

AEROSPACE MATERIAL SPECIFICATION

SAE

AMS 3185A

Issued NOV 1995
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Superseding AMS 3185

Hydraulic Fluid, Nonflammable
Chlorotrifluoroethylene (CTFE) Base

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of September 1999, and has been superseded by MIL-H-53119. The requirements of the latest issue of MIL-H-53119 shall be fulfilled whenever reference is made to the cancelled AMS 3185A. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications noting that it is superseded by MIL-H-53119.

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1. SCOPE:

1.1 Purpose:

This specification covers a nonflammable hydraulic fluid, composed with a chlorotrifluoroethylene (CTFE) base, in the form of a liquid.

1.2 Application:

This fluid has been used typically for hydraulic systems of aircraft and selected armored vehicles for usage in the temperature range -65 to +275 °F (-54 to +135 °C), but usage is not limited to such applications.

1.3 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 measure to ensure the health and safety of all personnel involved.

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.

AMS 2825 Material Safety Data Sheets
AMS 3217/4 Test Slab, Fluoroelastomer (FKM), 65 - 75

AS4707 Test Methods, Evaluation of Nonflammable, Chlorotrifluoroethylene Base Hydraulic Fluid

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 97	Pour Point of Petroleum Oils
ASTM D 130	Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test
ASTM D 240	Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter
ASTM D 445	Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM D 664	Neutralization Number by Potentiometric Titration
ASTM D 892	Foaming Characteristics of Lubricating Oils
ASTM D 1405	Estimation of Net Heat of Combustion of Aviation Fuels
ASTM D 1744	Water in Liquid Petroleum Products by Karl Fischer Reagent
ASTM D 2382	Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High -Precision Method)
ASTM D 4057	Manual Sampling of Petroleum and Petroleum Products
ASTM D 4172	Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)

2.3 U.S. Government Publications:

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

MIL-R-83485	Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperatures
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-290	Packaging of Petroleum and Related Products
PPP-C-96	Can, Metal, 28 Gage & Lighter
FED-STD-791	Lubricants, Liquid Fuels, and Related Products; Method of Testing
HSC 29CFR1910.1200	Hazard Communication Standard

3. TECHNICAL REQUIREMENTS:

3.1 Material:

- 3.1.1 Hydraulic fluid shall consist of chlorotrifluoroethylene (CTFE) base fluid with additives to improve lubricity and anti-rust characteristics.
- 3.1.2 Recycled CTFE may be used as base fluid provided it meets all properties shown in Table 1.

TABLE 1 - Properties of CTFE Base Fluid

Property	Value	AS4707 Test Method
Unsaturation, min	60 Minutes	Method 1
Capillary gas chromatography, elution before trimer, max	11%	Method 2

3.1.3 Additives that improve low temperature flow and viscosity-temperature characteristics (pour point depressants and viscosity index improvers) are not permitted.

3.2 Properties:

3.2.1 Base Fluid without Additives: Shall conform to the properties shown in Table 1, determined in accordance with methods and procedures specified in AS4707.

3.2.2 Hydraulic Fluid with Additives: Shall conform to Table 2 and the following; testing shall be performed in accordance with specified test methods: