provide products from the following table that has a validation certificate from the Sealant, Waterproofing and Restoration Institute (SWRI).

Manufacturer	Product	Manufacturer Rated Movement Capability (CLASS)	Substrate Primer Required: Yes/No/Test			
			Mortar*	Anod. Alum.	Uncoated Glass	Other**
Dow Corning	790	+ 100/- 50%	No	Yes	No	Test
May National Associates, Inc.	Bondaflex Sil 290	+ 100/- 50%	Yes	Test	No	Test
Momentive Performance Materials, Inc.	Silpruf LM SCS2700	+ 100/- 50%	Yes	Test	No	Test
Pecora Corporation	890	+ 100/- 50%	Yes	Test	No	Test
Tremco Incorporated	Spectrum 1	+ 100/- 50%	Yes	Test	No	Test

Table Notes:
* Indicates substrates with a cement component, such as concrete, that require use of a primer.
** Indicates that other substrates shall be tested for adhesion to determine if a primer will be required.

C. Weather Barrier Sealants.

1. Sealant JS-W1 - Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT; tested and marketed specifically for sealing air barrier and vapor retarder sheets to common building materials, such as aluminum, vinyl, PVC, powder coat, paint and fluoropolymer coatings; UV resistant..

2. Products: Subject to compliance with requirements, provide Dow Corning Corporation; 758.

D. Joint Sealant Backing.

1. General: Provide sealant backings of material 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.

2. 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.

3. 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. Provide self-adhesive tape where applicable.

E. Miscellaneous Materials.

1. 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.

2. 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.

3. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

155062.03 CONSTRUCTION.

A. Examination.

1. 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.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Preparation.

1. 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:
   - **a.** 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.
   - **b.** Clean porous joint substrate surfaces by brushing, grinding, 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:
     - Concrete.
   - **c.** Remove laitance and form-release agents from concrete.

d. Clean nonporous joint substrate 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:
- Metal.
- Glass.
- Porcelain enamel.
- Glazed surfaces of ceramic tile.

2. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by 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.

3. Masking Tape: Use masking tape where required to prevent contact of sealant or primer 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.

C. Installation of Joint Sealants.

1. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

2. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

3. Do not extend exterior sealants and primers into building interior (that is, inside the weatherproofing system) unless first verifying compliance with VOC requirements.

4. Install sealant backings of kind 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.
a. Do not leave gaps between ends of sealant backings.
b. Do not stretch, twist, puncture, or tear sealant backings.
c. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

5. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

6. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
a. Place sealants so they directly contact and fully wet joint substrates.
b. Completely fill recesses in each joint configuration.
c. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

7. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs 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.
a. Remove excess sealant from surfaces adjacent to joints.
b. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. Water-based tooling agents are unacceptable.
c. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
d. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

e. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193. Use masking tape to protect surfaces adjacent to recessed tooled joints.

D. Field Quality Control.

1. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
- **a.** Extent of Testing: Test completed and cured sealant joints as follows:
  - **1)** Perform ten tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
  - **2)** Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
- **b.** Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
- **c.** Inspect tested joints and report on the following:
  - **1)** Whether sealants filled joint cavities and are free of voids.
  - **2)** Whether sealant dimensions and configurations comply with specified requirements.
  - **3)** Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
- **d.** Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
- **e.** Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

2. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

E. Cleaning.

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.

F. Protection

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.

G. Joint-Sealant Schedule.

1. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
- **a.** Joint Locations:
  Construction joints in cast-in-place concrete.

1) Joints between different materials listed above.
2) Perimeter joints between materials listed above and frames of doors.

b. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

2. Joint-Sealant Application: Exterior weather barrier joints; Type JS-W1.

155062.04 METHOD OF MEASUREMENT.
Joint Sealants will not be measured for payment.

155062.05 BASIS OF PAYMENT.
Payment for this item will be incidental to items Cast-In-Place Concrete and Cast-In-Place Concrete Sandblast Finish.