



# AEROSPACE MATERIAL

## AMS 3020

Society of Automotive Engineers, Inc. **SPECIFICATION**

Issued 1-15-78  
Revised

400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

### OIL, REFERENCE, FOR "L" STOCK RUBBER TESTING

#### 1. SCOPE:

1.1 Form: This specification covers a petroleum-base reference oil.

1.2 Application: Primarily for use as a reference oil to estimate the ability of elastomeric compounds to conform to specified requirements after immersion at a specified temperature for a specified time.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D92 - Flash and Fire Points by Cleveland Open Cup

ASTM D270 - Sampling Petroleum and Petroleum Products

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

ASTM D611 - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

#### 3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall consist of a highly refined, hydrotreated, straight-run distillate from crude petroleum, containing  $0.20\% \pm 0.01$  of the antioxidant di-t-butyl-p-cresol.

3.2 Properties: The reference base oil shall conform to the following requirements:

3.2.1 Aniline Point: Shall be  $73^{\circ} \text{C} \pm 1$  ( $163^{\circ} \text{F} \pm 2$ ), determined in accordance with ASTM D611.

3.2.2 Viscosity: Shall be  $2.85 - 3.10 \text{ mm}^2/\text{s}$  (cSt) at  $38^{\circ} \text{C} \pm 1$  ( $100^{\circ} \text{F} \pm 2$ ), determined in accordance with ASTM D445.

3.2.3 Flash Point: Shall be not lower than  $95^{\circ} \text{C}$  (203F), determined in accordance with ASTM D92.

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3.3 Quality: The oil shall be free from water, sediment, and suspended matter. The odor shall not be nauseating or irritating. No substance of known dangerous toxicity under normal conditions of handling and use shall be present.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of oil shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the oil conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as qualification tests.

4.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows; a lot shall be all oil from one batch or tank submitted for vendor's inspection at one time:

4.3.1 Acceptance Tests: In accordance with ASTM D270, unless otherwise specified.

4.3.2 Qualification Tests: In accordance with ASTM D270 and as agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Sample oil shall be approved by purchaser before oil for production use is supplied, unless such approval be waived. Results of tests on production oil shall be essentially equivalent to those on the approved sample oil.

4.4.2 Vendor shall use ingredients, manufacturing procedures, and methods of routine inspection on production oil which are essentially the same as those used on the approved sample oil. If any change is necessary in ingredients or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in ingredients and processing and, when requested, sample oil. Production oil made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports: The vendor of oil shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the requirements of this specification. This report shall include the purchase order number, material specification number, lot number, and quantity.

4.6 Resampling and Retesting: If any sample used in the above tests fails to meet the specified requirements, disposition of the oil 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 oil represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

5.1.1 Oil shall be packaged in airtight containers of the size specified.