



Designation: D3161 – 09

## Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)<sup>1</sup>

This standard is issued under the fixed designation D3161; 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.

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

### 1. Scope

1.1 This test method covers the procedure for evaluating the wind resistance of asphalt shingles that results from the shingle's rigidity (with or without contribution from sealant) or mechanical interlocking (with or without contribution from sealant) or any combination thereof. The shingles are applied to a test panel in accordance with the manufacturer's instructions and tested at a 2:12 (17 %) slope, or at the lowest slope permitted by those instructions.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

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:*<sup>2</sup>

**D1079 Terminology Relating to Roofing and Waterproofing**

<https://standards.iteh.ai/catalog/standards/sist/edbae/718-1571/astm-d3161-09>

### 3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology **D1079**.

### 4. Classes of Shingles

4.1 Shingles are of three classes:

4.1.1 *Class A*—Pass at a test velocity of 97 km/h (60 mph).

4.1.2 *Class D*—Pass at a test velocity of 145 km/h (90 mph).

4.1.3 *Class F*—Pass at a test velocity of 177 km/h (110 mph).

### 5. Significance and Use

5.1 Most asphalt shingles that have demonstrated wind resistance by this test have also performed well in use. Natural wind conditions differ with respect to intensity, duration, and turbulence; these conditions are beyond the means of this test to simulate. The results of this test do not directly correlate to wind speeds experienced in service, and no accommodation is made in this test method for building height, building exposure category, or building importance factor.

5.2 Many factors influence the wind resistance of shingles in the field; for example, temperature, time, roof slope, contamination by dirt and debris, and fasteners that are misaligned or under-driven. It is beyond the scope of this test method to address all of these influences. This test method is designed to evaluate the wind resistance of asphalt shingles as described in the scope when representative samples are applied to test panels in accordance with the manufacturer's instructions and conditioned as specified before testing.

### 6. Apparatus

6.1 *Test Machine*, capable of delivering a horizontal stream of air through a rectangular opening 914 mm (36 in.) wide and 305 mm (12 in.) high at a velocity not less than 97 km/h (60 mph). At a velocity of not less than 177 km/h (110 mph), it is permissible to add a duct section to the equipment to lower the height of the rectangular opening to 152 mm (6 in.). The test velocity shall not vary more than  $\pm 5$  mph as measured at a minimum of three evenly spaced locations across the orifice. The machine shall be equipped with an adjustable stand to receive a test panel and be adapted to setting the test panel at any desired slope, at any horizontal distance from the lower edge of the duct opening, and at various angles incident to the wind direction.

6.2 *Timer*, capable of reading to the nearest minute.

6.3 *Mechanical Circulation Conditioning Cell or Room*, having forced circulation of air capable of receiving a 1.27-m (50-in.) wide by 1.68-m (66-in.) long, or larger test panel on a slope of 2:12 (17 %), or the lowest slope recommended in the

<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 D08.02 on Prepared Roofings, Shingles and Siding Materials.

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<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.