

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

Section 07951 – SEALANTS AND CALKING

1. Related Documents:

The general provisions of the contract, including General and Special Conditions, apply to the work specified in this section.

2. Description of Work:

The extent of each type of sealant and calking work is shown on the drawings.

The required applications of sealants and calking include, but are not necessarily limited to, the following general locations:

Flashing reglets and retainers

Exterior wall joints

Masonry control joints, exterior and interior

Flooring joints

Isolation joints, between structure and other elements

Joints at penetrations of walls, decks and floors by piping and other services and equipment

Joints between items of equipment and other construction

3. General:

Obtain elastomeric materials from only manufacturers who will, if required, send a qualified technical representative to project movements for the temperature and condition of the project at the time of installation.

Compressibility:

Specific hardnesses and compressibilities are intended to establish requirements for normal or average conditions of installation and use. Wherever a range of hardness or compressibility is available for a product, comply with the manufacturer's recommendations for the specific condition of use, except as otherwise directed.

Color:

Provide each concealed material in manufacturer's standard color which has the best overall performance characteristics for the application shown.

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3. General: (Con'd)

Provide exposed materials Light Grey except where another color is indicated.

Compatibility:

Before purchase of the specified sealant, investigate its compatibility with the joint surfaces, joint fillers and other materials behind or below the joint in the construction. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation condition, as shown by manufacturer's published data or certification.

Provide size and shape of preformed sealant units as shown or, if not shown, as recommended by the manufacturer, either in his published data or upon consultation with his technical representative.

4. One-Component Elastomeric Sealant:

One-Component Polysulfide Sealant:

Polysulfid based, one-part elastomeric sealant, complying with FS TT-S-00230 Class A, Type 2 (non-sag) unless Type 1 is recommended by manufacturer for the application shown.

Provide compound bearing the Thiokol Chemical Corp. seal of approval.

Products offered by manufacturers to comply with the requirements include the following:

Ultratite 102; Cost Pro Seal
Flexiseal 900 Series; DAP, Inc.
Hornflex One-Component; W.R. Grace
Novacalk – 600; Novagard Corp.
Uniparseal; Parr Paint & Sealants
Rubber Calk 5000; Products Research & Chemical
Sonolastic 1-Part; Sonneborn
Thiotok Sealant R.M.; Toch Brothers

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4. One-Component Elastomeric Sealant: (Con'd)

Acid-Type Products offered by manufacturers to comply with the requirements, include the following:

781 Building Sealant; Dow Corning
Silican Construction Sealant; General Electric Co.

5. Preformed Elastomeric Sealants:

Butyl Rubber Sealant Tape:

A partially-vulcanized, self-adhesive, non-staining, elastomeric butyl rubber tape recommended by the manufacturer for waterproof construction when compressed 35% in dynamically-moving joints; not less than 98% solids; no deterioration after 3000 hour test in Atlas Weatherometer.

Products offered by manufacturers to comply with the requirements include the following:

Betaseal 650 Tape; Essex Chemical
Duraribbon 1072; PPG Industries
176 Strucsureglaze; Presstle Interchem
PTI 606; Protective treatments

6. Miscellaneous Materials:

Joint Cleaner:

Provide the type of joint cleaning compound recommended by the sealant or calking compound manufacturer for the joint surfaces to be cleaned.

Joint Primer/Sealer:

Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

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6. Miscellaneous Materials: (Con'd)

Bond Breaker Tape:

Polyethylene tape or other plastic tape as recommended by the sealant manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

Sealant Backer Rod:

Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer; to control the joint depth for sealant placement, to break bond of sealant at bottom of joint, to form optimum shape of sealant bead on back side, and to provide a highly compressible backer which will minimize the possibility of sealant extrusion when joint is compressed.

7. Joint Surface Preparation:

Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or calking compound.

For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (bond-cohesion), in compliance with Paragraph 4, 3, 9 of FS TT-S-00227 has successfully demonstrated that sealant bond is not impaired by the coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.

Each concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Each with 5% solution of muriatic acid; neutralize with diluted ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

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7. Joint Surface Preparation: (Con'd)

Roughen joint surfaces on vitreous coated and similar non-porous materials, wherever sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive cloth or wool to produce a dull sheen.

The installer must examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed, and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the sealant work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

8. Sample Installation:

Prepare a mock-up installation of every major type and use of sealant shown and specified. Install sealant between materials matching those used on the project, complying with conditions similar in every way to anticipated project conditions. Prepare mock-up well in advance of scheduled installation, so that nominal cure-time is allowed and final color adjustments can be made, if necessary.

9. Pre-Installation Meeting:

At Contractor's direction, the sealant installer, Architect, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with the Contractor at the project site to review the procedures and time schedule proposed for installation of sealants in coordination with other work. Review every major sealant application required on the project.

10. Weather Conditions:

Do not proceed with installation of liquid sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at extremely low temperatures. Coordinate time schedule with Contractor to avoid delay of project.

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11. Installation:

Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

Install bond breaker tape wherever shown and wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cave, so that joint will not trap moisture and dirt.

Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations:

For joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.

For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but not more than 1/2" deep or less than 1/4" deep.

For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75% to 125% of joint width.

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11. Installation: (Con'd)

Spillage:

Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces including rough textures such as exposed aggregate panels. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer of the sealant/calking compound.

Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage. Do not damage the adjoining surfaces or finishes.

Polysulfide Sealant Installation:

Comply with standards issued by Thiokol Chemical Corp., except when more stringent requirements have been shown or specified, or issued as recommendations by the sealant manufacturer.

12. Cure and Protection:

Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

The installer shall advise the Contractor of procedures required for the protection of sealants and calking compounds during the construction period, so that they will be without deterioration or damage (other than normal weathering) at the time of Owner's acceptance.

13. Tests for Performance:

After nominal cure of exterior joint sealants which are exposed to the weather, test for water leaks. Flood the joint exposure with water directed from a ¾" garden hose held perpendicular to wall face, 2' – 0" from joint, connected to a water system with 30 psi minimum normal water pressure. Move stream of water along joint at an approximate rate of 20 ft. per min.

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13. Tests for Performance: (Con'd)

Test approximately 5% of total joint system, in locations which are typical of every joint condition, and which can be inspected easily for leakage on opposite face. Conduct tests in the presence of the Architect, who will determine the actual percentage of joints to be tested and the actual period of exposure to water from the hose, based upon the extent of observed leakage, or lack thereof.

Repair sealant installation at leaks or, if leakage is excessive, replace sealant installation as directed.

Wherever nature of observed leakage indicates the possibility of inadequate joint bond strength, P.B.A. may direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperatures and returned to the lowest range of temperature in which it is feasible to conduct testing. Repair or replace work as required.

14. Submittals:

Manufacturer's Data, Sealants and Calking:

Submit 2 copies of manufacturer's specifications, recommendations and installation instructions for each type or sealant, calking compound and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown. Show by transmittal that one copy of each recommendation and installation has been distributed to the Installer.

Samples, Sealants and Calking:

Submit 3, 12" long samples of each color required (except black) for each type of sealant or calking compound exposed to view. Install sample between 2 strips of material similar to or representative of typical surfaces where sealant or compound will be used, held apart to represent typical joint widths.

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14. Submittals: (Con'd)

Guarantee, Sealants:

Submit 2 copies of written guarantee agreeing to repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified as an inherent quality of the material by submitted manufacturer's data. Provide guarantee for a period of 1 year, signed by the Installer and Contractor.