AEROSPACE MATERIAL SPECIFICATION

AMS1384™	REV. B

Issued 1985-04
Revised 1991-07
Reaffirmed 2007-02
Stabilized 2020-07

Superseding AMS1384A

Acid, Inhibited Phosphoric Aircraft Turbine Engine Components Room Temperature Application

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

AMS1384B has been declared "STABILIZED" by SAE AMS Committee J Aircraft Maintenance Chemicals and Materials and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

1.1 Form:

This specification covers an inhibited phosphoric acid in the form of a liquid concentrate or a water soluble powder for dilution with water.

1.2 Application:

Primarily for derusting of aircraft turbine engine ferrous components and removal of heat scale and other contamination from the surface of nickel alloys by immersion at room temperature. Should not be used on steel parts having hardness of 40 HRC or over.

1.3 Precautions:

Inhibited acid may contain chemicals which, if improperly used, could be hazardous to the health and safety of operators. Protective clothing including eye shields, suitable gloves, and apron should be worn when preparing and using acid. Tanks shall be prepared and operated under conditions of adequate fume extraction and with due regard to the safety recommendations of the manufacturer of the acid mixture together with local workshop safety regulations.

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.

2.1 SAE Publications:

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

AMS 2825 Material Safety Data Sheets

ARP1755 Effect of Cleaning Agents on Aircraft Engine Materials, Stock Loss Test Method

2.2 ASTM Publications:

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

ASTM D 1568 Sampling and Chemical Analysis of Alkylbenzene Sulfonates

ASTM D 2667 Biodegradability of Alkylbenzene Sulfonates

2.3 U.S. Government Publications:

Available from Standardization Documents Order 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 Composition:

Shall be optional with the manufacturer but, when prepared in accordance with manufacturer's instructions, shall form a liquid product, with no solid sediment at room temperature, meeting the requirements of 3.2. Solution make up and control shall be in accordance with manufacturer's instructions and purchaser's requirements.

3.2 Properties:

The product shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the product supplied at the maximum concentration and temperature recommended by the manufacturer.

3.2.1 Stock Loss: Test panels of alloys or electrodeposits shal1 not incur stock loss exceeding 0.000025 inch (0.635 µm) per surface and plasma deposited coatings shall not incur stock loss exceeding 0.0001 inch (2.5 µm) when tested in accordance with ARP1755, Category 6. Where required in ARP1755, stock loss figures shall be reported. Vendor may indicate where the product is not recommended for particular alloys or surface coatings.

3.2.2 Surface Attack: Test panels and bars used for the stock loss test of 3.2.1 shall neither exhibit pitting corrosion nor show visual evidence of surface cracks, when examined at 50X magnification under good oblique surface lighting conditions.

3.2.3 Biodegradability: Vendor shall supply evidence that surfactants used in the product shall be at least 90% biodegradable, determined either in accordance with ASTM D 2667 where relevant to surfactant type or by alternative methods, appropriate to surfactant type, acceptable to purchaser.

3.2.3.1 Evidence of surfactant biodegradability does not guarantee that the acid may be discharged in either concentrated or diluted form into public waterways or sewerage systems; manufacturers shall give advice on the means for disposal.

3.2.4 Storage Stability: Acid, stored at 25 °C + 5 (77 °F + 9) for one year shall show no visual evidence of deterioration and shall meet all other technical requirements.

3.2.5 Performance: Acid, prepared and used in accordance with manufacturer's instructions shall, at room temperature, remove rust from ferrous parts and remove heat scale from nickel alloys. Acid, which meets all other technical requirements, shall be tested for cleaning performance in an approved engine overhaul facility for not less than six months, during which time at least ten turbofan or turbojet engines, or equivalent, shall be processed with satisfactory results before approval for service use is granted by the applicable engine manufacturer.

3.3 Quality:

Acid, as received by purchaser, if a liquid, shall be clear, homogeneous, and free from solid particles and separation and from foreign materials detrimental to usage of the acid and, if a powder form, shall be free flowing, free from lumping caused by moisture absorption, and free from foreign material detrimental to its usage.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

(R) The vendor of the product 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 product 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 acid 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:

Shall be in accordance with ASTM D1568. A lot shall be all acid produced in a single production run from the same batches of raw materials under the same fixed conditions and presented for vendor's inspection at one time. An inspection lot shall not exceed 6,000 gallons (22,712 L) if a liquid or 10,000 pounds (4,536 kg) if a powder. Acid may be packaged in smaller quantities and delivered under the basic lot approval provided lot identification is maintained.

4.4 Approval:

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

4.4.1.1 A new or revised product may be conditionally approved pending completion of the storage stability test of 3.2.4. Full approval will be granted following testing for the other technical requirements after completion of storage stability testing.

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