



Standard Test Method for Constituent Content of Composite Prepreg by Soxhlet Extraction¹

This standard is issued under the fixed designation C 613/C 613M; 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 Department of Defense.

^{ε1} NOTE—Warning/precaution notes were moved into the text editorially in October 2003.

1. Scope

1.1 This test method covers a Soxhlet extraction procedure to determine the matrix content, reinforcement content, and filler content of composite material prepreg. Volatiles content, if appropriate, and required, is determined by means of Test Method D 3530/D 3530M.

1.1.1 The reinforcement and filler must be substantially insoluble in the selected extraction reagent and any filler must be capable of being separated from the reinforcement by filtering the extraction residue.

1.1.2 Reinforcement and filler content test results are total reinforcement content and total filler content; hybrid material systems with more than one type of either reinforcement or filler cannot be distinguished.

1.2 This test method focuses on thermosetting matrix material systems for which the matrix may be extracted by an organic solvent. However, other, unspecified, reagents may be used with this test method to extract other matrix material types for the same purposes.

1.3 Alternate techniques for determining matrix and reinforcement content include Test Methods D 3171 (matrix digestion), D 2584 (matrix burn-off/ignition), and D 3529/D 3529M (matrix dissolution). Test Method D 2584 is preferred for reinforcement materials, such as glass, quartz, or silica, that are unaffected by high-temperature environments.

1.4 The values stated in SI units are to be regarded as standard.

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 and health practices and determine the applicability of regulatory limitations prior to use. Specific precautionary statements are given in Section 9 and 7.2.3 and 8.2.1.*

2. Referenced Documents

2.1 ASTM Standards:²

- D 883 Terminology Relating to Plastics
- D 2584 Test Method for Ignition Loss of Cured Reinforced Resins
- D 3171 Test Method for Constituent Content of Composite Materials
- D 3529/D 3529M Test Method for Matrix Solids Content and Matrix Content of Composite Prepreg
- D 3530/D 3530M Test Method for Volatiles Content of Composite Material Prepreg
- D 3878 Terminology of Composite Materials
- E 122 Practice for Calculating Sample Size to Estimate, With Specified Tolerable Error, the Average for Characteristic of a Lot or Process
- E 177 Practice for Use of Terms Precision and Bias in ASTM Test Methods
- E 456 Terminology Relating to Quality and Statistics
- E 1309 Guide for Identification of Composite Materials in Computerized Material Property Databases
- E 1471 Guide for Identification of Fiber-Reinforced Polymer-Matrix Composite Materials in Databases

2.2 NFPA Standard:

- NFPA 86 Standard for Ovens and Furnaces³

3. Terminology

3.1 *Definitions*—Terminology D 3878 defines terms relating to composite materials. Terminology D 883 defines terms relating to plastics. Terminology E 456 and Practice E 177 define terms relating to statistics. In the event of a conflict between terms, Terminology D 3878 shall have precedence over the other documents.

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.