Designation: ~~C1135 – 00 (Reapproved 2011)~~ C1135 – 15

Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants[1]

This standard is issued under the fixed designation C1135; 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 This test method covers a laboratory procedure for quantitatively measuring the tensile adhesion properties of structural sealants, hereinafter referred to as the "sealant".

1.2 The values stated in SI (metric) units are to be regarded as the standard. The inch-pound values given in parentheses are provided for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—Two ISO standards are known that develop similar information to C1135; ISO 8339 and ISO 8340.

2. Referenced Documents

2.1 *ASTM Standards:*[2]
C717 Terminology of Building Seals and Sealants
2.2 *ISO Standards:*[3]
ISO 8339 Determination of Tensile Properties
ISO 8340 Determination of Tensile Properties at Maintained Extension

3. Terminology

3.1 *Definitions*—Refer to Terminology C717 for definitions of the following terms used in this test method: cohesive failure, primer, sealant, spacer, standard conditions, structural sealant, and substrate.

4. Significance and Use

4.1 Frequently, glass or other glazing or panel materials are structurally adhered with a sealant to a metal framing system. The sealants used for these applications are designed to provide a structural link between the glazing or panel and the framing system.

4.2 Although this test method is conducted at one prescribed environmental condition, other environmental conditions and duration cycles can be employed.

5. Apparatus and Materials

5.1 *Tensile Testing Machine,* capable of producing a tensile load on the specimen at the rate of 50.8 ± 5.1 mm (2.0 ± 0.20 in.) per minute.

5.1.1 *Fixed Member*—A fixed or essentially stationary member carrying one grip.

5.1.2 *Movable Member*—A movable member carrying a second grip.

5.1.3 *Grips*—The grips should be suitable to firmly grasp the test fixture that holds the test specimen and should be designed to eliminate eccentric specimen loading. Specimen loading should be perpendicular to the substrate/sealant interfaces. For alignment purposes, each grip shall have a swivel or universal joint at the end nearest to the specimen.

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[1] This test method is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.30 on 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.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

5.1.4 *Grip Fixture*—A fixture capable of being held by the grips and furnishing a tensile force to the sealant specimen.

5.2 *Spatulas,* for use in applying sealant.

5.3 *Caulking Gun,* for extruding sealant from cartridges when applicable.

5.4 *Substrate Panels*—Two substrates of the same finish are required for each test specimen.

NOTE 2—This test method is based on identical substrates of 6.3 × 25.4 × 76.2 mm (0.25 × 1.0 × 3.0 in.) clear float glass. Other substrates may be tested; however, consideration needs to be given to maintaining adequate rigidity of the substrates during testing.

5.5 *Spacer*—One piece spacer made from polytetrafluorethylene (PTFE) or a suitable rigid material shall be used to which the test sealant will not bond.

5.6 *Substrate Cleaning Materials.*

5.7 *Primer* (if needed).

6. Test Specimen

6.1 *Assembly:*

6.1.1 Prior to assembly, wipe the substrates with a clean, dry, lint-free cloth, then thoroughly clean with a solution appropriate for the substrate material. Prior to evaporation of the cleaning solution, wipe the substrates dry with a clean, lint-free cloth.

NOTE 3—The precision and bias statement is based on glass substrates with a recommended cleaning solution of a 50 to 50 ratio isopropanol and water.

6.1.2 Apply recommended primer, if required. Then, construct the test specimen assemblies by forming a sealant cavity 12.7 by 12.7 by 50.8 mm (0.50 by 0.50 by 2.0 in.) between two substrate panels (see Fig. 1) with the aid of appropriate spacers.

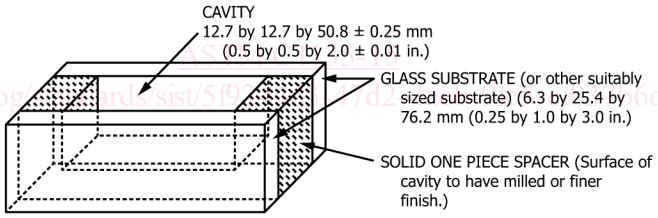
6.2 *Preparation of Test Assemblies:*

6.2.1 Prepare a set of five test specimen assemblies for each sealant and substrate combination being tested (see Fig. 1).

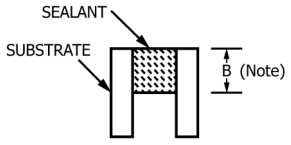
NOTE 4—Five test specimen assemblies should be prepared for each additional environmental condition being evaluated.

6.2.2 Fill each set of five assemblies with the sealant being tested. Immediately tool the sealant surface to ensure complete filling and wetting of the substrate surfaces. Take special care to strike off the sealant flush with the substrate.

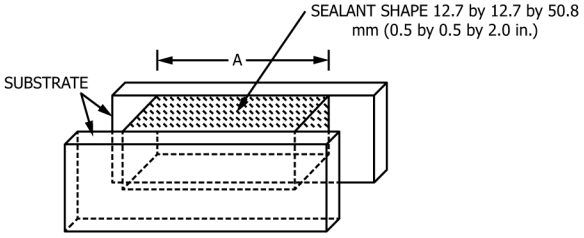
6.3 *Labeling*—Each of the five specimens of each set should be individually identified.



(*a*) Glass Substrate and Spacer Assembled to Form a Sealant Cavity (Tape or clamp substrates together prior to injecting the sealant.)



(*b*) Sideview of Test Specimen with Spacer Removed



(*c*) End view of Test Specimen with Spacer Removed

NOTE 1—Dimension B in Fig. 1(*c*) is known as the sealant edge bite or sealant contact depth.

FIG. 1 Sealant Test Specimen