SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 2641A

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Reaffirmed FEB 2007

Superseding AMS 2641

VEHICLE, MAGNETIC PARTICLE INSPECTION
Petroleum Base

RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

1. SCOPE:

1.1 Form:

This specification covers two types of refined hydrocarbon compounds in the form of liquids.

1.2 Application:

This product has been used typically as a vehicle for the suspension of magnetic particles used in magnetic particle inspection procedures, but usage is not limited to such applications.

1.3 Classification:

Products covered by this specification are classified as follows:

Type 1 Flash Point over 200 °F (93 °C)
Type 2 Flash Point 140 to 200 °F (60 to 93 °C)

1.3.1 Type 1 shall be supplied unless Type 2 is ordered.

1.4 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 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.

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

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2825 Material Safety Data Sheets

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 93 Flash Point by Pensky-Martens Closed Cup Tester
ASTM D 445 Kinematic Viscosity of Transparent and Opaque Liquids (the Calculation of Dynamic Viscosity)
ASTM D 1500 ASTM Color of Petroleum Products (ASTM Color Scale)
ASTM D 2276 Particulate Contamination in Aviation Fuel by Line Sampling
ASTM D 3242 Acidity in Aviation Turbine Fuel
ASTM D 4177 Automatic Sampling of Petroleum and Petroleum Products

2.3 U.S. Government Publications:

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

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

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Shall be a refined petroleum distillate conforming to 3.2.

3.2 Properties:

Vehicle shall conform to the following requirements:

3.2.1 Flash Point: Shall be as follows, determined in accordance with ASTM D 93.

3.2.1.1 Type 1: Over 200 °F(93 °C).

3.2.1.2 Type 2: 140 to 200 °F(60 to 93 °C).

3.2.2 Viscosity: Shall be not higher than 3.0 centistokes at 100 °F(38 °C)and not higher than 5.0 centistokes at the lowest temperature at which the vehicle will be used, determined in accordance with ASTM D 445.

3.2.3 Fluorescence: Shall be not greater than that of a 10-ppm (1.27×10^{-5} molar) solution of quinine sulfate dihydrate in 0.1 N sulfuric acid (H_2SO_4), determined by comparison of the two solutions in 10 x 75 mm round glass tubes. Determinations shall be made in accordance with 3.2.3.1 for preproduction tests and by either 3.2.3.1 or 3.2.3.2 for acceptance tests.

3.2.3.1 Determinations shall be made in a photo-electric fluorometer equipped with an S4 response phototube, Corning 7-37 or 7-39 primary filter, or equivalent, and a combination secondary filter including Corning 3-77 and Kodak 2A, 86A, and CC40Y filers, or equivalent.

3.2.3.2 Determinations may be made by comparison of the two tubes under black light.

3.2.4 (R) Particulate Matter: Shall be not more than 1 .O mg/L, determined in accordance with ASTM D 2276.

3.2.5 Total Acid Number: Shall be not higher than 0.15 mg of potassium hydroxide (KOH) per liter, determined in accordance with ASTM D 3242.

3.2.6 Odor: Shall not be offensive, objectionable, or disagreeable.

3.2.7 (R) Color: Shall be not darker than No. 2 ASTM color, determined in accordance with ASTM D 1500.

3.2.8 Toxicity: The vehicle shall have no adverse effect on the health of personnel when used for its intended purpose. The vehicle shall not contain any components which produce toxic vapors in such concentrations as to be an annoyance to personnel during use under conditions of adequate ventilation. The toxicological properties of the vehicle shall be reported as in 4.5.

3.3 Quality:

The vehicle, as received by purchaser, shall be uniform in quality and condition, clean, and free from foreign materials and other contaminants detrimental to usage of the vehicle.

4. QUALITY ASSURANCE PROVISIONS:

4.1 (R) Responsibility for Inspection:

The vendor of the vehicle shall supply all samples for vendor's tests and 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 vehicle conforms to specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Flash point (3.2.1), viscosity (3.2.2) fluorescence (3.2.3), and odor (3.2.6) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: All technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of the vehicle to a purchaser, when a change in ingredients and/or method of manufacture requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

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

4.3 Sampling and Testing:

Shall be in accordance with ASTM D 4177; a lot shall be all vehicle from one batch or tank offered for delivery at one time. If vehicle cannot be identified by batch or tank, a lot shall consist of not more than 10,000 gallons (37,854 L) offered for delivery at one time.

4.4 Approval:

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

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

4.5 Reports:

The vendor of the vehicle shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the vehicle conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS 2641A, type, date of manufacture, and quantity.

4.5.1 A material safety data sheet conforming to AMS 2825, or equivalent, shall be supplied to each purchaser prior to, or concurrent with, the report of preproduction test results or, if preproduction testing be waived by purchaser, concurrent with the first shipment of vehicle for production use. Each request for modification of vehicle formulation shall be accompanied by a revised data sheet for the proposed formulation.

4.6 Resampling and Retesting:

(R)

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