



AEROSPACE MATERIAL SPECIFICATION

AMS3107™**REV. A**

Issued 1983-04
Revised 1991-04
Reaffirmed 2022-08

Superseding AMS3107

Primer, Adhesive, Corrosion-Inhibiting
for High Durability Structural Adhesive Bonding

RATIONALE

AMS3107A 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 corrosion-inhibiting, modified epoxy primers in the form of ready-to-use sprayable liquids.

1.2 Application:

Primarily for use as a primer on metal surfaces in preparation for high-durability, structural, adhesive bonding of sandwich panels and for metal-to-metal attachments or as a primer in preparation for final paint-type finishing. The primers are useful over the temperature range specified in the applicable detail specification.

1.3 Classification:

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

1.4 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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Documents

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2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

2.1.1 Aerospace Material Specifications:

AMS 1425	Deicing Fluid, Aircraft, Ethylene-Glycol Base
AMS 2825	Material Safety Data Sheets
AMS 3020	Oil, Reference, for "L" Stock Rubber Testing
AMS 3021	Fluid, Reference for Testing Di-Ester (Polyol) Resistant Materials
AMS 3695/1	Adhesive Film, Epoxy-Base, High Durability, for 95°C (200°F) Service
AMS 3695/2	Adhesive Film, Epoxy-Base, High Durability, for 120°C (250°F) Service
AMS 3695/3	Adhesive Film, Epoxy-Base, High Durability, for 175°C (350°F) Service
AMS 3695/4	Adhesive Film, Epoxy-Base, High Durability, for 215°C (420°F) Service
AMS 4037	Aluminum Alloy Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated
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)

2.1.2 Aerospace Recommended Practices:

ARP1524	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 ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 117	Salt Spray (Fog) Testing
ASTM D 471	Rubber Property - Effect of Liquids
ASTM D 522	Elongation of Attached Organic Coatings with Conical Mandrel Apparatus
ASTM D 1193	Reagent Water
ASTM D 1200	Viscosity of Paints, Varnishes, and Lacquers by Ford Viscosity Cup
ASTM D 1475	Density of Paint, Varnish, Lacquer, and Related Products
ASTM D 1655	Aviation Turbine Fuels
ASTM D 2794	Resistance of Organic Coatings on the Effects of Rapid Deformation (Impact)
ASTM D 3359	Measuring Adhesion by Tape Test

2.3 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Federal Specifications:

TT-P-28 Paint, Aluminum, Heat Resisting, (1200 Deg. F)
PPP-P-1892 Paint, Varnish, Lacquer, and Related Materials, Packaging, Packing, and Marking of

2.3.2 Military Specifications:

MIL-P-14105 Paint, Heat-resisting (For Steel Surfaces)
MIL-L-23699 Lubricating Oil, Aircraft Turbine Engines, Synthetic Base
MIL-A-46106 Adhesive Sealants, Silicone, RTV, General Purpose
MIL-C-83286 Coating, Urethane, Aliphatic Isocyanate, for Aerospace Applications
MIL-S-83430 Sealing Compound, Integral Fuel Tank and Fuel Cell Cavities, Intermittent Use to 360°F (182°C)

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications:

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

3.2 Material:

The primer shall be a sprayable liquid composed of a resin or resin mixture, pigmented and compounded to be compatible with epoxy-base film or paste adhesives. The primer shall impart corrosion resistance and shall contribute to the adhesive properties of the primer-and-adhesive system.

- 3.2.1 Storage Life: The primer, stored in the original closed containers, shall meet requirements of this specification and applicable detail specification when tested at any time up to the time and temperature conditions specified in the applicable detail specification.

3.3 Properties:

Primer shall conform to the following requirements:

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

- 3.3.1.1 Color: The primer shall be pigmented with a readily visible color, as specified in the applicable detail specification, and, after spraying, shall produce a uniform coat, determined in accordance with 4.5.2.
- 3.3.1.2 Solids Content: Shall be as specified in the applicable detail specification, determined in accordance with 4.5.3.
- 3.3.1.3 Inhibitor Content: The quantity of corrosion inhibitor shall be as specified in the applicable detail specification, expressed as a percentage of the solids content, determined in accordance with 4.5.3.
- 3.3.1.4 Weight Per Volume: Shall be as specified in the applicable detail specification, determined in accordance with ASTM D 1475.
- 3.3.1.5 Viscosity: Shall be as specified in the applicable detail specification, determined in accordance with ASTM D 1200.
- 3.3.1.6 Sprayability: The primer shall be sprayable in accordance with manufacturer's instructions to a dry film thickness of 0.0003 to 0.0006 inch (7.6 to 15.2 μm), determined in accordance with 4.5.2. The use of solvents for sprayability shall be as specified in the applicable detail specification. The final sprayed coat shall be continuous, smooth, and uniform in thickness and color, determined by any suitable thickness measuring instrument and visual examination of the spray pattern.
- 3.3.1.7 Pot Life: The pot life or "working life" of the primer shall not be less than the time period specified in the applicable detail specification, determined in accordance with 4.5.2. Pot life is defined as that period of time at a specified temperature wherein the viscosity changes by increasing not more than 100% of the original value and the primer is still in a condition that it can be used to produce films meeting the other property requirements of this specification and applicable detail specification.
- 3.3.2 Curing: The primer shall cure within the times and temperatures specified in the applicable detail specification. Primer curing at different time and temperature combinations will be acceptable at the option of purchaser provided that the primer, in conjunction with adhesive film specified in the applicable detail specification, meets requirements for that primer-adhesive combination; such primer shall be identified with the curing parameters required to produce satisfactory bonds.
- 3.3.3 Primer Film: The primer, applied to panels prepared as specified in 4.5.1.2 and cured in accordance with the applicable detail specification, shall meet the requirements specified in the applicable detail specification, determined as specified below:

Requirement	Test Method
Adhesion	4.5.4
Flexibility	ASTM D 522
Impact Resistance	ASTM D 2794
Hardness	4.5.5
Fluid Resistance	4.5.6
Corrosion Resistance	4.5.7
Humidity Resistance	4.5.8
Heat Resistance	4.5.9
Low-Temperature Shock	4.5.10
Compatibility with Sealant	4.5.11
Compatibility with Topcoat	4.5.12

- 3.3.4 Cured Primer/Adhesive System: The cured primer, used in conjunction with the film adhesive specified in the applicable detail specification, shall meet the room-temperature lap shear and metal-to-metal peel requirements for that primer/adhesive system specified in the applicable adhesive detail specification.

3.4 Quality:

The primer, as received by purchaser, shall be uniform in quality and condition, homogenous, and free from contamination or foreign material that would alter its use or function and, when sprayed, shall yield a smooth, continuous, uniform coat possessing a uniformly pigmented color.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the primer shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the primer conforms to the requirements of this specification and applicable detail specification.

4.2 Classification of Tests:

- 4.2.1 Acceptance Tests: Shall be as specified in the applicable detail specification and shall be performed on each lot.