

# DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

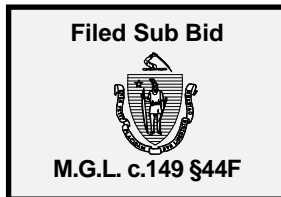
## 07 90 00 • SEALANTS

### SECTION INCLUDES

Elastomeric Sealants  
Joint Fillers  
Backer Rod

### RELATED SECTIONS

02 82 00 Asbestos Remediation  
04 20 00 Unit Masonry  
07 10 00 Waterproofing & Damproofing  
07 50 00 Membrane Roofing  
08 10 00 Doors and Frames  
08 40 00 Entrances and Storefronts  
08 50 00 Windows  
09 90 00 Painting



*Waterproofing, Dampproofing, and Caulking is a stipulated filed sub-bid category under M.G.L. Chapter 149, §44F. While these types of work are typically specified in different sections, if the cumulative estimated value of the work in this section exceeds \$20,000 and the projects total cost is over \$100,000, it triggers the filed sub-bid requirement., then specify it all in a single section to avoid confusion*

When specified as a separate filed sub-bid section, all the specified sealant work will be performed by the sub-bidder. If the Designer's intent is for the window installer or another trade to install sealants, then the necessary sealants, installation, and relevant materials should only be specified in the specification sections for that particular trade.

The Designer should also consider the sequencing of work when deciding whether sealants work shall be included as separate filed sub-bid.

### TECHNICAL STANDARDS

#### MATERIALS

**Sealant:** Typically refers to elastomeric products to prevent air and water infiltration, both in building envelope assembly and in interior wet areas such as bathrooms. The standard used is ASTM C 920 *Standard Specifications for Elastomeric Joint Compounds*.

**Caulking:** A type of joint filler most often used for interior applications where movement is insignificant and often refers to latex filler compounds. The standard used is ASTM C 834 *Standard Specification for Latex Sealing Compounds*.

Other relevant standards include:

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ASTM C1193- Standard Guide for the Use of Joint Sealants  
ASTM C679- Standard Test Method for Tack Free Time of Elastomeric Sealants  
ASTM D624- Standard Test Method for Tear Strength of Conventional Vulcanized Rubber & Thermoplastic Elastomers  
ASTM D2202- Standard Test Method for Slump of Sealants  
Food and Drug Administration (FDA):Reg. No. 21 CFR 177.2600

For most interior applications, not subject to excessive movement, latex or acrylic-emulsion sealants are typically acceptable. Exceptions are joints in wet areas such as plastic tub surrounds and along lip of bathtubs where one-part mildew resistant 100% silicone sealants should be used.

For most exterior applications, DHCD recommends that silicone sealants be used, rather than urethanes, because of their excellent performance characteristics and resistance to UV degradation.

Review temperature constraints and curing times for the sealants which are specified and include those in part 3 of the sealant specifications.

For horizontal surfaces in concrete not subject to thermal movement, use a multi-part, pourable, flexible epoxy joint filler for exterior applications.

A pourable two-part urethane filler is typically acceptable for most interior horizontal joints and exterior joints subjected to movement. Install rigid, pre-formed cap over the joint if the joint will be subjected to abrasives or heavy traffic.

Oil-based caulking is not acceptable.

Refer to sealant manufacturer for recommendations for specific materials and products.

Backer rods should be used whenever the depth of joint exceeds the depth to width sealant ratio. Close cell backer rods should be specified.

## SEALANTS, CON'T

### DESIGN

Proper joint design:

- The Designer should check the relative expansion/contraction of abutting materials in order to properly size sealant joints.
- Sealant type, grade and class should be specified for each type of joint.
- Details showing sealant profile, joint depth-to-width and backer rod, (if required) should be included in drawings. Do not leave the design of sealant joints up to the contractor.
- Fillet sealant joints typically involve the least amount of joint preparation, however, they are often not durable enough to withstand building movement. Design joints for maximum durability.

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- All sealants require surface preparation. Primers may be required per the manufacturer for certain surfaces. In the selection of sealants, care should be taken that they are compatibility with adjacent materials.
- Sealants should adhere to only two surfaces; Use backer rods and bond breakers to facilitate this.  
Depth to width ratio should typically not exceed 1 to 2.
- Width of joint should not exceed that recommended by the sealant manufacturer

Care should be taken to account for all necessary sealants in the contract documents. The following locations, which often require the use of sealant, are frequently neglected and should be clearly documented in contract document.

Sealant Locations typically include:

- The top of a wall base at irregular walls and rough substrates like masonry
- The perimeter of an interior door, sidelight, and transom frames
- At the joint between acoustical ceiling wall angles and irregular walls
- At countertops where backsplash meets wall base
- At joints between dissimilar exterior cladding materials
- At all window and door openings
- Air sealing of framing and other building envelope components per MA Energy Code.



Care should also be taken to account for rain screen wall assembly drainage and weepholes. Drawings should clearly indicate intent for maintaining weepholes and other drainable components of rain-screen wall assemblies to prevent sealants from covering drainage components. It is not uncommon to see sealants incorrectly installed to cover window drainage weepholes or brick weepholes.

### INSTALLATION

The use of preconstruction field tests or mock ups to verify sealant adhesion to joint substrates is advisable, and should be called out in the specifications.

It is the responsibility of the Designer and, if applicable, the clerk of the works, to review the sealants work performed by Contractor to determine whether sealants are installed within the thermal and temperature constraints recommended by sealants manufacturer. Sealants which are installed improperly shall be removed and reinstalled

Post-installation testing of sealants such as pull tests, paid for by the contractor, are recommended if the Designer observes that sealants are

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improperly installed or cured. Specify such tests to be performed at the discretion of the Designer so they are included in the scope of contractor's work.

Expandable foam products should not be used as an alternate to flashing and waterproofing sealants.