



AEROSPACE MATERIAL SPECIFICATION

AMS3695™

Issued 1983-04
Reaffirmed 2022-01

Superseding AMS3695

Adhesive Film, Epoxy-Base
for High Durability Structural Adhesive Bonding

RATIONALE

AMS3695 has been reaffirmed to comply with the SAE five year review policy.

1. SCOPE:

1.1 Form:

This specification and its supplementary detail specifications cover film adhesives compounded from modified epoxy resins in the form of ready-to-use sheet, supplied in rolls, either supported by mat or by woven monofilaments or unsupported.

1.2 Application:

Primarily for bonding metal-to-metal or aluminum honeycomb sandwich assemblies for service usage over the temperature ranges specified in the applicable detail specification.

1.3 Classification:

The requirements specified herein and in the applicable detail specification define each adhesive on the basis of anticipated maximum service temperature, as shown in the title of each detail specification.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) and Aerospace Recommended Practices (ARP) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

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<https://www.sae.org/standards/content/AMS3695/>

Documents
Document Sharing Hub

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 1425	Deicing/Anti-Icing Fluid, Aircraft, Ethylene-Glycol Base
AMS 2350	Standards and Test Methods
AMS 2825	Material Safety Data Sheets
AMS 3020	Oil, Reference, for "L" Stock Rubber Testing
AMS 3021	Reference Fluid for Testing Di-ester (Polyol) Resistant Material
AMS 3107/1	Primer, Adhesive, Corrosion-Inhibiting, High Durability Epoxy, -55° to +95°C (-67° to +200°F)
AMS 3107/2	Primer, Adhesive, Corrosion-Inhibiting, High Durability Epoxy, -55° to +120°C (-67° to +250°F)
AMS 3107/3	Primer, Adhesive, Corrosion-Inhibiting, High Durability Epoxy, -55° to +175°C (-67° to +350°F)
AMS 3107/4	Primer, Adhesive, Corrosion-Inhibiting, High Durability Epoxy, -55° to +215°C (-67° to +420°F)
AMS 4037	Aluminum Alloy Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn (2024; -T3 Flat Sheet, -T351 Plate)
AMS 4041	Aluminum Alloy Sheet and Plate, Alclad, 4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024 and 1-1/2% Alclad 2024-T3 Flat Sheet; 1-1/2% Alclad 2024 -T351 Plate)
AMS 4348	Honeycomb Core, Aluminum Alloy, Corrosion Inhibited, For Sandwich Construction, 5052, 350 (175)

2.1.2 Aerospace Recommended Practices:

ARP 1524	Surface Preparation and Priming of Aluminum Alloy Parts for High Durability Structural Adhesive Bonding, Phosphoric Acid Anodizing
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2.2 ASTM Publications:

Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B117	Salt Spray (Fog) Testing
ASTM C 297	Tension Test of Flat Sandwich Constructions in Flatwise Plane
ASTM D471	Rubber Property - Effect of Liquids
ASTM D898	Applied Weight Per Unit Area of Dried Adhesive Solids
ASTM D1151	Effect of Moisture and Temperature on Adhesive Bonds
ASTM D1655	Aviation Turbine Fuels
ASTM D1780	Conducting Creep Tests of Metal-to-Metal Adhesives
ASTM D1781	Climbing Drum Peel Test for Adhesives
ASTM D2919	Determining Durability of Adhesive Joints Stressed in Shear by Tension Loading
ASTM D3165	Strength Properties of Adhesives in Shear by Tension Loading of Laminated Assemblies
ASTM D3166	Fatigue Properties of Adhesives in Shear by Tension Loading (Metal/Metal)
ASTM D3529	Resin Solids Content of Carbon Fiber-Epoxy Prepreg
ASTM E252	Thickness of Thin Foil and Film by Weighing

2.3 U.S. Government Publications:

Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Specifications:

QQ-A-250/4 Aluminum Alloy 2024, Plate and Sheet
QQ-A-250/5 Aluminum Alloy Alclad 2024, Plate and Sheet
TT-S-735 Standard Test Fluids, Hydrocarbon

2.3.2 Military Specifications:

MIL-T-5624 Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-L-23699 Lubricating Oil, Aircraft Turbine Engines, Synthetic Base

2.3.3 Military Standards:

MIL-STD-794 Parts and Equipment, Procedures for Packaging and Packing of
MIL-STD-1472 Human Engineering Design Criteria for Military Systems, Equipment and Facilities

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications:

The requirements for a specific adhesive shall consist of all the requirements specified herein in addition to the requirements specified in the applicable detail specification. In case of any conflict between the requirements of this basic specification and an applicable detail specification, the requirements of the detail specification shall govern.

3.2 Material:

The adhesive shall be a modified epoxy film supplied in sheet or rolls, consisting either entirely of adhesive material or of a carrier impregnated with adhesive, with a suitable nonadhering separator film on both surfaces. The adhesive film shall be used with AMS 3107 corrosion-inhibiting primer and cured in accordance with the applicable detail specification to form an adhesive/primer system and shall not have a deleterious effect on the surface of materials being bonded.

3.2.1 Storage Life: The adhesive shall meet the requirements of this specification and the applicable detail specification when tested at any time up to the time and under the temperature conditions specified in the applicable detail specification, when the adhesive has been stored in the original sealed packages.

3.3 Properties:

Adhesive shall conform to the following requirements:

3.3.1 Uncured Adhesive: The adhesive, as-received, shall conform to the requirements of this specification and the applicable detail specification; tests shall be performed on the product supplied and in accordance with specified test methods.

- 3.3.1.1 Color: The adhesive shall have a readily visible color, as specified in the applicable detail specification and shown in the applicable preproduction test report.
- 3.3.1.2 Solids Content: Shall be as specified in the applicable detail specification, determined in accordance with ASTM D3529.
- 3.3.1.3 Weight: Shall be as specified in the applicable detail specification, determined in accordance with ASTM D898.
- 3.3.1.4 Thickness: When specified, thickness shall be determined by micrometer or in accordance with ASTM E252.
- 3.3.1.5 Working Life: Shall be not less than the time period specified in the applicable detail specification. Working life is defined as that period of time when the adhesive film is exposed to the temperature and humidity limits specified in the applicable detail specification after removal from refrigerated storage and with the protective separator film removed until the adhesive is reduced to a nonworkable state and the adhesive is no longer capable of producing bonds of the required strength.
- 3.3.2 Curing: The adhesive shall cure within the times and temperatures specified in the applicable detail specification. Adhesive curing at different time and temperature combinations will be acceptable at the option of the purchaser provided that the adhesive, in conjunction with the primer specified in the applicable detail specification, meets the requirements for that primer/adhesive combination; such adhesive shall be identified with the curing parameters required to produce satisfactory adhesive bonds.
- 3.3.3 Cured Adhesive: The cured adhesive, used in conjunction with the primer specified in the applicable detail specification, shall meet the requirements specified in the applicable detail specification, determined as specified in Table I. Tests shall be conducted on specimens cut from panels prepared in accordance with 4.5.1.2.

3.4 Toxicity and Safety:

The adhesive, uncured, during cure, and fully cured shall be nontoxic and shall not be classed as a safety hazard under the definitions in MIL-STD-1472.

3.5 Quality:

The adhesive, as received by purchaser, shall be uniform in quality and condition, clean, smooth (wrinkle or distortion free), homogeneous, and free from contamination or foreign materials and imperfections detrimental to usage of the adhesive.

3.6 Size and Tolerances:

The film or sheet weight and the corresponding thickness and the width, up to a maximum of 48 in. (1200 mm), shall be as specified in the applicable detail specification or as ordered. Individual rolls shall contain not over 600 sq ft (55 m²), unless otherwise ordered. The following tolerances shall apply: