AEROSPACE MATERIAL SPECIFICATION

AMS3085™	REV. B

Issued 2007-10
Revised 2018-04
Reaffirmed 2024-03

Superseding AMS3085A

Fluid, Reference for Testing AS5780 HPC Class (Polyol) Resistant Material (Also known as Eastman Reference Oil 300)

RATIONALE

Turbine oil base-stocks formulated for high thermal and oxidative stability tend to be more aggressive toward some fluorocarbon elastomer compounds used in aerospace applications. Reference Oil 300 provides a reference fluid that more closely simulates the performance of today's high-performance classification turbine oils described in AS5780. This revision broadens the viscosity limits in Table 1 to be consistent with AS5780 viscosity limits and allow necessary manufacturing margin for this property.

AMS3085B has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

1.1 Form

This specification covers a neopentyl polyol ester fluid (see 8.2) with AS5780 HPC or MIL-PRF-23699 HTS Class performance.

1.2 Application

This fluid has been used typically to evaluate the ability of elastomeric and other polymeric materials to conform to designated requirements after contact with, or immersion in, AS5780 HPC Class and MIL-PRF-23699 HTS Class oils, at a specified time and temperature, as required by an application specification, and its use is limited to such applications. This fluid is not intended for operational use in gas turbine engines (see 8.2). Each application should be considered separately.

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 measures to ensure the health and safety of all personnel involved.

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.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS3085B/

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.

AMS2825 Material Safety Data Sheets

ARP5088 Test Method for the Determination of Total Acidity in Polyol Ester and Diester Gas Turbine Lubricants by Automatic Potentiometric Titration

ARP5996 Evaluation of Coking Propensity of Aviation Lubricants Using the Hot Liquid Process Simulator (HLPS) Single Phase Flow Technique

AS5780 Specification for Aero and Aero-Derived Gas Turbine Engine Lubricants

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 D445 Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)

ASTM D1298 Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

ASTM D6304 Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fisher Titration

ASTM D4057 Manual Sampling of Petroleum and Petroleum Products

2.3 U.S. Government Publications

Copies of these documents are available online at http://quicksearch.dla.mil.

MIL-PRF-7808 Lubricating Oil, Aircraft Turbine Engine, Synthetic Base

MIL-STD-2073-1 DOD Material, Procedures for Development and Application of Packaging Requirements

MIL-PRF-23699 Lubricating Oil, Aircraft Turbine Engine, Synthetic Base

3. TECHNICAL REQUIREMENTS

3.1 Material

Product must be made to Eastman Chemical Company formulation for Eastman Reference Oil 300. Eastman Reference Oil 300 is a synthetic turbo oil of approximately 5 cSt at 212 °F (100 °C) and has been developed for the Aviation Lubricant Industry as an Elastomer reference fluid. It was formulated with a special synthetic base-stock and additives to achieve swell levels in aviation-lubricant-system-fluorocarbon elastomers greater than or equal to previously qualified AS5780 HPC Class oils.

3.2 Properties

The product shall conform to requirements shown in Table 1; tests shall be performed on the fluid supplied and in accordance with specified test methods.

Table 1 - Properties

	Property	Requirement	Test Method
3.2.1	Density at 15 °C	0.997 to 1.005 kg/m^3	ASTM D4052
3.2.2	Viscosity at 212 °F (100 °C)	4.90 to 5.40 cSt	ASTM D445
3.2.3	Viscosity at -40 °F (-40 °C), max	13000 cSt	ASTM D445
3.2.4	Acid Number, max	0.60 mg KOH/g	ARP5088
3.2.5	Water Content by weight, max	0.06%	ASTM D6304
3.2.6	Trace Metal Analysis	SAE AS5780 Table 2	4.5
3.2.7	HLPS Dynamic Coking 20 hours @ 707 °F (375 °C), mg max	0.6	ARP5996
3.2.8	Chromatographic Analysis	Similar to RO 300 Standard	Gas Chromatography

The intent of SAE E34 is to include a fluorocarbon compatibility test method with required limits once a reference O-ring is identified and made available to the industry.

3.3 Quality

The fluid, as received by purchaser, shall be free from water, sediment, and suspended matter. The odor shall not be irritating or nauseating. No substance of known toxicity under normal conditions of handling and use shall be present.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The manufacturer of the fluid shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the fluid conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and shall be performed prior to shipment of fluid by the manufacturer.

4.3 Sampling and Testing

4.3.1 Sampling and testing shall be in accordance with ASTM D4057. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.2 A lot shall be all fluid from one batch presented for manufacturer's inspection at one time.

4.3.3 When a statistical sampling plan has been agreed upon by purchaser and supplier, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.6 shall state that such plan was used.

4.4 Approval

If requested by purchaser, sample fluid shall be submitted for approval by the purchaser before fluid for production use is supplied. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, manufacturer shall submit for re-approval a statement of the proposed changes in ingredients and/or processing and, when requested, sample fluid (see 8.3). Production fluid made by the revised procedure shall not be shipped prior to receipt of approval.

4.5 Test Methods

Refer to AS5780 Table 2 for individual trace element limits and applicable notes regarding calibration and laboratory requirements.

The Gas Chromatographic analysis test will be an internal Eastman Chemical Company method and the report of conformance will indicate that the fluid is similar to an internal Eastman Chemical Company reference sample of Reference Oil 300.

4.6 Reports

The supplier of the fluid shall furnish with each shipment a report from the manufacturer, showing the results of tests to determine conformance to the technical requirements. This report shall include the purchase order number, lot number, AMS3085B, manufacturer's identification, and quantity.

4.6.1 A material safety data sheet conforming to AMS2825, or equivalent, shall be supplied to each purchaser prior to, or with the first shipment of fluid.

4.7 Resampling and Retesting

If any sample used in the above tests fails to meet the specified requirements, disposition of the fluid may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet the specified requirements shall be cause for rejection of the fluid represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Packaging and Identification

5.1.1 A lot of fluid may be packaged in small quantities and delivered under the basic lot approval provided lot identification is maintained.

5.1.2 The fluid shall be packaged in airtight containers of such size and design as to keep ullage to a minimum.

5.1.3 Each container of fluid shall be legibly identified, with not less than the following information on an attached label, using characters which will not be obliterated by normal handling.

FLUID, REFERENCE FOR TESTING POLYOL ESTER (AND DIESTER) RESISTANT MATERIAL
AMS3085B
MANUFACTURER'S IDENTIFICATION
LOT (OR BATCH) NUMBER
QUANTITY
APPROPRIATE WARNINGS OR PRECAUTIONARY NOTICES

5.1.4 Containers of fluid shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the fluid to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

A supplier shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Fluid not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.