

SECTION 07 92 00
JOINT SEALANTS
05-01-15

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section covers interior and exterior sealant and their application, wherever required for complete installation of building materials or systems.

1.2 RELATED WORK (INCLUDING BUT NOT LIMITED TO THE FOLLOWING):

- A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS.
- B. Masonry Control and Expansion Joint: Section 04 20 00, UNIT MASONRY.
- C. Firestopping Penetrations: Section 07 84 00, FIRESTOPPING.
- D. Glazing: Section 08 80 00, GLAZING.
- E. Glazed Aluminum Curtain Wall: Section 08 44 13, GLAZED ALUMINUM CURTAIN WALLS.
- F. Sound Rated Gypsum Partitions/Sound Sealants: Section 09 29 00, GYPSUM BOARD.
- G. Mechanical Work: Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION

1.3 QUALITY ASSURANCE:

- A. Installer Qualifications: An experienced installer with a minimum of three (3) years' experience and who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance. Submit qualification.
- B. Source Limitations: Obtain each type of joint sealant through one (1) source from a single manufacturer.
- C. Product Testing: Obtain test results from a qualified testing agency based on testing current sealant formulations within a 12-month period.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021.
 - 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C920, 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.

1.4 CERTIFICATION:

- A. Contractor is to submit to the COR written certification that joints are of the proper size and design, that the materials supplied are compatible with adjacent materials and backing, that the materials will properly perform to provide permanent watertight, airtight or vapor tight seals (as applicable), and that materials supplied meet specified performance requirements.

1.5 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Sustainable Design Submittals, as described below:
 1. Volatile organic compounds per volume as specified in PART 2 - PRODUCTS.
- C. Installer qualifications.
- D. Contractor certification.
- E. Manufacturer's installation instructions for each product used.
- F. Cured samples of exposed sealants for each color.
- G. Manufacturer's Literature and Data:
 1. Primers
 2. Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- H. Manufacturer warranty.

1.6 PROJECT CONDITIONS:

- A. Environmental Limitations:
 1. Do not proceed with installation of joint sealants under following conditions:
 - a. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C (40 degrees F).
 - b. When joint substrates are wet.
- B. Joint-Width Conditions:
 1. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- C. Joint-Substrate Conditions:

1. Do not proceed with installation of joint sealants until
contaminants capable of interfering with adhesion are removed from
joint substrates.

1.7 DELIVERY, HANDLING, AND STORAGE:

- A. Deliver materials in manufacturers' original unopened containers, with
brand names, date of manufacture, shelf life, and material designation
clearly marked thereon.
- B. Carefully handle and store to prevent inclusion of foreign materials.
- C. Do not subject to sustained temperatures exceeding 32 degrees C (90
degrees F) or less than 5 degrees C (40 degrees F).

1.8 DEFINITIONS:

- A. Definitions of terms in accordance with ASTM C717 and as specified.
- B. Backing Rod: A type of sealant backing.
- C. Bond Breakers: A type of sealant backing.
- D. Filler: A sealant backing used behind a back-up rod.

1.9 WARRANTY:

- A. Construction Warranty: Comply with FAR clause 52.246-21 "Warranty of
Construction".
- B. Manufacturer Warranty: Manufacturer shall warranty their sealant for a
minimum of five (5) years from the date of installation and final
acceptance by the Government. Submit manufacturer warranty.

1.10 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent
referenced. Publications are referenced in text by basic designation
only.
- B. ASTM International (ASTM):
C509-06.....Elastomeric Cellular Preformed Gasket and
Sealing Material
C612-14.....Mineral Fiber Block and Board Thermal
Insulation
C717-14a.....Standard Terminology of Building Seals and
Sealants
C734-06(R2012).....Test Method for Low-Temperature Flexibility of
Latex Sealants after Artificial Weathering
C794-10.....Test Method for Adhesion-in-Peel of Elastomeric
Joint Sealants
C919-12.....Use of Sealants in Acoustical Applications.
C920-14a.....Elastomeric Joint Sealants.

- C1021-08(R2014).....Laboratories Engaged in Testing of Building Sealants
- C1193-13.....Standard Guide for Use of Joint Sealants.
- C1248-08(R2012).....Test Method for Staining of Porous Substrate by Joint Sealants
- C1330-02(R2013).....Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants
- C1521-13.....Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
- D217-10.....Test Methods for Cone Penetration of Lubricating Grease
- D412-06a(R2013).....Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension
- D1056-14.....Specification for Flexible Cellular Materials-Sponge or Expanded Rubber
- E84-09.....Surface Burning Characteristics of Building Materials
- C. Sealant, Waterproofing and Restoration Institute (SWRI).
The Professionals' Guide
- D. Environmental Protection Agency (EPA):
40 CFR 59(2014).....National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

PART 2 - PRODUCTS

2.1 SEALANTS:

- A. Exterior Sealants:
1. S-#1 Vertical surfaces, provide non-staining ASTM C920, Type S or M, Grade NS, Class 25, Use NT.
 2. S-#2 Horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T.
 3. Provide location(s) of exterior sealant as follows:
 - a. Joints formed where frames and subsills of windows, doors, louvers, and vents adjoin masonry, concrete, or metal frames. Provide sealant at exterior surfaces of exterior wall penetrations.
 - b. Metal to metal.
 - c. Masonry to masonry or stone.
 - d. Masonry expansion and control joints.
 - e. Masonry joints where shelf angles occur.

- f. Voids where items penetrate exterior walls.
 - g. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.
- B. Floor Joint Sealant:
 - 1. ASTM C920, Type S or M, Grade P, Class 25, , Use T. S-#3
 - 2. S-#3 Provide location(s) of floor joint sealant as follows.
 - a. Seats of metal thresholds exterior doors.
 - b. Control and expansion joints in floors, slabs, ceramic tile, and walkways.
- C. Interior Sealants:
 - 1. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system are to comply with the following limits for VOC content when calculated according to 40 CFR 59, (EPA Method 24):
 - a. Architectural Sealants: 250 g/L.
 - b. Sealant Primers for Nonporous Substrates: 250 g/L.
 - c. Sealant Primers for Porous Substrates: 775 g/L.
 - 2. Provide sealant type at location(s) of interior sealant as per the DRM Sealant Table Exhibit attached at end of this specification section.
- D. Acoustical Sealant:
 - 1. Conforming to ASTM C919; flame spread of 25 or less; and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Acoustical sealant have a consistency of 250 to 310 when tested in accordance with ASTM D217; remain flexible and adhesive after 500 hours of accelerated weathering as specified in ASTM C734; and be non-staining.
 - 2. Provide location(s) of acoustical sealant as follows:
 - a. Exposed acoustical joint at sound rated partitions.
 - b. Concealed acoustic joints at sound rated partitions.
 - c. Joints where item pass-through sound rated partitions.

2.2 COLOR:

- A. Sealants used with exposed masonry are to match color of mortar joints.
- B. Sealants used with unpainted concrete are to match color of adjacent concrete.
- C. Color of sealants for other locations per DRM Table.

2.3 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 C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Type C: Closed-cell material with a surface skin.
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056 or synthetic rubber (ASTM C509), nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 32 degrees C (minus 26 degrees F). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. 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.

2.4 FILLER:

- A. Mineral fiberboard: ASTM C612, Class 1.
- B. Thickness same as joint width.
- C. Depth to fill void completely behind back-up rod.

2.5 PRIMER:

- A. As recommended by manufacturer of caulking or sealant material.
- B. Stain free type.

2.6 CLEANERS-NON POROUS SURFACES:

- A. Chemical cleaners compatible with sealant and acceptable to manufacturer of sealants and sealant backing material. Cleaners to be free of oily residues and other substances capable of staining or harming joint substrates and adjacent non-porous surfaces and formulated to promote adhesion of sealant and substrates.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.

- B. Coordinate for repair and resolution of unsound substrate materials.
- C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

3.2 PREPARATIONS:

- A. Prepare joints in accordance with manufacturer's instructions and SWRI (The Professionals' Guide).
- B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer paint, or other foreign matter that would tend to destroy or impair adhesion.
 - 1. 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.
 - 2. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include but are not limited to the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 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 surfaces include but are not limited to the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- C. Do not cut or damage joint edges.
- D. Apply non-staining masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.
 - 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.

E. Apply primer to sides of joints wherever required by compound manufacturer's printed instructions or as indicated by pre-construction joint sealant substrate test.

1. Apply primer prior to installation of back-up rod or bond breaker tape.
2. Use brush or other approved means that will reach all parts of joints. Avoid application to or spillage onto adjacent substrate surfaces.

3.3 BACKING INSTALLATION:

- A. Install backing material, to form joints enclosed on three sides as required for specified depth of sealant.
- B. Where deep joints occur, install filler to fill space behind the backing rod and position the rod at proper depth.
- C. Cut fillers installed by others to proper depth for installation of backing rod and sealants.
- D. Install backing rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm (1/8 inch) for sealant depths specified.
- E. Where space for backing rod does not exist, install bond breaker tape strip at bottom (or back) of joint so sealant bonds only to two opposing surfaces.

3.4 SEALANT DEPTHS AND GEOMETRY:

- A. At widths up to 6 mm (1/4 inch), sealant depth equal to width.
- B. At widths over 6 mm (1/4 inch), sealant depth 1/2 of width up to 13 mm (1/2 inch) maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

3.5 INSTALLATION:

- A. General:
 1. Apply sealants and caulking only when ambient temperature is between 5 degrees C and 38 degrees C (40 degrees and 100 degrees F).
 2. Do not install polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
 3. Do not install sealant type listed by manufacture as not suitable for use in locations specified.
 4. Apply caulking and sealing compound in accordance with manufacturer's printed instructions.
 5. Avoid dropping or smearing compound on adjacent surfaces.

6. Fill joints solidly with compound and finish compound smooth.
 7. Tool exposed joints to form smooth and uniform beds, with slightly concave surface conforming to joint configuration per Figure 5A in ASTM C1193 unless shown or specified otherwise in construction documents. Remove masking tape immediately after tooling of sealant and before sealant face starts to "skin" over. Remove any excess sealant from adjacent surfaces of joint, leaving the working in a clean finished condition.
 8. Finish paving or floor joints flush unless joint is otherwise detailed.
 9. Apply compounds with nozzle size to fit joint width.
 10. Test sealants for compatibility with each other and substrate. Use only compatible sealant. Submit test reports.
 11. Replace sealant which is damaged during construction process.
- B. For application of sealants, follow requirements of ASTM C1193 unless specified otherwise. Take all necessary steps to prevent three-sided adhesion of sealants.
- C. Interior Sealants: Where gypsum board partitions are of sound rated, fire rated, or smoke barrier construction, follow requirements of ASTM C919 only to seal all cut-outs and intersections with the adjoining construction unless specified otherwise.
1. Apply a 6 mm (1/4 inch) minimum bead of sealant each side of runners (tracks), including those used at partition intersections with dissimilar wall construction.
 2. Coordinate with application of gypsum board to install sealant immediately prior to application of gypsum board.
 3. Partition intersections: Seal edges of face layer of gypsum board abutting intersecting partitions, before taping and finishing or application of veneer plaster-joint reinforcing.
 4. Openings: Apply a 6 mm (1/4 inch) bead of sealant around all cutouts to seal openings of electrical boxes, ducts, pipes and similar penetrations. To seal electrical boxes, seal sides and backs.
 5. Control Joints: Before control joints are installed, apply sealant in back of control joint to reduce flanking path for sound through control joint.

3.6 FIELD QUALITY CONTROL:

- A. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements.

3.7 CLEANING:

- A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by manufacturer of the adjacent material or if not otherwise indicated by the caulking or sealant manufacturer.
- B. Leave adjacent surfaces in a clean and unstained condition.

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SEALANT TYPES:

JS-1 Architectural Urethane Sealant ASTM C1620
JS-2 100% Silicone ASTM C1518
JS-3 100 % Silicone Mildew Resistant ASTM C1518
JS-4 Siliconized Acrylic Latex ASTM C1518, ASTM C834
JS-5 Urethane ASTM C1620
JS-6 Non-Halogenated Latex- Based Elastomeric Sealant ASTM C920
JS-7 100% Silicone Aluminum Finish ASTM C920

KEY:

BSL Biological Safety Level
ABSL Animal Biological Safety Level
JS Joint Sealant
N/S No Sealant
N/A Not applicable
* Refer to Comments

Note 1: All BSL-3 and ABSL-3 sealants shall be color White.

Note 2: Non-Lab column lists requirements for spaces that are within the laboratory facility but outside of the laboratory room and zone.

DRM Sealant Table Exhibit X4-2-A

Group	Description	Non-Lab Sealants	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3	Comments
Doors:	Seal all penetrations in doors	N/S	N/S	JS-4	
	Seal all door hinge plates (not at pin) to include piano hinges	N/S	N/S	JS-4	
	Seal door frame and wall board interface.	JS-4	JS-4	JS-4	
	Seal view panel frames (around glass whether or not gasketed)	N/S	N/S	JS-4	
	Seal around lock sets	N/S	N/S	JS-4	
	Seal around all sides of latch boxes installed within frames	N/S	N/S	JS-4	
	Seal door thresholds to the floor and around the threshold	JS-1	JS-1	JS-4	
	Seal door protection plates and tapered door guards to doors	N/S	N/S	JS-4	

Group	Description	Non-Lab Sealants	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3 Sealants	Comments
	Seal gaps around door magnet latch at head of door and frame	N/S	N/S	JS-4	
Cabinetry/Shelving:	Seal openings in the base of tables where the support feet mount to the table	N/S	JS-4	JS-4	
	Seal openings in table legs where the support feet mount to the floor	N/S	JS-4	JS-4	
	Seal all cabinets where they contact dissimilar materials and where they contact one another	N/S	JS-4	JS-4	Cabinets need to be closed boxes
	Seal all counter tops where they contact with dissimilar material	N/S	JS-4	JS-4	Depends on finish
	Seal around all shelf support brackets where they contact the shelves and are mounted to the walls	N/S	N/S	JS-4	This is for specialty shelving used in laboratories.
	Seal tops and bottoms of all wall mounted shelving brackets	N/S	JS-4	JS-4	A plug shall be sealed
	Seal all gaps and openings in racks	N/S	N/S	JS-7	For ABSL-3 equipment, typically stainless steel racks in aquatic rooms
	Seal covers between shelf standards	N/S	N/S	JS-6	
	Seal peninsula shelving support at countertop and at ceiling	N/S	JS-4	JS-4	
Walls/Floors/Ceilings:	Seal around all wall guards, bumpers, and rails	N/S	JS-4	JS-4	Brackets/fasteners shall be installed tight to wall.
	Seal all penetrations on the top and bottom of slab	JS-6	JS-6	JS-6	To include but not limited to HVAC, plumbing, and electrical penetrations, and like penetrations through interstitial space.
	Seal around all corner guards	N/S	JS-4	JS-4	Brackets/fasteners shall be installed tight to wall.
	Seal around all door bumpers	N/S	N/S	JS-4	Brackets/fasteners shall be installed tight to wall.
	Seal top of trim strip and sheet flooring at wall	N/S	N/S	JS-4	Recommend feathering epoxy cove base to flat surface, e.g. not at grout line
	Seal top of cove base	N/S	JS-4	JS-5	
	Seal bottom of cove base	N/S	JS-4	JS-5	
	Seal all ceiling access panels (whether or not 100% gasketed)	N/S	N/S	JS-4	
	Seal the perimeter of all suspended acoustical ceiling frames at the wall juncture	N/S	JS-4	N/A	
	Seal all interior window frames (including gasketed areas)	N/S	JS-4	JS-4	Sealant shall be sloped to promote cleaning
	Seal around wall and ceiling, surface-mounted cover plates and surface-mounted mounting plates	N/S	JS-4	JS-4	This applies to exposed mounted brackets. The use of sealant at these brackets is as follows: 1) If the bracket or wall mounted fixture is easily removable, then sealant is not required, 2) If the brackets are permanently affixed to wall, then joints shall be sealed. Each bracket shall be examined for requirement of sealant on a case by case basis.
	Seal all around floor surface-mounted mounting plates	N/S	JS-1	JS-1	This applies to exposed mounted brackets. The use of seal at these brackets is as follows: 1) If the bracket or floor mounted fixture is

Group	Description	Non-Lab Sealants	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3 Sealants	Comments
					removable, then sealant is not required, 2) If the brackets are permanently affixed to floor, then joints shall be sealed. Each bracket shall be examined for requirement of seal on a case by case basis
	Seal all around floor surface-mounted coverplates	N/S	JS-4	JS-4	
	Seal and cap the tops of all CMU walls	N/A	N/A	N/S, no foam	Vivarium areas only; recommend sheet rock (Seal with JS-4) or CMU cap block
	Seal around all cap strips on the top edge of covebase	N/S	N/S	JS-4	
	Seal baseboard molding, at the top bottom and terminate at door frame	N/S	JS-4	JS-4	
	Seal control joints in walls	N/S	JS-4	JS-4	
	Seal control joints in ceilings	N/S	JS-4	JS-4	
	Seal control joints in floors	JS-1	JS-1	JS-1	Not visible to room - beneath floor
	Seal all crash rails, guard rails stand offs, and door rollers mounting brackets	N/S	JS-4	JS-4	
	Seal joints between walls of dissimilar materials	JS-4	JS-4	JS-4	
	Seal space in wall penetrations, including inside sleeves, collars, and surrounding construction	JS-6	JS-6	JS-6	Where stuff mineral wool is applied, use fire stop and spray over with JS-6.
HVAC:	Seal all duct work that penetrates the wall envelope	N/S	JS-4	JS-4	
	Seal all diffusers/grill joints in hard ceilings	N/S	JS-4	JS-4	
Plumbing:	Hot water line insulation shall be wrapped in aluminum and the seams and ends of the insulation sealed	N/S	JS-7	JS-7	This applies for steam lines (e.g. autoclaves).
	Seal at vacuum pass-through	N/S	JS-4	JS-4	
	Seal all cracks in foam rubber water line insulation	N/S	JS-4	JS-4	
	All flat escutcheon plates and support standoff brackets for animal water systems shall be sealed all around	N/S	JS-4	JS-4	
	Seal plumbing to surface where a gap of 6 mm to 9mm or less exists	N/S	JS-4	JS-4	
	Seal all plumbing escutcheon and cover plates at the wall and pipe junctions	N/S	JS-4	JS-4	
	Seal around sprinkler collars	N/S	JS-4	JS-4	
	Seal all piping that penetrates the wall envelope	N/S	JS-4	JS-4	
Electrical:	Seal electrical conduit to surface where a gap of 6 mm to 9mm or less exists	N/S	JS-4	JS-4	
	Conduit shall be sealed tight to wall or ceiling surfaces; (raceway)	N/S	JS-4	JS-4	Sealant is required on both sides of surface mounted conduit.

Group	Description	Non-Lab Sealants	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3 Sealants	Comments
	Seal the perimeter of all electrical panels	N/S	* N/S	JS-4	* Panelboards in BSL2 spaces do not require sealing - if done, recom- mend with gasket only. Locating panelboards within ABSL areas shall be avoided and shall never be placed in actual BSL3 space. If required within ABSL space, gasketing and sealing is required. Sealing of cover plates in BSL2 is not required.
	Seal joints between ceiling and light fixtures in hard ceilings	N/S	* N/S	JS-4	Surface and recessed mounted lighting fixtures shall have sealant applied between fixture enclosure and ceiling surface. Recessed mounted fixtures shall have manufacturer's gasketing applied between fixture lens trim cover and adjacent ceiling surfaces.
	Seal perimeter of device boxes to adjacent drywall/CMU. Wire within conduit shall be sealed also.	N/S	* N/S	JS-4	Applicable for ALL power, communications, signal and control applications within ABSL-2 vivarium facilities: All device boxes shall be cast type with external hub. Where device boxes and conduits are recessed mounted, the box to the adjacent wall, ceiling or floor surface shall be sealed. All wiring shall be provided in either threaded rigid gal- vanized steel (RGS), intermediate metal conduit (IMC), or electrical me- tallic tubing (EMT - only when recessed and with compression fittings). Gasketed device cover plates shall be used, with an additional continuous bead of silicone sealant between the device box cover plate and the adjacent wall, ceiling or floor surface. Where device boxes and conduits are surface mounted, and where the device box meets the wall, ceiling, or floor surface, a continuous bead of silicone sealant shall be provided. Non-recessed conduits are then required to be threaded RGS on minimum 3/4" (19mm) standoffs, or if also surface mounted, both sides of the conduit shall be sealed to adjacent surfaces with silicone caulk. Once wiring is installed, the wiring shall be surrounded by a one inch barrier of silicone caulking around the conductors within the device box hub. This prevents vermin harborage in and transmission through the electrical distribution systems.

Group	Description	Non-Lab Sealants	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3 Sealants	Comments
	Seal perimeter of device boxes to adjacent drywall/CMU. Wire within conduit shall be sealed also.	N/S	* N/S	JS-4	Applicable for ALL power, communications, signal and control applications within ABSL-3 vivarium and BSL3 laboratory facilities: All device boxes shall be cast type with external hub. Where device boxes and conduits are recessed mounted, the box to the adjacent wall, ceiling or floor surface shall be sealed. All wiring shall be provided in either threaded rigid galvanized steel (RGS) or intermediate metal conduit (IMC - only when recessed). Gasketed device cover plates shall be used, with an additional continuous bead of silicone caulk between the device box cover plate and the adjacent wall, ceiling or floor surface. Where device boxes and conduits are surface mounted, and where the device box meets the wall, ceiling, or floor surface, a continuous bead of silicone sealant shall be provided. Non-recessed conduits are then required to be threaded RGS on minimum 3/4" (19mm) stand-offs, or if also surface mounted, both sides of the conduit shall be sealed to adjacent surfaces with silicone sealant. Once wiring is installed, the wiring shall be surrounded by a one inch barrier of silicone caulking around the conductors within the device box hub. This provides for a gas tight electrical installation allowing decontamination of the BL3 space, and prevents vermin harborage in the BL3 space, and prevents vermin harborage in and transmission through the electrical distribution systems.
Equipment:	Seal all fixed equipment that is within 38 mm or less from a ceiling	N/S	JS-3	JS-3	
	All sinks shall be sealed if they contact other surfaces, including mounting and support brackets	N/S	JS-3	JS-3	
	Large gaps, behind the back splash shall be filled in with foam cord and sealed in place	N/S	JS-4	JS-4	
	Seal all gaps and openings in secured /fixed equipment	N/S	N/S	JS-4	May hinder function of equipment - Review on a case by case basis.
	Seal gaps that exist between stainless steel sheet metal in all cage washes	N/S	JS-7	JS-7	
	Seal gaps that exist between stainless steel sheet metal in all tunnel washers	N/S	JS-7	JS-7	
	Seal gaps that exist between stainless steel sheet metal in all rack wash equipment	N/S	JS-7	JS-7	
	Seal around frames and holes inside of fire extinguisher boxes	N/S	JS-4	JS-4	Some doors have hollow channel in access doors. Seal access door frame channels and glass cover where no clips are present.
	Seal around the metal rod hangers used to hold the exhaust hoods where they penetrate the drop ceiling	N/S	JS-4	JS-4	

Group	Description	Non-Lab Sealant	BSL-2 Sealants	BSL-3, ABSL-2 and ABSL-3	Comments
	Seal wall mounted heating/air conditioner unit casework and utility penetrations	N/S	JS-4	JS-4	
	Seal floor mounted equipment supports, legs and standoff	N/S	JS-5	JS-5	
Fixtures:	Seal stainless steel equipment at all joints and gaps	N/S	JS-7	JS-7	
	Seal toilet mounted to surface	JS-3	JS-3	JS-3	
	Seal sink faucet mounted to surface	JS-3	JS-3	JS-3	
	Seal wall hung equipment at surface attachment	N/S	JS-3	JS-3	