JOINT BASE LEWIS McCHORD DESIGN STANDARDS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION SECTION 07 92 00

JOINT SEALANTS

07/18

PART 1 GENERAL

* 1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C1193 (2013) Standard Guide for Use of Joint Sealants

ASTM C1311 (2014) Standard Specification for Solvent Release Agents

ASTM C1521 (2013) Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints

ASTM C509 (2006; R 2015) Elastomeric Cellular Preformed Gasket and Sealing Material

ASTM C734 (2015) Low-Temperature Flexibility of Latex Sealants after Artificial Weathering

ASTM C834 (2017) Standard Specification for Latex Sealants

ASTM C919 (2012; R 2017) Standard Practice for Use of Sealants in Acoustical Applications

ASTM C920 (2018) Standard Specification for Elastomeric Joint Sealants

ASTM D1056 (2014) Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber

ASTM D1667 (2017) Standard Specification for Flexible Cellular Materials - Poly (Vinyl Chloride) Foam (Closed-Cell)

ASTM D2452 (2015) Standard Test Method for Extrudability of Oil- and Resin-Base Caulking Compounds

ASTM D2453 (2015) Standard Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds

ASTM E84 (2018) Standard Test Method for Surface Burning Characteristics of Building Materials

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS SCS Global Services (SCS) Indoor Advantage SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1168 (2017) Adhesive and Sealant Applications UNDERWRITERS LABORATORIES (UL)

UL 2818 (2013) GREENGUARD Certification Program For Chemical Emissions for Building Materials, Finishes and Furnishings

* 1. SUBMITTALS

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NOTE: If 01 33 29 is incorporated in the specifications, select that option below. If not, select the option for 01 57 19. Include items noted at SD-01 and SD-11 as applicable, based on project scope.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals with an "S" are for inclusion in the [Sustainability e-Notebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING] [Environmental Records Binder in conformance to Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS]. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01

Interior Adhesives and Sealants (VOC Content); S

SD-03 Product Data Sealants; G,

Primers; G,

Bond Breakers; G,

Backstops; G,

SD-06 Test Reports

Field Adhesion; G,

SD-07 Certificates

Indoor Air Quality; G,

SD-11 Closeout Submittals

Interior Adhesives and Sealants (VOC Content); S

* 1. PRODUCT DATA

Include storage requirements, shelf life, curing time, instructions for mixing and application, and accessories. Provide manufacturer's Safety Data Sheets (SDS) for each solvent, primer and sealant material proposed.

1.4 CERTIFICATIONS

1.4.1 Indoor Air Quality Certifications

Submit required indoor air quality certifications in one submittal package.

1.4.1.1 Adhesives and Sealants

Provide products certified to meet indoor air quality requirements by UL 2818 (Green guard) Gold, SCS Global Services Indoor Advantage Gold or provide validation by other third-party program that products meet the requirement of this paragraph. Sealants and non-aerosol adhesive products used on the interior of the building (defined as inside of the weatherproofing system) must meet VOC content requirements of

SCAQMD Rule 1168. Provide current product certification documentation from certification body.

1.5 ENVIRONMENTAL CONDITIONS

Apply sealant when the ambient temperature is between 4 and 32 degrees C 40 and 90 degrees F.

* 1. DELIVERY AND STORAGE

Deliver materials to the jobsite in unopened manufacturers' sealed shipping containers, with brand name, date of manufacture, color, and material designation clearly marked thereon. Label elastomeric sealant containers to identify type, class, grade, and use. Handle and store materials in accordance with manufacturer's printed instructions. Prevent exposure to foreign materials or subjection to sustained temperatures exceeding 32 degrees C 90 degrees F or lower than 4 degrees C 0 degrees F. Keep materials and containers closed and separated from absorptive materials such as wood and insulation.

* 1. QUALITY ASSURANCE
     1. Compatibility with Substrate

Verify that each sealant is compatible for use with each joint substrate in accordance with sealant manufacturer's printed recommendations for each application.

* + 1. Joint Tolerance

Provide joint tolerances in accordance with manufacturer's printed instructions.

* + 1. Adhesion

Provide in accordance with ASTM C1193 or ASTM C1521.

PART 2 PRODUCTS

* 1. PRODUCT SUSTAINABILITY CRITERIA

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NOTE: If 01 33 29 is incorporated in the specifications, select that option below. If not, select the option for 01 57 19.

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* + 1. Reduce Volatile Organic Compounds (VOC) (Low-Emitting Materials) for Products

Provide products and documentation in accordance with Section [01 33 29 SUSTAINABILITY REPORTING][01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS] paragraph REDUCE VOLATILE ORGANIC COMPOUNDS (VOC) (LOW-EMITTING MATERIALS).

* 1. SEALANTS

Provide sealant products that have been tested, found suitable, and documented as such by the manufacturer for the particular substrates to which they will be applied.

* + 1. Interior Sealants

Provide ASTM C920, Type S or M, Grade NS, Class 25, Use NT. Provide certification of indoor air quality for interior sealants. Location and color of sealant for the following. Note, color "as selected" refers to manufacturer's full range of color options

|  |  |
| --- | --- |
| LOCATION | COLOR |
| a. Small voids between walls or partitions and adjacent lockers, casework, shelving, door frames, built-in or surface mounted equipment and fixtures, and similar items. | As Selected |
| b. Perimeter of frames at doors, windows, and access panels which adjoin exposed interior concrete and masonry surfaces. | As Selected |
| c. Joints of interior masonry walls and partitions which adjoin columns, pilasters, concrete walls, and exterior walls unless otherwise detailed. | As Selected |
| d. Joints between edge members for acoustical tile and adjoining vertical surfaces. | As Selected |
| e. Interior locations, not otherwise indicated or specified, where small voids exist between materials specified to be painted. | As Selected |
| f. Joints between bathtubs and ceramic tile; joints between shower receptors and ceramic tile; joints formed where non-planar tile surfaces meet. | As Selected |
| g. Joints formed between tile floors and tile base cove; joints between tile and dissimilar materials; joints occurring where substrates change. | As Selected |
| h. Behind escutcheon plates at valve pipe penetrations and showerheads in showers. | As Selected |

* + 1. Exterior Sealants

For joints in vertical surfaces, provide ASTM C920, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T. Provide location(s) and color(s) of sealant as follows. Note, color "as selected" refers to manufacturer's full range of color options:

|  |  |
| --- | --- |
| LOCATION | COLOR |
| a. Joints and recesses formed where frames and sub-sills of windows, doors, louvers, and vents adjoin masonry, concrete, or metal frames. Use sealant at both exterior and interior surfaces of exterior wall penetrations. | As Selected |
| b. Joints between new and existing exterior masonry walls. | As Selected |
| c. Masonry joints where shelf angles occur. | As Selected |
| d. Joints in wash surfaces of stonework. | As Selected |
| e. Expansion and control joints. | As Selected |
| f. Interior face of expansion joints in exterior concrete or masonry walls where metal expansion joint covers are not required. | As Selected |
| g. Voids where items pass through exterior walls. | As Selected |
| h. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels. | As Selected |
| i. Metal-to-metal joints where sealant is indicated or specified. | As Selected |
| j. Joints between ends of gravel stops, fasciae, copings, and adjacent walls. | As selected |

* + 1. Floor Joint Sealants

ASTM C920, Type S or M, Grade P, Class 25, Use T. Provide certification of indoor air quality for interior floor joint sealants. Provide location(s) and color(s) of sealant as follows. Note, color "as selected" refers to manufacturer's full range of color options:

|  |  |
| --- | --- |
| LOCATION | COLOR |
| a. Seats of metal thresholds for exterior doors. | As Selected |
| b. Control and expansion joints in floors, slabs, ceramic tile, and walkways. | As Selected |

* + 1. Acoustical Sealants

Rubber or polymer based acoustical sealant in accordance with ASTM C919 to have a flame spread of 25 or less and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Provide non-staining acoustical sealant with a consistency of 250 to 310 when tested in accordance with ASTM D217. Acoustical sealant must remain flexible and adhesive after 500 hours of accelerated weathering as specified in ASTM C734. Provide certification of indoor air quality for interior acoustical sealants.

* 1. PRIMERS

Non-staining, quick drying type and consistency as recommended by the sealant manufacturer for the particular application. Provide primers for interior applications that meet the indoor air quality requirements of the paragraph SEALANTS above.

* 1. BOND BREAKERS

Type and consistency as recommended by the sealant manufacturer to prevent adhesion of the sealant to the backing or to the bottom of the joint.

Provide bond breakers for interior applications that meet the indoor air quality requirements of the paragraph SEALANTS above.

* 1. BACKSTOPS

Provide glass fiber roving, neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Provide 25 to 33 percent oversized backing for closed cell and 40 to 50 percent oversized backing for open cell material, unless otherwise indicated. Provide backstop material that is compatible with sealant. Do not use oakum or other types of absorptive materials as backstops.

* + 1. Rubber

Provide in accordance with ASTM D1056, Type 2, closed cell, Class A, Grade NS, round cross section for cellular rubber sponge backing.

* + 1. Synthetic Rubber

Provide in accordance with ASTM C509, Option I, Type I preformed rods for synthetic rubber backing.

* + 1. Neoprene

Provide in accordance with ASTM D1056, closed cell expanded neoprene cord Type 2, Class C, Grade 2C2 neoprene backing.

* + 1. Butyl Rubber Based

Provide in accordance with ASTM C1311, from a single component, with solvent release. Color as selected from manufacturer's full range of color choices.

* + 1. Silicone Rubber Base

Provide in accordance with ASTM C920, from a single component, with solvent release, Non-sag, Type S or M, Grade P, Class 25. Color as selected from manufacturer's full range of color choices.

* 1. CAULKING

For interior use and only where there is little or no anticipated joint movement. Provide in accordance with ASTM D2452 and ASTM D2453, Type

S, for oil and resin-based caulking. Provide certification of indoor air quality for interior caulking.

* 1. CLEANING SOLVENTS

Provide types recommended by the sealant manufacturer and in accordance with environmental requirements herein. Protect adjacent aluminum and bronze surfaces from solvents. Provide solvents for interior applications that meet the indoor air quality requirements of the paragraph SEALANTS above.

PART 3 EXECUTION

* 1. FIELD QUALITY CONTROL

Perform a field adhesion test in accordance with manufacturer's instructions and ASTM C1193, Method A or ASTM C1521, Method A, Tail Procedure. Remove sealants that fail adhesion testing; clean substrates, reapply sealants, and re-test. Test sealants adjacent to failed sealants. Submit field adhesion test report indicating tests, locations, dates, results, and remedial actions taken.

* 1. SURFACE PREPARATION

Prepare surfaces according to manufacturer's printed installation instructions. Clean surfaces from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would destroy or impair adhesion. Remove oil and grease with solvent; thoroughly remove solvents prior to sealant installation. Wipe surfaces dry with clean cloths. When resealing an existing joint, remove existing caulk or sealant prior to applying new sealant. For surface types not listed below, provide in accordance with sealant manufacturer's printed instructions for each specific surface.

* + 1. Steel Surfaces

Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finished work, scraping and wire brushing. Remove protective coatings by sandblasting or using a residue free solvent.

Remove resulting debris and solvent residue prior to sealant installation.

* + 1. Aluminum or Bronze Surfaces

Remove temporary protective coatings from surfaces that will be in contact with sealant. When masking tape is used as a protective coating, remove tape and any residual adhesive prior to sealant application. For removing protective coatings and final cleaning, use non-staining solvents recommended by the manufacturer of the item(s) containing aluminum or bronze surfaces.

* + 1. Concrete and Masonry Surfaces

Where surfaces have been treated with curing compounds, oil, or other such materials, remove materials by sandblasting or wire brushing. Remove laitance, efflorescence and loose mortar from the joint cavity. Remove resulting debris prior to sealant installation.

* + 1. Wood Surfaces

Ensure wood surfaces that will be in contact with sealants are free of splinters, sawdust and other loose particles.

3.2.5 Removing Existing Hazardous Sealants

For sealants applied prior to 1979, or that have been tested and found to contain polychlorinated biphenyls (PCBs), remove and dispose of these sealants in accordance with Section 02 84 33 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs).

3.3 SEALANT PREPARATION

Do not add liquids, solvents, or powders to sealants. Mix multicomponent elastomeric sealants in accordance with manufacturer's printed instructions.

* 1. APPLICATION
     1. Joint Width-To-Depth Ratios Acceptable Ratios:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| JOINT WIDTH | | | | | | JOINT DEPTH | | |
| Minimum | Maximum | |
| For metal, glass, or other nonporous surfaces: | | | | | | | | |
| 6 mm (minimum) | | | | | | 6 mm | 6 mm | |
| over 6 mm | | | | | | 1/2 of width | Equal to width | |
| For wood, concrete, masonry, stone surfaces: | | | | | | | | |
| 6 mm (minimum) | | | | | | 6 mm | 6 mm | |
| over 6 mm to 13 mm | | | | | | 6 mm | Equal to width | |
| over | 13 | mm | to | 25 | mm | 50 mm | 16 mm |
| Over | 25 | mm |  |  |  | prohibited | |

|  |  |  |
| --- | --- | --- |
| For metal, glass, or other nonporous surfaces: | | |
| 1/4 inch (minimum) | 1/4 inch | 1/4 inch |
| over 1/4 inch | 1/2 of width | Equal to width |
| For wood, concrete, masonry, stone surfaces: | | |
| 1/4 inch (minimum) | 1/4 inch | 1/4 inch |
| over 1/4 inch to 1/2 inch | 1/4 inch | Equal to width |
| over 1/2 inch to 1 inch | 1/2 inch | 5/8 inch |
| Over 1 inch | prohibited | |

Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding is prohibited at metal surfaces.

* + 1. Unacceptable Sealant Use

Do not install sealants in lieu of other required building enclosure weatherproofing components such as flashing, drainage components, and joint closure accessories, or to close gaps between walls, floors, roofs, windows, and doors, that exceed acceptable installation tolerances. Remove sealants that have been used in an unacceptable manner and correct building enclosure deficiencies to comply with contract documents requirements.

* + 1. Masking Tape

Place masking tape on the finished surface on one or both sides of joint cavities to protect adjacent finished surfaces from primer or sealant smears. Remove masking tape within 10 minutes of joint filling and tooling.

* + 1. Backstops

Provide backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide joints in specified depths. Provide backstops where indicated and where backstops are not indicated but joint cavities exceed the acceptable maximum depths specified in JOINT WIDTH-TO-DEPTH RATIOS Table.

* + 1. Primer

Clean out loose particles from joints immediately prior to application of. Apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's printed instructions.

Do not apply primer to exposed finished surfaces.

* + 1. Bond Breaker

Provide bond breakers to surfaces not intended to bond in accordance with, sealant manufacturer's printed instructions for each type of surface and sealant combination specified.

* + 1. Sealants

Provide sealants compatible with the materials to which they are applied. Do not use a sealant that has exceeded its shelf life or has jelled and cannot be discharged in a continuous flow from the sealant gun. Apply sealants in accordance with the manufacturer's printed instructions with a gun having a nozzle that fits the joint width. Work sealant into joints so as to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Apply sealant uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply additional sealant, and tool smooth as specified. Apply sealer over sealants in accordance with the sealant manufacturer's printed instructions.

* 1. PROTECTION AND CLEANING
     1. Protection

Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled and no residual tape marks remain.

* + 1. Final Cleaning

Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

* + - 1. Masonry and Other Porous Surfaces: Immediately remove fresh sealant that has been smeared on adjacent masonry, rub clean with a solvent, and remove solvent residue, in accordance with sealant manufacturer's printed instructions. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding. Remove resulting debris.
      2. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent moistened cloth. Remove solvent residue in accordance with solvent manufacturer's printed instructions.

-- End of Section --