



Designation: D5076 – 90 (Reapproved2006)

## Standard Test Method for Measuring Voids in Roofing and Waterproofing Membranes<sup>1</sup>

This standard is issued under the fixed designation D5076; 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 includes two procedures for measuring the area of voids in the adhesive between materials used in roofing and waterproofing systems. Both procedures require a count of the number of voids.

1.2 The values given in SI units are to be regarded as the standard. The values 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:*<sup>2</sup>

[D1079 Terminology Relating to Roofing and Waterproofing](#)  
[D2829 Practice for Sampling and Analysis of Existing Built-Up Roof Systems](#)

### 3. Terminology

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

### 4. Summary of Test Method

4.1 All voids are counted and measured. In addition, in built-up roofing and waterproofing membrane samples, voids may be classified into dry, glazed, uncoated, and overlying voids (see Terminology [D1079](#)). Count and measure only voids with at least one dimension equal to or larger than 13 mm (0.5 in.). Smaller adhesive layer defects are not considered voids.

4.2 The void area in each adhesive layer is estimated with the aid of a template, or alternatively, digitized and measured with a computer.

<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 Dec. 1, 2006. Published February 2007. Originally approved in 1990. Last previous edition approved in 2000 as D5076 – 90 (2000) <sup>$\epsilon$ 1</sup>. DOI: 10.1520/D5076-90R06.

<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.

### 5. Significance and Use

5.1 This laboratory test method can be used on multi-ply roofing and waterproofing systems to measure, classify, and count the voids between felt plies, between insulation layers, and between the membrane and insulation layers. Voids between the felt plies or between the membrane and insulation layer in multi-ply systems can be the seeds for future blisters.

5.2 In one-ply systems, this test method can be used to count and measure the voids in the adhesive in laps and, in adhered systems, in the adhesive between the membrane and the insulation. Voids in the lapping adhesive can be the source of leakage while voids in the lapping adhesive or in the adhesive between the membrane and insulation can be the seeds for future blisters.

### 6. Apparatus

6.1 *Freezer*, for conditioning bituminous samples. A standard freezer, such as that used for storing frozen foods, may be used provided it has the volume to loosely hold the samples to be tested. Do not store food and condition samples in the same equipment.

6.2 *Transparent Sheets*, to record the size and location of the voids. Any clear, rigid sheet that can be marked with a flow pen can be used.

6.3 *Flow Pen*, or other marking device that is compatible with the transparent sheet selected.

6.4 *Void Estimating Template*—A stiff, 305-mm<sup>2</sup> (12-in.<sup>2</sup>) transparent template with a 25.4-mm (1-in.) minimum grid. Special templates can be prepared and used with lap samples, or just part of the above template can be used.

6.5 *Computer Equipment and Software*, for digitizing accurate images, image enhancement such as background leveling, noise cleaning and edge sharpening, and area determination by pixel (point of light) count.<sup>3</sup>

### 7. Sampling, Test Specimens, and Test Units

7.1 Samples may be from the laboratory or the field as in Practice [D2829](#).

<sup>3</sup> The sole source of supply of the software known to the committee at this time is Jandel Corp., 3030 Bridgeway, Sausalito, CA 94965. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.