Designation: D 2453 – 99

Standard Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds[1]

This standard is issued under the fixed designation D 2453; 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 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 *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:*

C 717 Terminology of Building Seals and Sealants[2]

3. Terminology

3.1 *Definitions*—Definitions of the following terms are found in Terminology C 717: caulking, caulking compound, compound, cure, joint.

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 shink 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 a temperature of 23 ± 2°C (73.4 ± 3.6°F) at 50 ± 5 % relative humidity 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 *Titrating Buret*, 50-mL capacity, marked in 0.1 mL.

6.5 *Brass Ring*, metal, 0.8 to 3.2 mm (1⁄32 to ⅛ in.) thick; inside diameter, 66.7 mm (2⅝ in.); and 12.7 mm (½ in.) wide, with ends of the ring ground flat.

6.6 *Cover Plates*, ground glass, two, 76 to 89 mm (3 to 3½in.) in diameter.

6.7 *Limestone Block*, standard 89 mm (3½in.) square by 16 to 19 mm (⅝ to ¾ in.) thick.

6.8 *Steel Spatula or Putty Knife* about 102 mm (4 in.) long and about 19 mm (¾ in.) wide.

6.9 *Leveling Tool* for spreading compound (Fig. 1).

6.10 *Knife*, thin-pointed blade.

6.11 *Putty Knife*, steel, stiff, about 102 mm (4 in.) long and about 51 mm (2 in.) wide at the end.

6.12 *Distilled Water*.

7. Sampling

7.1 The compound to be tested shall be taken from a previously unopened container. Remove the compound from the container and work with a putty knife to a homogeneous consistency on a nonporous surface.

8. Conditioning

8.1 Condition limestone blocks in an oven at 104 ± 2°C (220 ± 3.6°F) for 24 h and then cool to room temperature.

8.2 Condition the unopened cartridge or can of caulking

[1] 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 Sealent Standards.

Current edition approved Feb. 10, 1999. Published April 1999. Originally published as D 2453 – 66 T. Last previous edition D 2453 – 94.

[2] *Annual book of ASTM Standards*, Vol 04.07.