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.

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Standard Terminology for Composite Materials[1]

This standard is issued under the fixed designation D3878; 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 These definitions cover generic terms, including terms of commercial importance, that appear in one or more standards on composites containing high-modulus (greater than 20 GPa (3×10^6 psi)) fibers.

1.2 The definitions cover, in most cases, special meanings used in the composites industry. No attempt has been made to include common meanings of the same terms as used outside the composites industry.

1.3 Definitions included have, in general, been approved as standard.

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]

D123 Terminology Relating to Textiles

2.2 *Industry Standard:*[3]

CMH-17 Composite Materials Handbook

3. Terminology

3.1 *Definitions:*

±45° laminate, *n*—a balanced and symmetric laminate consisting of plies with ply orientations of only +45° and −45°.

angleply laminate, *n*—a balanced laminate consisting of plies with ply orientations of only plus theta and minus theta.

balanced laminate, *n*—a laminate that contains one ply with a ply orientation of minus theta for every ply of the same material and thickness with a ply orientation of plus theta.

bond, *n*—the act of adhering one surface to another, with or without the use of an adhesive at the interface.

co-cure, cocure—see **cure**.

co-bond, cobond, n—the act of curing (or consolidating) and bonding one semi-solid detail (for example, uncured thermoset polymer or a thermoplastic polymer) to a solid detail in a single process through principal action of the matrix, possibly with the inclusion of a separate layer of adhesive at the interface.

secondary bond, n—the act of bonding two or more already-cured thermoset composite or other solid details, during which the only chemical or thermal reaction, or both, occurring is the curing of the adhesive layer at the interface.

DISCUSSION—For example, a previously cured composite or metal doubler bonded via an adhesive to a previously cured skin, or a previously cured face sheet bonded via an adhesive to a honeycomb core. Also applies to bonding metallic substrates such as aluminum face sheets onto aluminum honeycomb core.

braided fabric—see *braided fabric* under **fabric.**

breather string, *n*—a string, composed of a material such as glass, that provides a vacuum path from the laminate to a breather.

bundle, *n*—a general term for a collection of essentially parallel filaments.

carbon fiber precursor, *n*—a material from which carbon fiber is made by pyrolysis.

DISCUSSION—Polyacrylonitrile, rayon, or pitch fibers are commonly used precursors.

catenary:

filament catenary, n—the difference in length of the filaments in a specified length of tow, end, or strand as a result of unequal tension; the tendency of some filaments in a taut horizontal tow, end, or strand to sag lower than others.

roving catenary, n—the difference in length of the ends, tows, or strands in a specified length of roving as a result of unequal tension; the tendency of some ends, tows, or strands in a taut horizontal roving to sag lower than others.

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[1] This terminology is under the jurisdiction of ASTM Committee D30 on Composite Materials and is the direct responsibility of Subcommittee D30.01 on Editorial and Resource Standards.

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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 SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096, http://www.sae.org.

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