



Designation: C679 – 15 (Reapproved 2022)

Standard Test Method for Tack-Free Time of Elastomeric Sealants¹

This standard is issued under the fixed designation C679; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers a procedure for the determination of the tack-free time property of single- and multi-component *elastomeric sealants* commonly used for sealing, *caulking*, and *glazing* in buildings and related construction.

1.2 This test method is applicable to *self-leveling* and *non-sag* grades of *sealant*. Sealants requiring slight heating to facilitate extrusion from the cartridge or gun are also described by this test method.

NOTE 1—See Specification C920 for type and grade definitions.

1.3 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.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 2—Currently, there is no ISO standard similar to this specification.

1.5 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C717 Terminology of Building Seals and Sealants

C920 Specification for Elastomeric Joint Sealants

¹ This test method is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.20 on General Test Methods.

Current edition approved Jan. 1, 2022. Published January 2022. Originally approved in 1971. Last previous edition approved in 2015 as C679 – 15. DOI: 10.1520/C0679-15R22.

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. Terminology

3.1 *Definitions*—See Terminology C717 for definitions of the following terms used in this test method: caulking, compound, cure, elastomeric, glazing, non-sag sealant, sealant, self-leveling sealant, and standard conditions.

4. Summary of Test Method

4.1 The test consists of lightly touching a surface of a curing sealant with a polyethylene film at regular intervals until the sealant does not attach itself to the film and the film appears clean when peeled from the surface.

4.2 More specifically a strip of polyethylene film is placed on the surface of the curing sealant and a 30 g (1.06-oz) weight is placed on the film. The weight is left in place for 30 s, then removed and the polyethylene strip is removed and examined for sealant attachment to the film. The length of time from when the sealant was first applied and tooled into the template until the time the sealant is no longer picked up by the film is called tack-free time.

4.3 With some sealants, interpretation of the end point is confusing in that a very thin film of sealant or oil will transfer to the film. For consistency of data, record the point where the bulk sealant is no longer transferred to the plastic but ignore the very thin uniform film of sealant or the plasticizer transferred to the plastic test strip.

5. Significance and Use

5.1 The tack-free time is a measure of the surface cure time and may generally be correlated to a variety of useful parameters such as the time interval before the sealant (1) resists damage by touch or light surface contact, (2) resists job-site or airborne dirt pick-up, (3) resists impinging rainfall.

5.2 The tack-free time is sometimes used as an on-the-job quality assurance test. A quality product that is consistent and reproducible will generally fall within a maximum and minimum tack-free time.

5.3 This test for tack-free time can be used at any temperature and humidity. It is important that if a sealant will be used in a climate quite different than the standard conditions called out in this test method, then those conditions be used to test the sealant.

6. Apparatus

6.1 *Cabinet or Room*, capable of maintaining Standard Conditions.

6.2 *Weight*, rectangular, with dimensions of 41 mm by 19 mm (1 $\frac{5}{8}$ in. long by $\frac{3}{4}$ in. wide) and mass of 30 g (1.06 oz).

NOTE 3—The thickness of the weight should be approximately 6 mm ($\frac{1}{4}$ in.) but planed to a thickness that will provide the 30 g (1.06-oz) mass.

6.3 *Polyethylene Strips*, several (often 6 or more), clear, low density with dimensions 127 mm by 25 mm by 0.15 mm (5 in. by 1 in. by 0.006 in.).

6.4 *Timer*, capable of measuring minutes and hours.

6.5 *Rectangular Plates*, several (often 6 or more), rectangular, approximately 152 mm by 76 mm (6 in. by 3 in.), made of non-porous material such as tin plated steel or aluminum.

6.6 *Template*, rectangular, of steel, brass or other suitable material, 3.2 mm ($\frac{1}{8}$ in.) thick with inside dimensions 95 mm by 25.4 mm (3 $\frac{3}{4}$ in. by 1 in.); outside dimensions approximately 120 mm by 31 mm (5 $\frac{3}{4}$ in. by 2 in.).

7. Sampling

7.1 The test sample shall consist of a factory-sealed can of compound (minimum contents, 450 mL or 1 pt) with an appropriate curing agent where applicable, or a standard cartridge, factory filled and sealed.

8. Procedure (see Fig. 1)

8.1 Thoroughly clean the templates and rectangular plates with methyl ethyl ketone, xylene, or similar solvent. (**Warning**—Methyl ethyl ketone, xylene, and similar solvents are both toxic and flammable and should be handled with caution in a well ventilated hood.)

8.2 Condition the sample of sealant in the original closed container for 24 h at Standard Conditions. For single-component sealants, weigh out approximately 250 g of the sealant before testing. For multi-component sealants, thor-

oughly mix 250 g of the base compound with the appropriate amount of curing agent following the manufacturer's mixing instructions.

8.3 Prepare at least two specimens for each sealant as follows: Center the template on the metal plate and carefully fill it with sealant avoiding air pockets. Strike off the surface flat using a metal straightedge, to a uniform thickness.

8.4 *Relative Tack-Free Time Unknown*. If the relative tack-free time is unknown, the procedure is to pretest one of the test specimens by lightly touching the surface of the sealant with a film of polyethylene wrapped over the end of a finger. Touch the test piece in accordance with an appropriate time interval described in 8.5. Try to touch a different place on the surface each time. After the polyethylene wrapped finger is lightly touched to the surface of the sealant, it is immediately removed and examined to see if sealant was picked up on the polyethylene film. When no sealant is picked up on the polyethylene strip, perform the next test as described in 8.6.

8.5 *Time Intervals*—If the relative tack-free time is unknown, the procedure is to pretest, as in 8.4, one test specimen each minute for the first 10 min, each 2 min for the next 10 min, each 5 min for the next 160 min (3 h has elapsed), each hour for the next 69 h, each day until a positive result is achieved or until 21 days has elapsed. Table 1 summarizes the time intervals.

NOTE 4—Information provided by the manufacturer can save a great deal of time and lead the tester quickly to an appropriate time bracket.

8.6 After the pretest in 8.4 do the actual test by starting new, but just before the tack-free time estimated by the pretest. At the appropriate time lay a polyethylene strip over half of the same test specimen and gently place the brass weight on the strip and allow it to remain there for 30 s.

8.7 Remove the weight and then slowly withdraw the polyethylene strip pulling it with thumb and forefinger at 90° to the compound, at a constant rate of 1 in./15 s (see Fig. 1).

8.8 If the strip is clean or almost clean, repeat the test of 8.6 and 8.7 on a previously undisturbed test specimen.

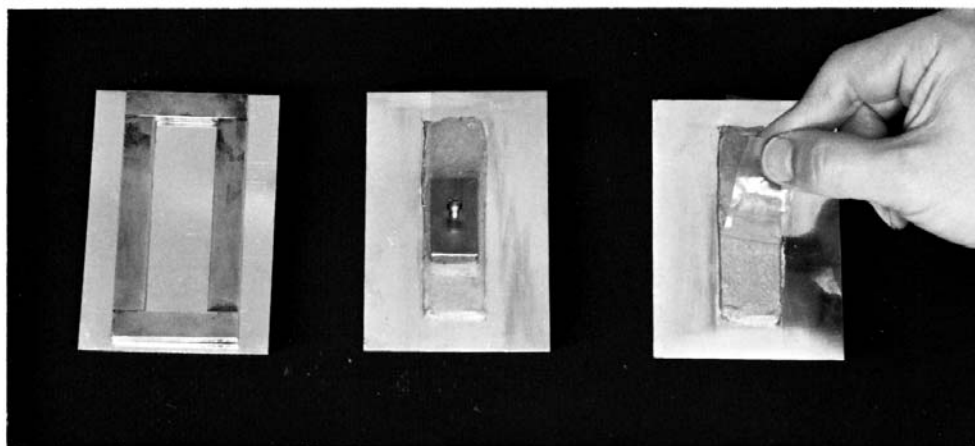


FIG. 1 Stages in the Tack-Free Time Test Procedure