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.

Designation: D6772/D6772M – 22

Standard Test Method for Dimensional Stability of Sandwich Core Materials[1]

This standard is issued under the fixed designation D6772/D6772M; 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 sandwich core dimensional stability in the two plan dimensions.

1.2 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.2.1 Within the text, the inch-pound units are shown in brackets.

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

1.4 *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]

C271/C271M Test Method for Density of Sandwich Core Materials

D883 Terminology Relating to Plastics

D3878 Terminology for Composite Materials

D5229/D5229M Test Method for Moisture Absorption Properties and Equilibrium Conditioning of Polymer Matrix Composite Materials

E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E456 Terminology Relating to Quality and Statistics

3. Terminology

3.1 *Definitions*—Terminology D3878 defines terms relating to high-modulus fibers and their composites, as well as terms relating to sandwich constructions. Terminology D883 defines terms relating to plastics. Terminology E456 and Practice E177 define terms relating to statistics. In the event of a conflict between terms, Terminology D3878 shall have precedence over the other terminologies.

3.2 *Symbols:*

3.2.1 *CV*—coefficient of variation statistic of a sample population for a given property (in percent)

3.2.2 L_i— initial (pre-test) measured dimension

3.2.3 L_f—post-heating measured dimension

3.2.4 S_{n-1}—standard deviation statistic of a sample population for a given property

3.2.5 x_i—test result for an individual specimen from the sample population for a given property

3.2.6 $\bar{x}$—mean or average (estimate of mean) of a sample population for a given property

4. Summary of Test Method

4.1 This test method consists of placing a small piece of sandwich core material in an elevated temperature environment for a specified period of time. After cooling, the dimensional changes in the planar dimensions are measured and compared to the initial measurements taken prior to thermal exposure, both immediately after heating and after re-conditioning. A typical honeycomb core specimen is shown in Fig. 1.

5. Significance and Use

5.1 Sandwich panel cores may change planar dimensions when heated. This phenomenon can be associated with the effects of heating upon the core material itself, as well as changes in core moisture content resulting from the heating cycle. It is prudent to know if this may be problematic with regard to the intended final part dimensions.

[1] This test method is under the jurisdiction of ASTM Committee D30 on Composite Materials and is the direct responsibility of Subcommittee D30.09 on Sandwich Construction.

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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.

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