



Standard Specification for Epoxy Resin System for Composite Skin, Honeycomb Sandwich Panel Repair¹

This standard is issued under the fixed designation E1556; 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.

1. Scope

1.1 This specification covers the requirements for an epoxy resin system intended for the repair of sandwich panels for durable, rigidwall, relocatable structures. It must be usable in a field environment and shall not require the use of special equipment such as autoclaves or presses. The epoxy system covered by this specification shall be usable for simultaneous impregnation of a wet-layup composite skin and bonding of that skin to a substrate honeycomb core. The material shall withstand exposure to temperatures from -54 to 93°C (-65 to 199°F) and high relative humidity, and also the combination of stress, temperature, and relative humidity that are expected to be encountered in service.

1.2 The values stated in SI units are to be regarded as standard where only SI units are given or where SI units are given first followed by inch-pound units; where inch-pound units are given first followed by SI units, the inch-pound units are to be regarded as the standard.

1.3 The following safety hazards caveat refers only to the test methods described in this specification. *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:²

C297/C297M Test Method for Flatwise Tensile Strength of Sandwich Constructions

¹ This specification is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.53 on Materials and Processes for Durable Rigidwall Relocatable Structures.

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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.

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

D2344/D2344M Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates

D2584 Test Method for Ignition Loss of Cured Reinforced Resins

D2734 Test Methods for Void Content of Reinforced Plastics

D3165 Test Method for Strength Properties of Adhesives in Shear by Tension Loading of Single-Lap-Joint Laminated Assemblies

E631 Terminology of Building Constructions

E1091 Specification for Nonmetallic Honeycomb Core for Use in Shelter Panels

E1749 Terminology Relating to Rigid Wall Relocatable Shelters

2.2 Military Specifications:³

MIL-I-24768 Insulation, Plastic, Laminated, Thermosetting, Glass-Cloth, Epoxy-Resin

2.3 Military Standards:³

MIL-STD-129 Military Marking for Shipping and Storage

MIL-STD-1916 DOD Preferred Methods for Acceptance of Product

2.4 Commercial Standards:⁴

SAE-AMS-C-9084 Cloth, Glass, Finished for Epoxy Resin Laminates

3. Terminology

3.1 *Definitions*—See Terminologies **E631** and **E1749** for definitions of general terms used in this specification.

4. Physical Requirements

4.1 Working Characteristics:

4.1.1 *Application*—The components of the epoxy resin shall be readily hand-mixed to a smooth consistency suitable for application. It shall be uniform and free of lumps. The resin components, once mixed, shall not settle out. The epoxy

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

⁴ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.