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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3041B

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Superseding AMS 3041A

MAGNETIC PARTICLES, NONFLUORESCENT
Wet Method, Oil Vehicle, Ready-to-Use

1. SCOPE:

1.1 Form: This specification covers nonfluorescent magnetic particles in the form of a mixed, ready-to-use suspension in an odorless inspection oil vehicle.

1.2 Application: Primarily as the inspection medium in a wet magnetic particle inspection system as defined in AMS 2640 or MIL-STD-1949.

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

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2640 - Magnetic Particle Inspection
AMS 2641 - Vehicle, Magnetic Particle Inspection, Petroleum Base
AMS 2825 - Material Safety Data Sheets
AMS 3042 - Magnetic Particles, Wet Method, Dry Powder.

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

ASTM D96 - Water and Sediment in Crude Oils
ASTM E11 - Wire-Cloth Sieves for Testing Purposes

2.3 U.S. 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 and Packing of
MIL-STD-1949 - Inspection, Magnetic Particle

3. TECHNICAL REQUIREMENTS:

3.1 Material: The product shall be composed of durable magnetic particles, Ø suitable for long time use, which meet the requirements of AMS 3042. The particles shall be supplied ready-to-use, mixed in the proper proportion with odorless inspection oil conforming to AMS 2641 or equivalent oil.

3.2 Storage Life: The product shall meet the requirements specified in 3.3 when tested at any time up to 12 months from date of manufacture.

3.3 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with specified test procedures:

3.3.1 Contamination: The product shall show no evidence of foreign material, agglomeration, or scum, determined by visual examination of the test suspension at the following times:

3.3.1.1 Immediately after thoroughly mixing the test suspension.

3.3.1.2 After mixing the test suspension, allowing it to stand for not less than 30 minutes, and agitating it slightly.

3.3.1.3 During tests to determine other characteristics of the product.

3.3.2 Concentration: The concentration of magnetic particles in the vehicle shall be 1.0 - 2.4 mL of magnetic particles in 100 mL of suspension, determined by mixing the sample thoroughly, filling a 100 mL calibrated centrifuge tube as specified in ASTM D96, allowing to stand undisturbed for at least 60 minutes, and reading, on the calibrated tube, the volume of the particles settled from the suspension.

3.3.3 Sensitivity: The product shall show not less than a five-hole indication Ø of the ring test specimen defined in MIL-STD-1949, determined as follows:

3.3.3.1 Place the ring on a 1-inch (25-mm) diameter copper bar and circularly magnetize in a standard magnetic particle inspection unit by passing 2500 A of direct current through the bar immediately before flushing the ring with the agitated test suspension which has passed the concentration, and contamination tests. Examine the ring under a white light of not less than 100 foot-candles (1075 lm/m^2) at the examining surface.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The manufacturer of the product shall supply all samples for manufacturer's tests 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 sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for Ø contamination (3.3.1), concentration (3.3.2), and sensitivity (3.3.3) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification, are classified as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in material, processing, or both, 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 test material shall be submitted to the cognizant agency as directed by the procuring activity, contracting officer, or request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 Sufficient product shall be taken at random from each lot to perform all required tests. The number of determinations for each requirment shall be as specified in the applicable test procedures or, if not specified therein, not less than three.

4.3.1.1 A lot shall be all product produced in a single production run from the same batch of raw materials under the same fixed conditions and presented for manufacturer's inspection at one time. A lot may be packaged in smaller quantities and delivered under the basic lot approval provided lot identity is maintained.

4.3.1.2 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such a plan in lieu of sampling as in 4.3 and the report of 4.5 shall state that such plan was used.

4.3.2 For Preproduction Tests: Shall be as agreed upon by purchaser and vendor.

4.4 Approval:

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

4.4.2 Manufacturer shall use ingredients, manufacturing procedures, processes, and methods of inspection of production product that are the same as those used on the approved sample product. If necessary to make any changes in ingredients, processing techniques, or manufacturing procedures, manufacturer shall submit for reapproval a statement of the proposed changes and, when requested, sample product. Production product shall not be shipped prior to receipt of reapproval.

4.5 Reports: The manufacturer of the product shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements of this specification. This report shall include the purchase order number, AMS 3041B, manufacturer's material designation, lot number, 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 the product for production use. Each request for modification of product formulation shall be accompanied by a revised data sheet for the proposed formulation.

4.6 Resampling and Retesting: If any sample used in the above tests fails to meet the specified requirements, disposition of the product 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 product 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 Magnetic particles in the form of a mixed, ready-to-use suspension shall be packaged in containers of a type and size agreed upon by purchaser and vendor.