



Designation: D2453 – 15 (Reapproved 2020)<sup>ε1</sup>

# Standard Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds<sup>1</sup>

This standard is issued under the fixed designation D2453; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

<sup>ε1</sup> NOTE—In 5.1, a misspelling was corrected editorially in May 2020.

## 1. Scope

1.1 This test method describes a laboratory procedure for determining the shrinkage of oil- and resin-base (Note) caulking compounds, as well as the evaluation of the tenacity property of such compounds. This test method is applicable to both gun (Type I) and knife (Type II) grades.

NOTE 1—This is not a suitable test method for water-base products.

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

1.3 The subcommittee with jurisdiction is not aware of any similar ISO 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.*

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:*<sup>2</sup>

**C717 Terminology of Building Seals and Sealants**

## 3. Terminology

3.1 *Definitions*—Definitions of the following terms are found in Terminology **C717**: caulking, caulking compound,

<sup>1</sup> This 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 May 1, 2020. Published June 2020. Originally approved in 1966. Last previous edition approved in 2015 as D2453 – 15. DOI: 10.1520/D2453-15R20E01.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

compound, cure, joint, standard conditions.

## 4. Summary of Test Method

4.1 A ¼-in. layer of caulking compound is aged 120 h at 65 ± 2°C (149 ± 3.6°F) and its shrinkage is determined by comparing its initial volume to the volume after the aging period.

4.2 After the shrinkage has been determined, this same specimen is also used to test tenacity by folding the aged material 180° six times.

## 5. Significance

5.1 Shrinkage is a measure of the nonvolatile solids of an oil- or resin-base compound. A compound that exhibits excessive shrinkage may have a tendency to crack or shrink from the sides of a joint when in service.

5.2 Tenacity is the measure of the flexibility of an oil- or resin-base caulking compound. Oil- or resin-base caulking compounds that cure excessively hard and do not remain flexible may fail prematurely because of the inability to absorb movement.

## 6. Apparatus and Materials

6.1 *Cabinet or Room*, capable of maintaining standard conditions for extended periods of time.

6.2 *Oven* (convection-type), controlled at 65 ± 2°C (149 ± 3.6°F).

6.3 *Oven* (convection- or blower-type), controlled at 104 ± 2°C (220 ± 3.6°F).

6.4 *Titration Buret*, 50-mL capacity, marked in 0.1 mL.

6.5 *Brass Ring*, metal, 0.8 to 3.2 mm (1/32 to 1/8 in.) thick; inside diameter, 66.7 mm (2 5/8 in.); and 12.7 mm (1/2 in.) wide, with ends of the ring ground flat.

6.6 *Cover Plates*, ground glass, two, 76 to 89 mm (3 to 3 1/2 in.) in diameter.

6.7 *Limestone Block*, standard 89 mm (3 1/2 in.) square by 16 to 19 mm (5/8 to 3/4 in.) thick.