



Designation: D3529 – 16 (Reapproved 2021)

Standard Test Methods for Constituent Content of Composite Prepreg¹

This standard is issued under the fixed designation D3529; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of the fiber content, fiber areal weight, matrix solids content and matrix content of composite material prepregs. Optionally, the matrix solids content can also be determined after a volatiles content has been established. Volatiles content, if appropriate and required, is determined by means of Test Method [D3530](#).

1.2 Procedure A of this test method applies to composite prepreg of primarily thermosetting matrices that can be extracted in organic solvent. The reinforcement and filler must be substantially insoluble in the selected extraction reagent. This procedure may also be used for the same purposes to extract other matrix material types.

1.3 Procedure B of this test method uses ignition loss of a composite prepreg matrix and applies to organic matrix composite systems containing reinforcing fibers that do not change mass when exposed to the matrix combustion method.

1.4 This test method assumes a two-part material system (plus volatiles) and does not distinguish between hybrid reinforcements or matrices. Use with hybrid composites is limited to determination of total reinforcement or total matrix content.

1.5 Matrix solids determination for Procedures A or B uses Test Method [D3530](#) to determine volatiles content.

1.6 Alternate techniques for determining constituent content include Test Methods [C613](#) (resin content by Soxhlet extraction) and [D3171](#) (used principally for consolidated laminates).

1.7 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.8 *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 deter-*

mine the applicability of regulatory limitations prior to use. Specific precautionary information is given in Sections 8 and 9.

1.9 *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

[C613](#) Test Method for Constituent Content of Composite Prepreg by Soxhlet Extraction

[D883](#) Terminology Relating to Plastics

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

[D3530](#) Test Method for Volatiles Content of Composite Material Prepreg

[D3878](#) Terminology for Composite Materials

[E177](#) Practice for Use of the Terms Precision and Bias in ASTM Test Methods

2.2 *NFPA Standard:*³

[NFPA 86](#) Standard for Ovens and Furnaces

3. Terminology

3.1 *Definitions*—Terminology [D3878](#) defines terms relating to composite materials. Terminology [D883](#) defines terms relating to plastics. Practice [E177](#) defines terms relating to statistics. In the event of a conflict between terms, Terminology [D3878](#) shall have precedence over the other documents.

3.1.1 *fiber content, n*—the amount of fiber present in a composite or prepreg expressed either as percent by weight or percent by volume. This is sometimes stated as a fraction, that is, fiber volume fraction. See Terminology [D3878](#).

3.1.2 *matrix content, n*—the amount of matrix present in a composite or prepreg expressed either as percent by weight or

¹ This test method is under the jurisdiction of ASTM Committee [D30](#) on Composite Materials and is the direct responsibility of Subcommittee [D30.03](#) on Constituent/Precursor Properties.

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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.

³ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.