



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

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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

- C 297 Test Method for Flatwise Tensile Strength of Sandwich Constructions
- D 792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

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.

D 2344 Test Method for Strength of Polymer Matrix Composite Materials by Short-Beam Method

D 2584 Test Method for Ignition Loss of Cured Reinforced Resins

D 2734 Test Methods for Void Content of Reinforced Plastics

D 3165 Test Method for Strength Properties of Adhesives in Shear by Tension Loading of Single-Lap-Joint Laminated Assemblies

E 874 Practice for Adhesive Bonding of Aluminum Facings to Nonmetallic Honeycomb Core for Shelter Panels

E 1091 Specification for Nonmetallic Honeycomb Core for Use in Shelter Panels

2.2 Military Specifications:

MIL-I-24768 Insulation, Plastic, Laminated, Thermosetting, Glass-Cloth, Epoxy-Resin³

2.3 Military Standards:

MIL-STD-1916 DOD Preferred Methods for Acceptance of Product³

2.4 Commercial Standards

SAE-AMS-C-9084 Cloth, Glass, Finished for Epoxy Resin Laminates⁴

3. Physical Requirements

3.1 Working Characteristics:

3.1.1 *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 material shall be suitable for the wet-layup impregnation of SAE-AMS-C-9084 glass cloth and for application to core materials over the temperature range of 16 to 38°C (60 to 100°F) and at relative humidities of 30 to 75 %.

3.1.2 *Application Life*—The application life of a 200-g kit of the mixed epoxy system shall be at least 60 min when tested in accordance with 3.1.5. The epoxy shall be considered to

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁴ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.