



## Standard Test Method for Water Migration in Honeycomb Core Materials<sup>1</sup>

This standard is issued under the fixed designation F 1645; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This test method covers the determination of water migration in honeycomb core materials.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound units given may be approximate.

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 271 Test Method for Density of Core Materials for Sandwich Constructions<sup>2</sup>

### 3. Significance and Use

3.1 This test method determines the rate of water migration between honeycomb core cells.

### 4. Apparatus

4.1 *Micrometer, Gage, or Caliper*, capable of measuring accurately to 0.025 mm (0.001 in.).

4.2 *Weighing Scale*, capable of measuring accurately to  $\pm 0.5$  %.

4.3 *Water Migration Setup*, burret, rubber hose, clamps, stand.

### 5. Test Specimens

5.1 The test specimens may be any convenient size of core material as agreed upon by the purchaser and the seller. The minimum specimen size recommended is 76- by 76-mm (3- by 3-in.) cross section and 12.7 mm (0.5 in.) thick. The facings shall be of impervious, transparent material to permit visual observation into the core cells by illumination, and they shall be bonded to the core with a water-resistant adhesive.

### 6. Conditioning

6.1 It is recommended that the tests be conducted at  $23 \pm 3^\circ\text{C}$  ( $73 \pm 5^\circ\text{F}$ ),  $50 \pm 5$  % relative humidity, and the

specimens be conditioned to constant weight ( $\pm 1$  %) under those conditions before testing.

### 7. Procedure

7.1 Determine the density of each specimen per Test Method C 271, if required.

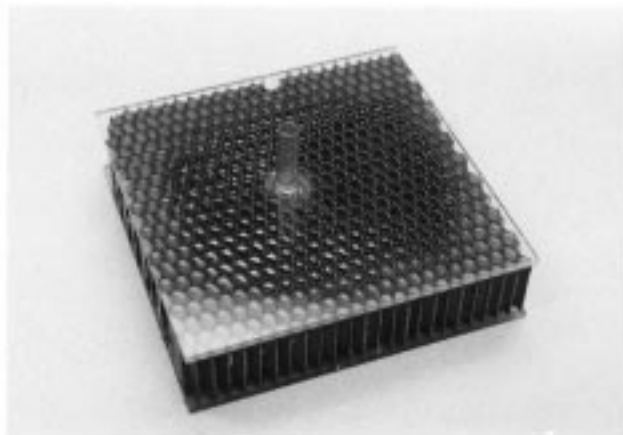
7.2 Bond the facings to the core. Clear plastic facings are recommended as this will make it possible to drill a hole in the upper facing over a single cell and observe where the water migrated. The adhesive shall be applied so that fairly heavy fillets form between the core cell walls and the facings, thus assuring a watertight joint between the facings and core. A clear adhesive is recommended.

7.3 A hole shall be drilled through the upper facing over one centrally located core cell. The hole must lead into only one cell.

7.4 A suitable connection shall be provided, such as a tube bonded over the hole, for the application of hydrostatic pressure (see Fig. 1).

7.5 The primary cell shall be filled with distilled or deionized water, measuring the volume of water required or the increase in weight of the sandwich specimen. It is recommended that a colored dye be added to the water.

7.6 The primary cell shall then be connected to a room temperature distilled or deionized water source under a constant head of 914 mm (3 ft) (see Fig. 2).



**FIG. 1 Water Migration Specimen**

7.7 The amount of water, transfused during a 24-h period,

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 15.03.