AEROSPACE MATERIAL SPECIFICATION

AMS3021™	REV. G

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Superseding AMS3021F

Fluid, Reference for Testing Di-Ester (Polyol) Resistant Material

RATIONALE

This specification is being revised to update information on available test fluids. Reference to Hatco 7700 is being removed, since this fluid is no longer available.

1. SCOPE

1.1 Form

This specification covers a neopentyl polyol ester fluid.

1.2 Application

This fluid has been used typically to evaluate the ability of elastomeric and other polymeric compounds to conform to designated requirements after immersion in the fluid at a specific temperature and time, as required by an applicable 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 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.

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/AMS3021G

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

AS7766 Terms Used in Aerospace Metals Specifications

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 D664 Neutralization Number by Potentiometric Titration

ASTM D1218 Refractive Index and Refractive Dispersion of Hydrocarbon Liquids

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

ASTM D1744 Water in Liquid Petroleum Products by Karl Fischer Reagent

ASTM D4057 Manual Sampling of Petroleum and Petroleum Products

ASTM E222 Standard Test Methods for Hydroxyl Groups Using Acetic Anhydride Acetylation

2.3 U.S. Government Publications

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

FED-STD-791 Testing Method of Lubricants, Liquid Fuels, and Related Products

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

2.4 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Material

The test fluid shall consist of a refined product of neopentyl ester with 0.5% phenothiazine added as an antioxidant.

3.2 Properties

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

Table 1 - Properties

Paragraph	Property	Requirement	Test Method
3.2.1	Specific Gravity at 60/60 °F (16/16 °C)	0.961 to 0.967	ASTM D1298
3.2.2	Viscosity at 100 °F (38 °C)	14.60 to 15.60 cst	ASTM D445
3.2.3	Viscosity at 210 °F (99 °C)	3.0 to 4.0 cst	ASTM D445
3.2.4	Acid Number, Max	0.10 mg KOH/g	ASTM D664
3.2.5	Water Content by Weight, Max	0.10%	ASTM D1744
3.2.6	Refractive Index at 73 °F (23 °C)	1.449 to 1.455	ASTM D1218
3.2.7	C7 Acid Component, Min	93%	4.5
3.2.8	Hydroxyl Content, Max	0.1% by mass	4.5

3.3 Quality

The fluid, as received by the 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.

3.4 Turbonycoil 160 per MIL-PRF-7808 is an acceptable substitute should AMS3021 be commercially unavailable for purchase.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The manufacturer of fluid shall be responsible for the performance of all required tests. The 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

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.

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

4.3.2 When a statistical sampling plan has been agreed upon by the purchaser and supplier, sampling shall be in accordance with such plan in lieu of sampling as in 4.3, and the report of 4.6 shall state that such plan was used.

4.4 Approval

If requested by the 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, the manufacturer shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, sample fluid (see 8.4). Production fluid made by the revised procedure shall not be shipped prior to receipt of approval.

4.5 Test Methods

Shall be as agreed upon by the purchaser and manufacturer for determining the C7 acid component (see 3.2.7) and hydroxyl content (see 3.2.8). A suggested test method for determining the C7 acid component is FED-STD-791, Method 3500. An alternative to FED-STD-791, Method 3500 is currently under development as SAE Aerospace Recommended Practice ARP6670, but ARP6670 is not yet published. A suggested test method for determining the hydroxyl content is ASTM E222.

4.6 Reports

The supplier of 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, AMS3021G, the 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 that will not be obliterated by normal handling:

FLUID, REFERENCE, FOR TESTING DI-ESTER (POLYOL) RESISTANT MATERIAL
AMS3021G
PURCHASE ORDER NUMBER
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 the purchaser, will be subject to rejection.

8. NOTES

8.1 Revision Indicator

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.