SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP5062

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Reaffirmed 2007-02

Recommended Test Fluids for Electrical Components Used on Aircraft Exterior or for Ground Support Near Aircraft

RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

1. SCOPE:

1.1 Purpose:

The purpose of this SAE Aerospace Recommended Practice (ARP) is to provide recommended test fluids for testing of electrical components used on aircraft exterior or for ground support near aircraft. These fluids were selected based on a consolidation of test fluids used by military and commercial sources and on review of national and international component specifications.

These recommendations are general guidelines. Safety factors for any unusual testing applications or operating conditions should be given special consideration by the designer.

The test fluids provided are intended to be recommendations and are not intended to limit or supersede those recommended by aircraft or ground support equipment manufacturers.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document 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. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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SAE WEB ADDRESS: **http://www.sae.org**

2.1 SAE Publications:

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

AS1241	Fire Resistant, Phosphate Ester Hydraulic Fluid for Aircraft
AMS 1424	Deicing/Anti-Icing Fluid Aircraft
AMS 1428	Fluid Aircraft Deicing/Anti-Icing
SAE 50	Lubricating Oil

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor, West Conshohocken, PA 19428-2959.

ASTM D 910	Gasoline, Aviation
ASTM D 1665	Test Method of Engler Specific Viscosity of Tar Products

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-1344	Test Methods for Electrical Connectors
MIL-STD-202	Test Methods for Electronic and Electrical Component Parts
MIL-H-5606	Hydraulic Fluid, Petroleum Base; Aircraft Missile and Ordnance
MIL-C-5756	Cable, Power, Electrical, Portable, General Specification for
MIL-L-6082	Lubricating Oil, Aircraft Piston Engine
MIL-C-7974	Cable Assemblies and Attachable Plugs, External Electrical Power, Aircraft, General Specification for
MIL-A-8243	Anti-Icing and Deicing - Defrosting Fluids
MIL-L-23699	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number O-156
MIL-C-81790	Connectors, Receptacle, External Electric Power, Aircraft, General Specification for
MIL-T-83133	Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8) and NATO F-35
MIL-C-87252	Coolant Fluid, Hydrolytically Stable, Dielectric
MIL-C-87937	Cleaning Compounds, Aircraft Exterior Surfaces, Water Dilutable
P-D-680	Dry Cleaning and Degreasing Solvent
TT-I-735	Isopropyl Alcohol
A-A-2904	Thinner, Paint, Mineral Spirits, Regular and Odorless

2.4 DSCC Publications:

Available from Defense Supply Center Columbus, 3990 E. Broad Street, Columbus, OH 43216-5000.

List of Sources for Small Quantities of Aerospace Test Fluids

2.5 NATO Publications:

Available from HQ USAF/XOXX(ISO), Washington, DC 20330-5058.

NATO Type F-34	Turbine Fuel
NATO Type O-117	Lubricating Oil, Aircraft Piston Engine
NATO Type O-156	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
NATO Type H-515	Hydraulic Fire Resistant Fluid (Synthetic Hydrocarbon)

3. DEFINITIONS:

3.1 Abbreviations and Symbols:

DSCC	Defense Supply Center Columbus
AEA	Association of European Airlines
SAE	Society of Automotive Engineers
ASTM	American Society for Testing and Materials
NATO	North Atlantic Treaty Organization
AMS	Aerospace Material Specifications
FAA	Federal Aviation Administration

4. TECHNICAL REQUIREMENTS:

4.1 Test Fluids:

The test fluids listed in Table 1 are recommended for the use of testing of electrical components used within the shadow of the aircraft.

WARNING: The following fluids are highly toxic to skin, eyes and respiratory tract. They are also flammable. Eye and skin protection is required. Good general ventilation is normally adequate.

TABLE 1 - Recommended Test Fluids for Electrical Components Used on Aircraft Exterior or for Ground Support Near Aircraft

Fluid Class	Test Fluid	Preferred Specification	Alternate Specifications
Fuels	Turbine Fuel	MIL-T-83133, JP-8	ASTM D 1665 Jet A-1 or NATO Type F-34
	Aviation Gasoline	ASTM D 910, 1/ Grade 100LL	
Hydraulic Fluids	Petroleum Based	MIL-H-5606	NATO Type H-515
	Phosphate Ester (Fire Resistant)	AS1241 2/	Skydrol, Hy-Jet or other Type IV
Lubricating Oils	Synthetic Base Oil for Turbine Engine	MIL-L-23699	NATO Type O-156
	Piston Engine Oil	MIL-L-6082, 3/ Grade 1100	NATO Type O-117 or SAE 50
Cleaning Fluids	Isopropyl Alcohol (2-propanol)	TT-I-735 4/ Grade A or B	Commercial Grade A or B
	Alkaline Water Based	MIL-C-87937 5/ 6/ Type II or Type IV	
Deicing	Propylene Glycol	AMS 1424	MIL-A-8243 7/ Type 1 or AMS 1428
	Ethylene Glycol	FAA #1	AEA Type 1 or 2 or MIL-A-8243 8/ Type 2
Dielectric Coolant	Silicate Ester Based	MIL-C-87252 9/	Coolanol 25

1/ Replaced MIL-G-5572.
2/ Replaced MIL-H-83306 and MIL-H-8446.
3/ Other grades may be suitable for use.
4/ MIL-STD-1344 and MIL-STD-202 method 215 require 1 part TT-I-735 mixed with 3 parts A-A-2904 type I or P-D-680 type I mineral spirits by volume.
5/ Recommended dilution is 1 part fluid to 3 parts water by volume.
6/ Replaced MIL-C-25769 and MIL-C-87936.
7/ Recommended dilution is 6 parts fluid to 4 parts water by volume - this is propylene glycol based.
8/ Recommended dilution is 6 parts fluid to 4 parts water by volume - this is ethylene glycol based.
9/ Replaced MIL-C-47220.