



AEROSPACE MATERIAL SPECIFICATION

AMS1435™**REV. E**Issued 1995-04
Revised 2024-03

Superseding AMS1435D

Liquid Runway Deicing/Anti-icing Product

RATIONALE

This specification has been revised to include clarification on qualification requirements, remove 1.3.3 related to the electrochemical dehydrolysis of glycols, 3.2.5.5.1 related to the stress corrosion resistance of AMS4916 titanium alloy specimens, and 8.3 related to the use of terms in ARP1917, and to clarify reporting requirements.

TABLE OF CONTENTS

1.	SCOPE.....	3
1.1	Form.....	3
1.2	Application.....	3
1.3	Precautions.....	3
1.3.1	Product Compatibilities.....	3
1.3.2	Pavement Friction Evaluation.....	3
1.3.3	Repealed.....	4
1.3.5	Airfield Requirements.....	4
1.4	Safety - Hazardous Materials.....	4
1.5	Fluid Qualification.....	4
1.5.1	Previous Qualifications.....	4
2.	APPLICABLE DOCUMENTS.....	4
2.1	SAE Publications.....	4
2.2	ANSI Accredited Publications.....	5
2.3	APHA Publications.....	5
2.4	ASTM Publications.....	5
2.5	EPA Publications.....	6
2.6	ISO Publications.....	6
2.7	LFV Test Method 2-98 Publications.....	6
2.8	Organisation for Economic Co-operation and Development Publications.....	6
2.9	U.S. Government Publications.....	7
3.	TECHNICAL REQUIREMENTS.....	7
3.1	Material.....	7
3.1.1	Environmental Information.....	7
3.1.2	Appearance.....	7
3.2	Physical Properties.....	7
3.2.1	Flash Point.....	8
3.2.2	Specific Gravity.....	8
3.2.3	pH.....	8
3.2.4	Freezing Point.....	8
3.2.5	Effect on Aircraft Metals.....	8

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Documents

Document Sharing Hub

3.2.6	Effect on Transparent Plastics	9
3.2.7	Effect on Painted Surfaces	9
3.2.8	Effect on Unpainted Surfaces	9
3.2.9	Rinsibility	9
3.2.10	Effect on Runway Pavements	9
3.2.11	Storage Stability	10
3.2.12	Performance	11
3.2.13	Effect on Carbon-Brake Systems	11
4.	QUALITY ASSURANCE PROVISIONS	11
4.1	Responsibility for Inspection	11
4.2	Classification of Tests	11
4.2.1	Acceptance Tests	11
4.2.2	Periodic Tests	11
4.2.3	Preproduction Tests	11
4.3	Sampling and Testing	11
4.3.1	Drum Shipments	11
4.3.2	Bulk Shipments	11
4.4	Approval	12
4.5	Reports	12
4.6	Resampling and Retesting	12
5.	PREPARATION FOR DELIVERY	12
5.1	Packaging and Identification	12
6.	ACKNOWLEDGMENT	13
7.	REJECTIONS	13
8.	NOTES	13
8.1	Revision Indicator	13
8.3	Repealed	13
APPENDIX A		14
Table 1	Total immersion corrosion	8
Figure 1	Aggregate size distribution	10

1. SCOPE

1.1 Form

This specification covers runway deicing and anti-icing products in the form of a liquid. Unless otherwise stated, all specifications referenced herein are latest (current) revision.

1.2 Application

These products have been used typically at airports on runways, taxiways, and other aircraft maneuvering areas for the prevention and removal of frozen deposits of snow, frost, and ice, but usage is not limited to such applications. These products must not be used to deice/anti-ice aircraft.

1.3 Precautions

1.3.1 Product Compatibilities

While this specification covers technical requirements for liquid runway deicing/anti-icing products, it does not address the compatibility issue of combining runway deicing products during the operational phase. Products meeting this specification are unique to each manufacturer and could be adversely affected by mixing with other deicing/anti-icing products. It is the user's responsibility to become familiar with the safe and proper use of applying multiple deicing/anti-icing products.

1.3.1.1 Diluting a Liquid Runway Deicing Product

If the liquid deicing/anti-icing product is diluted and subsequently used as a liquid deicing/anti-icing product on runways, taxiways, and other aircraft maneuvering areas, the resulting liquid shall meet the latest revision requirements of AMS1435.

1.3.2 Pavement Friction Evaluation

Airport authorities should ascertain the friction coefficient of the runway after the application of deicing/anti-icing product prior to aircraft landing operations.

1.3.3 Repealed

1.3.4 Airport authorities are advised that runway deicing products can cause failure of runway and taxiway lighting circuits. Damage potential depends on the condition of these systems, quantity of product usage, or the opportunity of product entry into electrical conduit systems. A comprehensive evaluation of the aeronautical lighting systems should be completed as part of winter operations planning.

1.3.5 Airfield Requirements

Some airfields, including USAF-controlled airfields, may have additional requirements not included in this specification that the product must meet for use on the airfield. Consult the governing agency of the airfield to ensure all requirements are met.

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.

1.4.1 Some deicing/anti-icing products may be mildly toxic and contact with human skin and eyes should be avoided. Prolonged exposure to concentrations of vapor and wind-borne mists should be avoided. Prolonged exposure to concentrations exceeding any established threshold limit values (TLV) for those products or its major components should be avoided.

1.5 Fluid Qualification

1.5.1 Previous Qualifications

For products qualified under previous versions of this specification, only tests for which the technical requirements have changed in subsequent versions from the original qualification need to be performed in order for the product to meet the requirements of the current version of this specification.

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.

AMS1431	Solid Runway Deicing/Anti-Icing Product
AMS2470	Anodic Treatment of Aluminum Alloys, Chromic Acid Process
AMS2475	Protective Treatments, Magnesium Alloys
AMS2825	Material Safety Data Sheets
AMS4037	Aluminum Alloy, Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated
AMS4041	Aluminum Alloy, Sheet and Plate, Alclad, 4.4Cu - 1.5Mg - 0.60Mn (2024, -T3 Sheet/-T351 Plate with 1-1/2% Alclad), Solution Heat Treated, Cold Worked and Naturally Aged

AMS4049	Aluminum Alloy, Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075; -T6 Sheet - T651 Plate), Solution and Precipitation Heat Treated
AMS4376	Plate, Magnesium Alloy, 3.0Al - 1.0Zn - 0.20Mn (AZ31B-H26), Cold Rolled and Partially Annealed
AMS4911	Titanium Alloy, Sheet, Strip, and Plate, 6Al - 4V, Annealed
AMS4916	Titanium Alloy Sheet, Strip, and Plate, 8Al - 1Mo - 1V, Duplex Annealed
AMS5045	Steel, Sheet and Strip, 0.25 Carbon, Maximum, Hard Temper
AMS-P-83310	Plastic Sheet, Polycarbonate, Transparent
AIR5567	Test Method for Catalytic Carbon Brake Disk Oxidation
AIR6130	Cadmium Plate Cyclic Corrosion Test
AS6170	Ice Melting Test Method for AMS1431 and AMS1435 Runway Deicing/Anti-Icing Products
AS6172	Ice Undercutting Test Method for AMS1431 and AMS1435 Runway Deicing/Anti-Icing Products
AS6211	Ice Penetration Test Method for AMS1431 and AMS1435 Runway Deicing/Anti-icing Products

2.2 ANSI Accredited Publications

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

ANSI Z400.1/Z129.1-2010 Hazardous Workplace Chemicals - Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

2.3 APHA Publications

Available from American Public Health Association, 800 I Street, NW, Washington, DC 20001-3710, Tel: 202-777-APHA, www.apha.org.

APHA Method 4500-CL Standard Methods for the Examination of Water and Wastewater

2.4 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 C672	Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
ASTM D56	Flash Point by Tag Closed Cup Tester
ASTM D93	Flash Point by Pensky-Martens Closed Cup Tester
ASTM D891	Specific Gravity, Apparent, of Liquid Industrial Chemicals
ASTM D1177	Freezing Point of Aqueous Engine Coolants
ASTM D1193	Reagent Water
ASTM D1568	Sampling and Chemical Analysis of Alkylbenzene Sulfonates
ASTM D4057	Manual Sampling of Petroleum and Petroleum Products

ASTM D4177	Automatic Sampling of Petroleum and Petroleum Products
ASTM E70	pH of Aqueous Solutions with the Glass Electrode
ASTM F483	Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
ASTM F484	Stress Cracking of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds
ASTM F485	Effects of Cleaners on Unpainted Aircraft Surfaces
ASTM F502	Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces
ASTM F519	Mechanical Hydrogen Embrittlement Evaluation of Plating/Coating Processes and Service Environments
ASTM F945	Stress-Corrosion of Titanium Alloys by Aircraft Engine Cleaning Materials
ASTM F1104	Preparing Aircraft Cleaning Compounds, Liquid Type, Water Based, for Storage Stability Testing
ASTM F1110	Sandwich Corrosion Test
ASTM F1111	Corrosion of Low-Embrittling Cadmium Plate by Aircraft Maintenance Chemicals

2.5 EPA Publications

EPA 40 CFRs may be available at <https://www.gpo.gov/fdsys/browse/collection.action?collectionCode=FR>.

EPA Methods, US Title 40 Code of Federal Regulations (CFR)

EPA 40 CFR 797.1300 Daphnid Acute Toxicity Test

EPA 40 CFR 797.1400 Fish Acute Toxicity Test

2.6 ISO Publications

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

ISO 5725 Accuracy (Trueness and Precision) of Measurement Methods and Results

2.7 LFV Test Method 2-98 Publications

Available from Swedish Civil Aviation Administration, LFV Teknik, Box 53, SE-190 45 Stockholm-Arlanda, Sweden.

2.8 Organisation for Economic Co-operation and Development Publications

Available from Organisation for Economic Co-operation and Development, 2 Rue Andre Pascal, 75775 Paris Cedex 16, France, Tel: +33 1 45 24 82 00, www.oecd.org.

OECD Guidelines for Testing of Chemicals, Methods 202 and 203