



Designation: D5602/D5602M – 11

# Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens<sup>1</sup>

This standard is issued under the fixed designation D5602/D5602M; 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.

## 1. Scope

1.1 This test method covers evaluation of the maximum static puncture load that roofing membrane samples can withstand without allowing the passage of water.

1.2 This laboratory test is conducted at any desired temperature using sheet membrane samples manufactured in a factory or prepared in a laboratory.

1.3 Roof membrane specimens to which the test method is applicable include bituminous built up, polymer-modified bitumens, vulcanized rubbers, non-vulcanized polymeric, and thermoplastic materials.

1.3.1 The applicability of this test method to these membrane specimens includes their use in vegetative roof systems.

1.4 This test method is not applicable to aggregate-surfaced membrane specimens, but it is applicable to specimens having factory-applied granules.

1.5 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.6 *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:*<sup>2</sup>

[C578 Specification for Rigid, Cellular Polystyrene Thermal Insulation](#)

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.20 on Roofing Membrane Systems.

Current edition approved Feb. 15, 2011. Published May 2011. Originally approved in 1994. Last previous edition approved in 2006 as D5602 – 98 (2006). DOI: 10.1520/D5602\_D5602M-11.

<sup>2</sup> 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.

[D1079 Terminology Relating to Roofing and Waterproofing](#)

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology [D1079](#).

## 4. Summary of Test Method

4.1 Set on a thermal insulation substrate, the roofing membrane test specimen is subjected for 24 h to a predetermined static puncture force using a ball bearing having a 10-mm [0.39-in.] diameter.

4.2 The loads are increased in 10-N [2.2-lbf] increments until puncture of the membrane specimen occurs or the maximum load of the test apparatus which is at least 250 N [56 lbf] is reached.

4.3 Puncture of the test specimen is assessed by visual examination and verified by conducting a watertightness test.

## 5. Significance and Use

5.1 An important factor affecting the performance of many membrane roofing systems is their ability to resist static puncture loads. This test method provides a means for assessing static puncture resistance.

5.2 This test method can be used to compare the puncture resistance of a single type of membrane as a function of a variety of insulation substrates or, conversely, to compare the resistance of a number of membrane specimens set on a single type of insulation.

5.3 The effect of temperature on puncture resistance can be studied by conducting the test under controlled conditions using such equipment as an environmental chamber, oven, or freezer.

5.4 This test method can be useful for developing performance criteria for membrane roofing systems.

5.5 This test method can be useful for developing classifications of the static puncture resistance of membrane roofing systems.

5.6 While it is considered that the results obtained by this laboratory test can afford a measure of the static puncture resistance of membrane roofing systems in the field provided