

AEROSPACE MATERIAL SPECIFICATION



AMS 3060A

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Superseding AMS 3060

Submitted for recognition as an American National Standard

COMPOUND, RUST INHIBITING
Aircraft Engine Components

1. SCOPE:

1.1 Form:

This specification covers a rust-inhibiting compound in the form of a liquid concentrate or a water soluble powder.

1.2 Application:

This product has been used typically in the preservation of steel engine components during overhaul, inspection, and re-assembly cycles of gas turbine engines, but usage is not limited to such applications.

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.

2.1 SAE Publications:

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

AMS 2640 Magnetic Particle Inspection

AMS 2825 Material Safety Data Sheets

AMS 3021 Reference Fluid for Testing Di-Ester (Polyol) Resistant Material

AMS 6350 Steel Sheet, Strip, and Plate, 0.95Cr - 0.20Mo (0.28 - 0.33C)
(SAE 4130)

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2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 93 Flash Point by Pensky-Martens Closed Tester

ASTM D 445 Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)

ASTM D 892 Foaming Characteristics of Lubrication Oils

ASTM D 974 Neutralization Number by Color-Indicator Titration

ASTM F 519 Mechanical Hydrogen Embrittlement Testing of Plating Processes and Aircraft Maintenance Chemicals

2.3 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 1911-5094.

MIL-STD-290 Packaging of Petroleum and Related Products

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Composition of the compound shall be optional with the manufacturer, but shall be compounded to meet the requirements of 3.2.

3.1.1 Toxicity: The compound shall not be injurious to personnel when used, for the intended purpose, in accordance with manufacturer's recommendations.

3.2 Properties:

The compound shall conform to the following requirements when prepared for use in accordance with manufacturer's instructions:

3.2.1 Corrosion Protection: Test panels shall exhibit no discoloration or pitting, determined in accordance with 4.5.1.

3.2.2 Compatibility: Test panels shall exhibit foaming characteristics, flash point, viscosity, and neutralization number within 4% of the preproduction values established as in 4.4.1, determined in accordance with 4.5.2.

3.2.3 Surface Appearance: Test panels, after application, shall be free of residues that interfere with evaluation of 0.015 inch (0.38 mm) and larger linear indications when inspected by magnetic particle inspection in accordance with AMS 2640.

3.2.4 Hydrogen Embrittlement: Compound shall be non-embrittling, determined in accordance with ASTM F 519, Type 1a, 1c, or 2a.

3.2.5 Biodegradability: Surfactants used shall be not less than 90% biodegradable. The vendor of the compound shall obtain certification from the surfactant manufacturer stating percent biodegradability of the surfactant and indicating test method used in determination of biodegradability.

3.2.6 Storage Life: Compound stored at $25^{\circ}\text{C} \pm 5$ ($77^{\circ}\text{F} \pm 9$) for one year from date of receipt by purchaser shall show no visual evidence of deterioration and shall meet all other technical requirements of this specification.

3.2.7 Working Life:

Aqueous solutions of the compound prepared, used, and maintained in accordance with manufacturer's instructions shall meet the other technical requirements of this specification for a period of time or for a volume of work as agreed upon by purchaser and vendor.

3.3 Quality:

Compound, as received by purchaser, shall be homogeneous and free from impurities detrimental to usage of the compound.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

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The vendor of the compound shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the compound conforms to the requirements of this specification.

4.2 Classification of Tests:

Tests for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of compound to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.1 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 and Testing:

Sufficient compound shall be selected at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure, or, if not specified therein, not less than two.

4.3.1 A lot shall be all compound produced in a single production run from the same batches of component ingredients under the same fixed conditions and presented for vendor's inspection at one time. An inspection lot shall be not more than 1000 gallons (3785 L) of compound.

4.4 Approval:

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

4.4.1.1 A new or revised compound may be conditionally approved pending completion of the storage life test of 3.2.6. Full approval will be granted following testing for the other technical requirements after completion of storage life testing.

4.4.2 Vendor shall use ingredients, manufacturing procedures and processes, and methods of inspection on production compound which are essentially the same as those used on the approved sample compound. 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 compound. Production compound made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Corrosion Test: Three panels of AMS 6350 steel, nominally 0.020 x 3 x 4 inches (0.51 x 76 x 102 mm), shall be degreased, grit blasted with 100 mesh or finer aluminum oxide at 60 - 90 psi (414 - 621 kPa) to produce a clean, matte finish, cleaned with filtered compressed air, and submerged for 30 seconds $\pm$ 3 in the test compound prepared in accordance with manufacturer's recommended dilution for usage. The panels shall be lifted from the test compound, allowed to drain for approximately one minute, and immediately set at a 45 degree angle on a perforated tray in a test vessel of sufficient size to hold the test specimens. The test vessel shall contain distilled or deionized water to a level of 1/2 inch (12.7 mm) below the perforated tray on which the specimens are set. The lid shall be lightly greased to ensure an air tight fit. The test shall be conducted for 72 hours $\pm$ 1 at 24 to 27 °C (75 to 81 °F).

4.5.2 Compatibility Test: Three panels of AMS 6350 steel, nominally 0.020 x 3 x 4 inches (0.51 x 76 x 102 mm), shall be prepared as in 4.5.1 except that after the 30 seconds immersion and one minute drain period, the panels shall be immersed in one liter of AMS 3021 oil for 24 hours at 25 °C $\pm$ 5 (77 °F $\pm$ 9). After removal of the panels, the oil shall be tested for foam tendency in accordance with ASTM D 892, flash point in accordance with ASTM D 93, viscosity in accordance with ASTM D 445, and neutralization number in accordance with ASTM D 974.

4.6 Reports:

The vendor of compound shall furnish with the initial shipment of compound a report showing the results of tests to determine conformance to the technical requirements except that, for a new or revised compound, the results of the storage life test may be omitted. This report shall include the purchase order number, lot number, AMS 3060A, manufacturer's identification, and quantity.