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Standard Guide for Preparation of Flat Composite Panels with Processing Guidelines for Specimen Preparation[1]

This standard is issued under the fixed designation D 5687/D 5687M; 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 guide provides guidelines to facilitate the proper preparation of laminates and test specimens from fiber-reinforced organic matrix composite prepregs. The scope is limited to organic matrices and fiber reinforcement in unidirectional (tape) or orthagonal weave patterns. Other forms may require deviations from these general guidelines. Other processing techniques for test coupon preparation, for example, pultrusion, filament winding and resin-transfer molding, are not addressed.

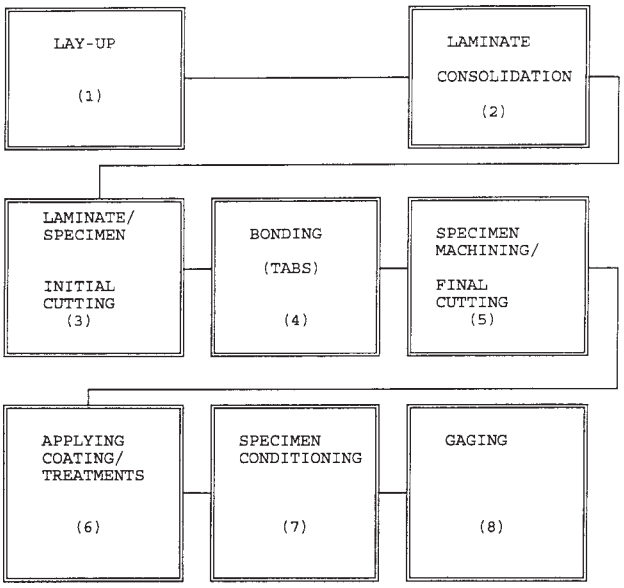
1.2 Specimen preparation is modeled as an 8-step process that is presented in Fig. 1 and Section 8. Laminate consolidation techniques are assumed to be by press or autoclave. This practice assumes that the materials are properly handled by the test facility to meet the requirements specified by the material supplier(s) or specification, or both. Identification and information gathering guidelines are modeled after Guide E 1309. Test specimens shall be directly traceable to material used as designated in Guide E 1434. Proper test specimen identification also includes designation of process equipment, process steps, and any irregularities identified during processing.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text the inch-pound units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.4 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*



NOTE 1—Material identification is mandatory. Continuous traceability of specimens is required throughout the process.

Process checks (Appendix X4) may be done at the end of each step to verify that the step was performed to give a laminate or specimen of satisfactory quality.

Steps 4 and 5 may be interchanged. For aramid fibers, step 5 routinely precedes step 4.

Steps 6, 7 and 8 may be interchanged.

FIG. 1 8 Step Mechanical Test Data Model

C 297 Test Method for Flatwise Tensile Strength Sandwich Constructions[2]

D 123 Terminology Relating to Textiles[3]

D 792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement[4]

D 883 Terminology Relating to Plastics[4]

[1] This guide is under the jurisdiction of ASTM Committee D30 on Composite Materials and is the direct responsibility of Subcommittee D30.04 on Lamina and Laminate Test Methods.

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[2] *Annual Book of ASTM Standards*, Vol 15.03.

[3] *Annual Book of ASTM Standards*, Vol 07.01.

[4] *Annual Book of ASTM Standards*, Vol 08.01.

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