



Designation: D8066/D8066M – 23

Standard Practice Unnotched Compression Testing of Polymer Matrix Composite Laminates¹

This standard is issued under the fixed designation D8066/D8066M; 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 practice provides instructions for using the Test Method [D6484/D6484M](#) open hole compression test fixture to determine unnotched compressive strength of multi-directional laminates. The composite material forms are limited to continuous-fiber reinforced polymer matrix composites in which the laminate is both symmetric and balanced with respect to the test direction. The range of acceptable test laminates and thicknesses are described in [8.2.1](#).

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:*

[D695](#) Test Method for Compressive Properties of Rigid Plastics

[D792](#) Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

¹ This test method is under the jurisdiction of ASTM Committee [D30](#) on Composite Materials and is the direct responsibility of Subcommittee [D30.05](#) on Structural Test Methods.

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[D883](#) Terminology Relating to Plastics

[D3410/D3410M](#) Test Method for Compressive Properties of Polymer Matrix Composite Materials with Unsupported Gage Section by Shear Loading

[D3171](#) Test Methods for Constituent Content of Composite Materials

[D3878](#) Terminology for Composite Materials

[D5229/D5229M](#) Test Method for Moisture Absorption Properties and Equilibrium Conditioning of Polymer Matrix Composite Materials

[D5467/D5467M](#) Test Method for Compressive Properties of Unidirectional Polymer Matrix Composite Materials Using a Sandwich Beam

[D6484/D6484M](#) Test Method for Open-Hole Compressive Strength of Polymer Matrix Composite Laminates

[D6507](#) Practice for Fiber Reinforcement Orientation Codes for Composite Materials

[D6641/D6641M](#) Test Method for Compressive Properties of Polymer Matrix Composite Materials Using a Combined Loading Compression (CLC) Test Fixture

[D7249/D7249M](#) Test Method for Facesheet Properties of Sandwich Constructions by Long Beam Flexure

[E6](#) Terminology Relating to Methods of Mechanical Testing

[E132](#) Test Method for Poisson's Ratio at Room Temperature

[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 structural sandwich constructions. Terminology [D883](#) defines terms relating to plastics. Terminology [E6](#) defines terms relating to mechanical testing. 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 standards.

3.2 *Definitions of Terms Specific to This Standard*—

NOTE 1—If the term represents a physical quantity, its analytical dimensions are stated immediately following the term (or letter symbol) in fundamental dimension form, using the following ASTM International standard symbology for fundamental dimensions, shown within square