



Standard Specification for Precured Elastomeric Silicone Joint Sealants¹

This standard is issued under the fixed designation C 1518; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 Precured elastomeric silicone joint sealants, hereinafter referred to as seal, are manufactured in flat, cured, extruded shapes and are primarily used to span joint openings in construction. This specification describes the properties of applied, flat shaped precured elastomeric silicone joint sealants, hereinafter referred to as applied seal, that bridge joint openings and are adhered to joint substrates utilizing a liquid applied silicone adhesive sealant, specified by the manufacturer, hereinafter referred to as adhesive to construction substrates, to seal building openings such as panel joints, metal flashing joints, or other building openings in place of conventional liquid applied sealants.

1.2 Seals are applied in three different configurations:

1.2.1 As a bridge joint, the seal is applied flat on the surface to cover a joint opening. See Fig. 1.

1.2.2 As a beveled bridge joint, the seal is applied on the beveled edge of a substrate to bridge a joint opening. See Fig. 2.

1.2.3 As a U-joint, the seal is applied in a U-configuration within a joint. See Fig. 3.

1.3 This specification is for a flat extruded shape. A three-dimensional shape used at a joint cross section or termination is being considered for future inclusion in the specification.

1.4 An applied seal meeting the requirements of this specification shall be designated by the manufacturer as to movement class and tear class as described in Section 5.

1.5 The values stated in SI units are to be regarded as the standard. The values given in brackets are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*²

C 717 Terminology of Building Seals and Sealants

C 1442 Practice for Conducting Test on Sealants Using Artificial Weathering Apparatus

C 1523 Test Method for Determining Modulus, Tear and Adhesion Properties of Precured Elastomeric Joint Sealants

D 1566 Terminology Relating to Rubber

G 113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

3. Terminology

3.1 *Definitions:*

3.1.1 Refer to Terminology C 717 for definitions of the following terms used in this specification: cohesive failure, adhesive failure, elastomeric, elongation, joint, modulus, primer, seal, sealant, substrate.

3.1.2 Refer to Terminology G 113 for definitions related to artificial weathering.

3.1.3 Refer to Terminology D 1566 for tear.

4. Significance and Use

4.1 This specification describes several classifications of applied seals as described in Section 5. The purchaser or design professional shall recognize that not all materials meeting this specification are suitable for all applications and substrates. It is essential, therefore, that the proper classification of the seal system is provided for the intended use. The test methods in this specification relate to elastomeric performance, adhesion

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

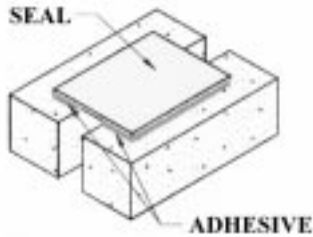


FIG. 1 Bridge Joint Configuration

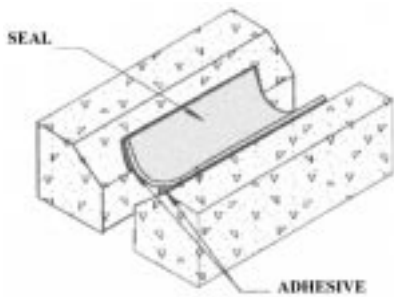


FIG. 2 Beveled Bridge Joint Configuration

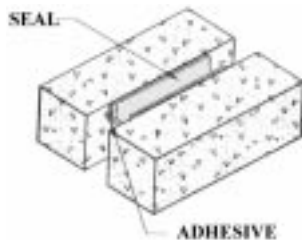


FIG. 3 U-Joint Configuration

of the adhesive to the seal and adhesion of the adhesive to the substrate, only as adhesion relates to the test specimens. The standard substrate for qualification to this specification is portland cement mortar. The standard joint configuration for qualification to this specification is the bridge joint configuration as shown in Fig. 1. Users are advised to have adhesion tests performed in the field on the actual substrate to determine adhesion performance.

NOTE 1—Other joint configurations such as beveled bridge joint application and/or U-joint application in place or in addition to the standard joint configuration may be specified for the test with the applied seal sample.

NOTE 2—Other substrates such as EIFS, brick, wood, aluminum, plastic, metal or other in place or in addition to the standard substrate may be specified for the test with the applied seal sample.

5. Classification

5.1 *Movement Class*—A seal qualifying under this specification shall be classified for movement capability as follows.

5.1.1 *Movement Class X*—An applied seal that when tested for movement as described in Test Method C 1523 (9.1) after subjecting joint specimens to each of the following: three joint specimens to frozen temperature conditioning as described in Test Method C 1523 (8.2.3) for 24 h; three joint specimens to heat conditioning as described in Test Method C 1523 (8.2.4)

for 24 h; and three joint specimens to artificial weathering in accordance with Practice C 1442 as described in Test Method C 1523 (8.2.5) for a minimum of 2500 h. The exposure duration shall be sufficient to produce a statistically significant change of the property evaluated in a material known to give poor performance when used in the application of interest. After each type of conditioning, the specimen shall withstand a strain and the holding time at that strain for one hour to X % elongation, where X is 12.5 % or greater, in increments of 12.5 % to max 200 %. (Test Method C 1523, 9.1)

5.1.2 Immediately following 5.1.1 the same specimen shall withstand 10 movement cycles of X % elongation where X is the percentage used in 5.1.1 and relaxation to 0 %.

5.2 *Tear Class NT, PT and Class T*—Immediately following 5.1.2 the same specimen shall be tested for tear propagation as described in Test Method C 1523 (9.4).

6. General Requirements

6.1 *Stability*—A seal when stored in the original package at temperatures not exceeding 50°C [122°F] shall be capable of meeting the requirements of this specification for at least twelve months after the date of manufacture.

6.2 *Color and Texture*—The color and texture of the exposed seal surface shall be the color and texture that was agreed upon between the purchaser and supplier.

6.3 *Application*—The seal system is intended for application to clean, dry substrate surfaces. All laboratory tests shall be performed using the liquid applied adhesive sealant recommended by the manufacturer of the seal. It shall be recognized that more adhesive may be necessary than indicated in the manufacturer's recommendations due to the shape of the seal and/or the type of substrate. Where a primer for a substrate surface is recommended by a manufacturer, all tests on that surface shall include the recommended primer.

6.4 *Adhesion/Cohesion*—The applied seal when tested in accordance with 5.1.1 and 5.1.2 shall have no loss of adhesion or cohesion in bond depth greater than 25 % at any given location along the bond line.

6.5 *Tear Propagation*—The applied seal when tested in accordance with 5.2 for class NT and PT shall have not more than 25 mm of defective joint length see Fig. 4. For Tear Class T the length of defective joint will exceed 25 mm, see Fig. 5.

7. Physical Requirements

7.1 Flat manufactured seals are provided in different widths, usually from 25 mm [1 in.] to 150 mm [6 in.] in 12 mm [0.5 in.] increments and thickness usually from 1 mm [0.04 in.] to 3 mm [0.12 in.]. A seal qualifying to this specification can be of any thickness, but shall be the same thickness as a seal indicated as qualifying to movement class, modulus and tear characteristics.

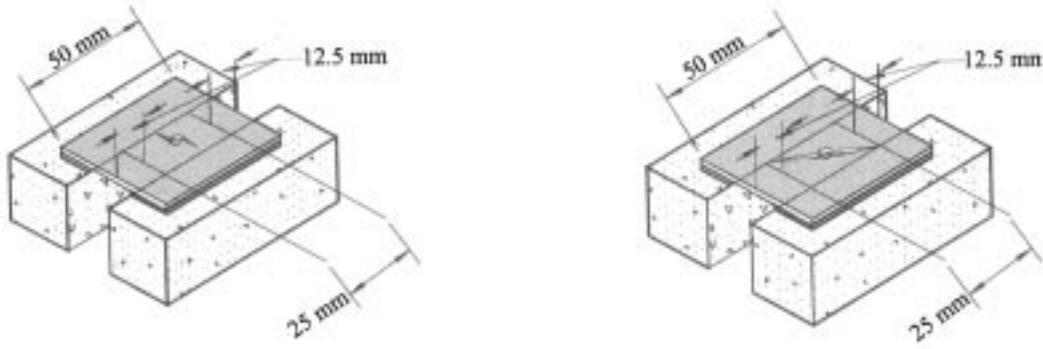
8. Test Methods

8.1 *Movement Class*:

8.1.1 The movement properties shall be tested in accordance with Test Method C 1523 (8.2.3, 8.2.4, 8.2.5, 9.1).

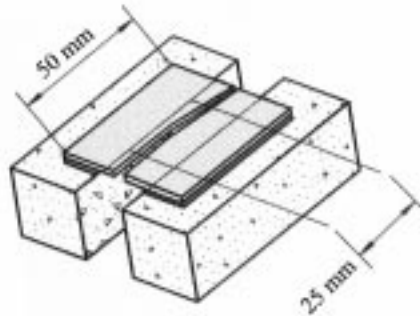
8.2 *Modulus*:

8.2.1 The modulus properties shall be tested in accordance with Test Method C 1523 (8.2.3, 8.2.4, 8.2.5, 9.1).



NOTE—Tear propagates perpendicular to the length of the joint as shown above, left; or at any angle leading to the joint wall as shown above, right. In each case tear stops at the joint wall with an intact unbroken joint length on both sides of at least 12.5 mm.

FIG. 4 Class PT



NOTE—Tear propagates nearly parallel to the joint wall and opens one side or both sides.

FIG. 5 Class T

8.3 Tear Characterization:

8.3.1 Tear characterization shall be tested in accordance with Test Method C 1523 (8.2.3, 8.2.4, 8.2.5, 9.4).

9. Packaging and Package Marking

9.1 The seal should be packaged so that it maintains its manufactured shape.

9.2 A seal, that meets this specification shall be clearly labeled by the manufacturer:

9.2.1 Movement class in accordance with 5.1.1 and 5.1.2.

9.2.2 Modulus at strain that represents the movement class, in accordance with 5.1.1.

9.2.3 Tear characterization in accordance with 5.2.

10. Keywords

10.1 adhesion; adhesive-sealant; bond-line; elastomeric; joint; precured; precured elastomeric joint sealant; seal; tear

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