

AEROSPACE MATERIAL SPECIFICATION

AMS 3021D

Issued AUG 1979
Reaffirmed MAR 2004
Revised JAN 2007

Superseding AMS 3021C

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

RATIONALE

To revise source of fluid.

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 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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS 2825

Material Safety Data Sheets

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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 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 1218	Refractive Index and Refractive Dispersion of Hydrocarbon Liquids
ASTM D 1298	Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
ASTM D 1744	Water in Liquid Petroleum Products by Karl Fischer Reagent
ASTM D 4057	Manual Sampling of Petroleum and Petroleum Products

3. TECHNICAL REQUIREMENTS

3.1 Material

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 D 1298
3.2.2	Viscosity at 100 °F (38 °C)	14.60 to 15.60 cst	ASTM D 445
3.2.3	Viscosity at 210 °F (99 °C)	3.0 to 4.0 cst	ASTM D 445
3.2.4	Acid Number, max	0.10 milligrams KOH/gram	ASTM D 664
3.2.5	Water Content by weight, max	0.10%	ASTM D 1744
3.2.6	Refractive Index at 73 °F (23 °C)	1.449 to 1.455	ASTM D 1218
3.2.7	C7 Acid Component, min	93%	4.5
3.2.8	Hydroxyl Content, max	0.1%	4.5

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 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

Shall be in accordance with ASTM D 4057. 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 manufacturer's inspection at one time.

4.3.2 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 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 reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, sample fluid (See 8.5). 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 purchaser and manufacturer for determining the C7 acid component (3.2.7) and hydroxyl content (3.2.8).

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, AMS 3021D, manufacturer's identification, and quantity.

4.6.1 A material safety data sheet conforming to AMS 2825, 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 DI-ESTER (POLYOL) RESISTANT MATERIAL

AMS 3021D

PURCHASE ORDER NUMBER _____

MANUFACTURER'S IDENTIFICATION _____

LOT (OR BATCH) NUMBER _____

QUANTITY _____

APPROPRIATE WARNINGS OR PRECAUTIONARY NOTICES _____