



Designation: D3576 – 20

Standard Test Method for Cell Size of Rigid Cellular Plastics¹

This standard is issued under the fixed designation D3576; 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 covers the determination of the apparent cell size of rigid cellular plastics by counting the number of cell-wall intersections in a specified distance.

1.2 Procedure A requires the preparation of a thin slice, not more than one half the average cell diameter in thickness, that is mechanically stable. For most rigid cellular plastics this limits the test method to materials with an average cell size of at least 0.2 mm.

1.3 Procedure B is intended for use with materials whose friable nature makes it difficult to obtain a thin slice for viewing.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—The annex to ISO 2896 is technically equivalent to this test method.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D883 Terminology Relating to Plastics

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.22 on Cellular Materials - Plastics and Elastomers.

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² 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.

D2842 Test Method for Water Absorption of Rigid Cellular Plastics

D6226 Test Method for Open Cell Content of Rigid Cellular Plastics

E456 Terminology Relating to Quality and Statistics

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *ISO Standard:*

ISO 2896 Cellular Plastics, Rigid—Determination of Water Absorption³

3. Terminology

3.1 Terms used in this standard are defined in accordance with Terminology D883, unless otherwise specified. For terms relating to precision and bias and associated issues, the terms used in this standard are defined in accordance with Terminology E456.

4. Summary of Test Method

4.1 *Procedure A*—The cellular plastic specimen is cut to not more than one half the average cell diameter in thickness on a slicer and the shadowgraph is projected on a screen by the use of a cell-size scale slide assembly and a projector. The average chord length is obtained by counting the cells on cell-wall intersections and converting this value to average cell size by mathematical derivation.

4.2 *Procedure B*—The cellular plastic specimen is sliced to provide a smooth surface. The cell walls are accented by the use of a marking pen or marking ink. The average chord length is obtained by counting the cell wall intersections and converting this value to average cell size by mathematical derivation.

5. Significance and Use

5.1 Several physical properties of rigid cellular plastics are dependent on cell size and cell orientation. Measuring water absorption and open-cell content in accordance with Test Method D2842 and Test Method D6226 requires knowledge of surface cell volume, which uses cell size values in the calculations.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard