



Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids¹

This standard is issued under the fixed designation C1247; 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 that assists in determining the durability of a sealant and its adhesion to a substrate while continuously immersed in a liquid. This test method tests the influence of a liquid on the sealant and its adhesion to a substrate. It does not test the added influence of constant stress from hydrostatic pressure that is often present with sealants used in submerged and below-grade applications, nor does it test the added influence of stress from joint movement while immersed. This test method also does not (in its standard form) test the added influence of acids or caustics or other materials that may be in the liquid, in many applications.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound 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.*

2. Referenced Documents

2.1 ASTM Standards:²

C33 Specification for Concrete Aggregates

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

C150 Specification for Portland Cement

C717 Terminology of Building Seals and Sealants

C719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)

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.

2.2 ISO Standards

ISO 13638 Building Construction-Sealants-Determination of Resistance of Prolonged Exposure to Water³

3. Terminology

3.1 Definitions:

3.1.1 Definitions of the following terms used in this test method are found in Terminology C717: *adhesive failure; cohesive failure; compound; cure; hydrostatic pressure; joints; primer; sealant; self-leveling sealant; standard conditions; and substrate.*

4. Summary of Test Method

4.1 Specimens are prepared and the sealant is cured. The specimens are immersed in a hot liquid at $50 \pm 2^\circ\text{C}$ ($122 \pm 3.6^\circ\text{F}$) for six weeks. At the end of the six weeks, the specimens are placed into a compression/extension machine, as described in Test Method C719, and cycled through the movement range appropriate to the test sealant or its application, or both.

4.2 If after three movement cycles at 3.2 mm/h ($\frac{1}{8}$ in./h) adhesive or cohesive failure is not noted, the specimens are again placed in the hot liquid for an additional four weeks and then retested.

4.3 This test method consists of six weeks of immersion followed by three extension and compression cycles. This can be followed by four weeks of further immersion and a repeat of the three extension and compression cycles. The four weeks of immersion and subsequent extension and compression testing can be repeated as many times as required for the application.

5. Significance and Use

5.1 This test method uses elevated temperature to accelerate the degradation of a sealant and its adhesion to a substrate. This test method is an accelerated method and will only be a predictor of long-term durability if the actual service temperature is significantly lower than the elevated test temperature.

³ Available from American National Standards Institute, 11 W. 42nd Street, 13th Floor, New York, NY 10036.