



Designation: C1518 – 22

Standard Specification for Precured Elastomeric Silicone Joint Sealants¹

This standard is issued under the fixed designation C1518; 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.

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 standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.10 on Specifications, Guides and Practices.

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2. Referenced Documents

2.1 *ASTM Standards*:²

C717 Terminology of Building Seals and Sealants

C1442 Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus

C1523 Test Method for Determining Modulus, Tear and Adhesion Properties of Precured Elastomeric Joint Sealants

D1566 Terminology Relating to Rubber

G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

3. Terminology

3.1 *Definitions*:

3.1.1 Refer to Terminology C717 for definitions of terms used in this standard, including but not limited to the following: cohesive failure, adhesive failure, elastomeric, elongation, joint, modulus, primer, seal, sealant, shelf-life, substrate.

3.1.2 Refer to Terminology G113 for definitions related to artificial weathering.

3.1.3 Refer to Terminology D1566 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 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 evaluations performed in the field on the actual substrate(s) to determine adhesion performance.

NOTE 1—Other joint configurations such as beveled bridge joint

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.

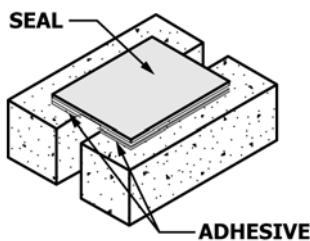


FIG. 1 Bridge Joint Configuration

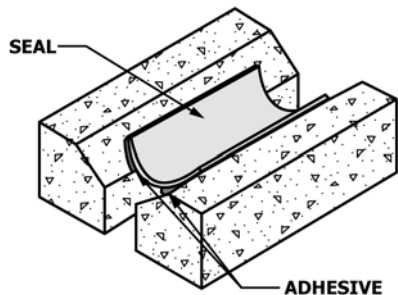


FIG. 2 Beveled Bridge Joint Configuration

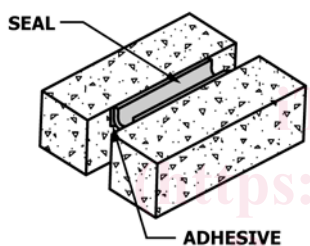


FIG. 3 U-Joint Configuration

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 C1523 (9.1) after subjecting joint specimens to each of the following: three joint specimens to frozen temperature conditioning as described in Test Method C1523 (8.2.3) for 24 h; three joint specimens to heat conditioning as described in Test Method C1523 (8.2.4) for 24 h; and three joint specimens to artificial weathering in accordance with Practice C1442 as described in Test Method C1523 (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 C1523, 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 C1523 (9.4).

6. General Requirements

6.1 The shelf-life of this seal shall be determined by its manufacturer. When establishing the shelf-life, the manufacturer should also identify acceptable conditions of storage for the seal.

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 C1523 (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 C1523 (8.2.3, 8.2.4, 8.2.5, 9.1).

8.3 *Tear Characterization:*

8.3.1 Tear characterization shall be tested in accordance with Test Method C1523 (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.