



AEROSPACE MATERIAL SPECIFICATION

AMS-C-27725™

REV. E

Issued 1999-10
Revised 2025-07

Superseding AMS-C-27725D

Coating, Corrosion-Preventative,
for Aircraft Integral Fuel Tanks
for Use to 250 °F (121 °C)

RATIONALE

This revision is a Five-Year Review that incorporates latest G-8 committee standard specification format, clarifies Type classifications, and clarifies certain test requirements.

1. SCOPE

1.1 Form

This specification establishes requirements for three types of corrosion-preventative coatings for protection of aircraft integral fuel tanks.

1.2 Application

The coating materials covered by this specification are typically applied to the interior of aircraft integral fuel tanks to protect against corrosion from fuel contaminants, but usage is not limited to such applications. They are suitable for use in a service temperature range from -65 to +250 °F (-54 to +121 °C).

1.3 Classification

The coating materials covered by this specification shall be classified as follows:

Type 1 - A chromated, two-component polyurethane coating with less than 420 g/L volatile organic compound (VOC) content

Type 2 - A chromated, two-component polyurethane coating with less than 720 g/L VOC content

Type 3 - A chrome-free coating with less than 420 g/L VOC content

Grade 1 - Standard

Grade 2 - Diethylene glycol monomethyl ether (DiEGME) resistant

See 8.5 for classification guidance when Type or Grade are not specified.

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 that 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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2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS1640	Corrosion Removing Compound for Aircraft Surfaces
AMS2629	Fluid, Jet Reference
AMS3276	Sealing Compound, Integral Fuel Tanks and General Purpose, Intermittent Use to 360 °F (182 °C)
AMS3721	Tape for Organic Coatings Adhesion Testing
AMS3819	Cloths, Cleaning, For Aircraft Primary and Secondary Structural Surfaces
AMS4045	Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr, 7075: (-T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AS5127/1	Aerospace Standard Test Methods for Aerospace Sealants, Two-Component Synthetic Rubber Compounds
AS9100	Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B36/B36M	Brass Plate, Sheet, Strip and Rolled Bar
ASTM D130	Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
ASTM D257	DC Resistance or Conductance of Insulating Materials
ASTM D740	Standard Specification for Methyl Ethyl Ketone
ASTM D1200	Viscosity by Ford Viscosity Cup
ASTM D1353	Nonvolatile Material in Volatile Solvents for Use in Paint, Varnish, Lacquer and Related Products
ASTM D1475	Density of Liquid Coatings, Inks, and Related Products
ASTM D1974	Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
ASTM D3330/D3330M	Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape
ASTM D3359	Standard Test Methods for Measuring Adhesion by Tape Test
ASTM D3363	Standard Test Method for Film Hardness by Pencil Test

ASTM D3960 Volatile Organic Compound (VOC) Content of Paint and Related Coatings

ASTM D4171 Standard Specification for Fuel System Icing Inhibitors

2.3 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

MIL-A-8625 Anodic Coatings for Aluminum and Aluminum Alloys

MIL-DTL-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys

MIL-DTL-81706 Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys

MIL-PRF-23699 Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code 0-156

MIL-PRF-83282 Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft

MIL-PRF-85570 Cleaning Compounds, Aircraft, Exterior

MIL-PRF-87937 Cleaning Compound, Aerospace Equipment

2.4 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.p-r-i.org.

PD2000 Procedures for an Industry Qualified Product Management Process

PRI QPL-AMS-C-27725 Products Qualified Under AMS-C-27725

2.5 ANSI Accredited Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI Z400.1/Z129.1 Hazardous Workplace Chemicals – Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

2.6 ISO Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories

3. TECHNICAL REQUIREMENTS

3.1 Materials

The formulation chemistry for Types 1 and 2 shall be polyurethane with curing agents, thinners, and additives suitable for various application methods, including brushing, dipping, and spraying. The formulation chemistry for Type 3 coatings is not specified, provided the material will meet the performance requirements set forth in this specification (see Section 3) and is suitable for various application methods, including brushing, dipping, and spraying.

3.1.1 Prohibited Materials

The manufacturer of the coating material shall certify that no cadmium or cadmium compounds, and no lead or lead compounds, have been intentionally added to the coating material formulation. The manufacturer of Type 3 coating material shall additionally certify that no chromium or chromium compounds have been intentionally added to the coating material formulation.

3.1.2 Toxicity

The coating material shall have no adverse effect on the health of personnel when used for its intended purpose in accordance with the manufacturer's instructions and with appropriate handling procedures and precautions stated on the safety data sheet (see 4.8.2).

3.2 Quality

The coating material, as received by the purchaser, shall be uniform in quality and condition, free from foreign materials, and free from imperfections detrimental to the usage of the compound. There shall be no separation of ingredients that cannot be readily dispersed by hand mixing.

3.3 VOC Content

The volatile organic compound (VOC) content of the admixed coating material, when prepared in accordance with the manufacturer's instructions, shall be less than 420 g/L (Types 1 and 3) and less than 720 g/L (Type 2) when tested in accordance with ASTM D3960 (calculate using Paragraph 10.2 and Appendices X2 and X3).

3.4 Properties

The coating material, when prepared in accordance with the manufacturer's instructions, shall conform to the requirements shown in Table 1, determined in accordance with specified test methods.

Table 1 - Properties

Paragraph	Property	Requirement	Test Method
3.4.1	Density, variation from acceptable qualification ± 5 sample listed on QPL, percent		4.7.5.1
3.4.2	Viscosity, seconds		4.7.5.2
	Initial	13 to 23 (Type 1 and 3) 10 to 20 (Type 2)	
	After application (pot) life	≤ 35 (Type 1 and 3) ≤ 20 (Type 2)	
3.4.3	Application (pot) life, hours, min	4	4.7.5.3
3.4.4	Drying time, hours, max, at standard conditions	2	4.7.5.4
3.4.5	Cure time, max		4.7.5.5
	Standard conditions	21 days (Type 1 and 3) 14 days (Type 2)	
	Force cure	24 hours at standard conditions followed by 24 hours at 140 °F (60 °C) and 50% RH	
3.4.6	Surface appearance	Smooth, uniform, and free of film porosity and irregularities	4.7.5.6
3.4.7	Coating hardness, min	F	4.7.5.19



Paragraph	Property	Requirement	Test Method
3.4.8	Resistance to water	No blistering, softening by more than 1 pencil hardness unit from unexposed hardness, leaching, corrosion extending more than 1/8 inch (3.2 mm) beyond the scribe mark or in from the edge of the panel, or other visible deleterious effect and adhesion rating $\geq 4A$	4.7.5.7
3.4.9	Resistance to salt water and fuel	No blistering, softening by more than 1 pencil hardness unit from unexposed hardness, leaching, shrinkage, corrosion extending more than 1/8 inch (3.2 mm) beyond the scribe mark or in from the edge of the panel, or other visible deleterious effect and adhesion rating $\geq 4A$	4.7.5.8
3.4.10	Resistance to engine oil	No blistering, softening by more than 1 pencil hardness unit from unexposed hardness, leaching, shrinkage, or other visible deleterious effect and adhesion rating $\geq 4A$	4.7.5.9
3.4.11	Resistance to hydraulic fluid	No blistering, softening by more than 1 pencil hardness unit from unexposed hardness, leaching, shrinkage, or other visible deleterious effect and adhesion rating $\geq 4A$	4.7.5.10
3.4.12	Fuel contamination, nonvolatile extractable materials, max	20 mg per 100 mL max nonvolatile extractable materials; no more than slight discoloration or tarnish on freshly polished copper strip	4.7.5.11
3.4.13	Low-temperature flexibility	No cracking, checking, crazing, or loss of adhesion	4.7.5.12
3.4.14	Peel strength, sealing compound to coating materials, min	20 lbf/in (3503 N/m); no adhesive failure between coating and sealant except for bubbles and knife cuts	4.7.5.13
3.4.15	Adhesion, coating material to sealing compound	No cracks in the sealing compound; cracks in cured coating permissible, but cured coating shall not flake from sealant	4.7.5.14
3.4.16	Repairability	No blistering or loss of adhesion	4.7.5.15
3.4.17	Resistance to iron chloride	No blistering, softening by more than 1 pencil hardness unit from unexposed hardness, or corrosion	4.7.5.16.1
		After immersion, coating shall have a resistance $\geq 5.0 \text{ M}\Omega$ per mil thickness	4.7.5.16.2
3.4.18	Resistance to simulated microbial by-products	No blistering, softening by more than 2 pencil hardness units from unexposed hardness, shrinkage, and no more than 5% adhesion loss in each exposure area	4.7.5.17
3.4.19	Resistance to DiEGME (Grade 2 only)	No blistering, coating delamination (maximum of 1/8 inch [3.2 mm] delamination beyond the scribe mark allowed on Type II panel), or softening by more than 2 pencil hardness units from unexposed hardness and adhesion rating $\geq 4B$	4.7.5.18
3.4.20	Accelerated storage stability	Shall conform to initial viscosity, application life, and dry time requirements after elevated storage	4.7.5.21

3.5 Shelf Life

Shelf life for the coating material shall be a minimum of 12 months from the date of manufacture when stored in the original, unopened containers at a temperature between 40 °F (4.4 °C) and 95 °F (35 °C). Coating material repackaged into touch-up kits shall have a minimum shelf life of 6 months from date of repackaging or the remaining shelf life of the oldest component, whichever is less. Repackaged material must be labeled with the original date of manufacture and repackaging date to retain shelf life status.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification of Coating Material

Qualification is the process by which material properties of a coating material are verified through testing at a certified laboratory prior to inclusion on a qualified products list (QPL). All coating materials sold to this specification shall be listed, or approved for listing, on an approved QPL in accordance with PD2000.

4.1.1 Qualified Products Lists

PRI QPL-AMS-C-27725 is the approved QPL managed by the Performance Review Institute (PRI), 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616. Information pertaining to qualification of coating material may be obtained from PRI.

4.1.2 Contract Awards

Awards will be made only for coating materials which are, prior to the award of contract, QPL approved.

4.2 Quality System of Manufacturer

Before submitting a coating material for qualification to this specification for the purpose of being listed on the QPL, the manufacturer shall have a quality system in place that holds a third-party accreditation to AS9100.

4.3 Responsibility for Testing

The manufacturer of the coating material shall supply all samples needed and shall be responsible for the performance of all required tests of this specification.

4.4 Classification of Tests

4.4.1 Qualification Tests

All technical requirements of this specification (see Section 3) are qualification tests. Conformance to these requirements shall be established prior to QPL approval. All qualification testing shall be carried out by a laboratory that is independent of the manufacturer and is accredited per ISO/IEC 17025 with a Scope of Accreditation that is approved by the G-8 Qualified Products Group (QPG).

4.4.2 Acceptance Tests

The technical requirements shown in Table 2 are acceptance tests. Conformance to these requirements shall be established on each batch of coating material. Unless otherwise specified herein, acceptance testing may be carried out by a laboratory of the manufacturer's choosing.

Table 2 - Acceptance tests

Paragraph	Property	Test Method Paragraph
3.3	Volatile organic compound content	3.3
3.4.1	Density	4.7.5.1
3.4.2	Viscosity	4.7.5.2
3.4.3	Application life (viscosity only)	4.7.5.3
3.4.4	Drying time	4.7.5.4
3.4.5	Force cure	4.7.5.5
3.4.6	Surface appearance	4.7.5.6

4.5 Sampling and Testing

Shall be as follows:

4.5.1 For Qualification Tests

Samples shall consist of approximately 2 gallons (7.6 L) of material from a single batch. The material shall be furnished in containers of the type to be used in filling contract orders. Samples shall be identified as follows and forwarded to the activity responsible for testing:

COATING, CORROSION-PREVENTATIVE

For Aircraft Integral Fuel Tanks for Use to 250 °F (121 °C)

AMS-C-27725 TYPE (1, 2, or 3), GRADE (1 or 2)

MANUFACTURER'S PRODUCT IDENTIFICATION

NAME OF MANUFACTURER

BATCH NUMBER

DATE OF MANUFACTURE

DATE OF EXPIRATION

SUBMITTED BY (NAME) (DATE) FOR QUALIFICATION TESTS IN ACCORDANCE WITH AMS-C-27725E

4.5.2 For Acceptance Tests

Samples shall consist of sufficient coating material taken at random from each batch to perform all the required tests. A batch shall be the quantity of material run through a mill or mixer at one time.

4.5.2.1 A statistical sampling plan, acceptable to the purchaser, may be used in lieu of sampling as in 4.5.2.

4.6 Approval, Reapproval, and Recertification

Approval of qualification test results, reapproval, and recertification of qualification for QPL listing shall be in accordance with PD2000, unless otherwise specified herein. Data shall be reviewed by the G-8 QPG.

4.6.1 Approval

The manufacturer shall submit qualification test data to PRI for approval by the G-8 QPG. Qualification will be valid until such time that the conditions in 4.6.2 or 4.6.3 occur or unless qualification is withdrawn per the conditions set forth in PD2000.

4.6.2 Reapproval

The manufacturer shall use ingredients, manufacturing procedures, processes, and methods of inspection on production coating material that are the same as those used on the qualification sample. If necessary to make any change in product formulation, raw materials, basic methods of processing, or plant site, the manufacturer shall submit for reapproval by the G-8 QPG a statement of the proposed changes in ingredients and/or processing and, when requested, sample coating material. Production coating material made by the revised procedure shall not be shipped prior to receipt of reapproval.