

Issued 1 APR 1985  
Revised 1 JUL 1991  
Reaffirmed FEB 2007  
Superseding AMS 1382

OXIDE REMOVER COMPOUND, ACIDIC  
Aircraft Turbine Engine Components

### RATIONALE

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

#### 1. SCOPE:

1.1 Form: This specification covers an acidic oxide remover compound in the form of a ready-to-use liquid, liquid concentrate, or water-soluble powder for dilution with water or for dilution with mineral acid as defined by the compound manufacturer.

1.2 Application: Primarily for removal of oxidation products from corrosion-resistant steels, nickel alloys, and cobalt alloys by immersion in a solution of the compound at elevated temperature or room temperature as recommended by the manufacturer of the product.

1.3 Classification: Compounds conforming to this specification are classified as follows:

Type I - Ready-to-use liquid  
Type II - Liquid concentrate  
Type III - Water-soluble powder

1.3.1 Type I shall be supplied unless Type II or Type III is ordered.

1.4 Precautions: Remover compound 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 remover. 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 remover together with local workshop safety regulations.

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- 1.5 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.
- 2.1.1 Aerospace Material Specifications:
- AMS 2825 - Material Safety Data Sheets
- 2.1.2 Aerospace Recommended Practices:
- 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.
- 2.3.1 Military Standards:
- 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: Compound 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 shall not incur stock loss exceeding 0.000025 inch (0.635  $\mu\text{m}$ ) per surface and plasma deposited coatings shall not incur stock loss exceeding 0.0001 inch (2.5  $\mu\text{m}$ ), when tested in accordance with ARP1755, Category 4. Where required in ARP1755, stock loss figures shall be reported. Vendor may indicate where remover is not recommended for particular alloys or surface coatings.
- 3.2.2 Corrosion: Test panels and bars used for the stock loss test of 3.2.1 shall exhibit no surface attack, when examined at 50X magnification under good oblique surface lighting conditions.
- 3.2.3 Biodegradability: Vendor shall supply evidence that surfactants used in the compound 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 compound 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: Compound stored at  $25^{\circ}\text{C} \pm 5$  ( $77^{\circ}\text{F} \pm 9$ ) for one year shall show no visual evidence of deterioration and shall meet all other technical requirements of this specification.
- 3.2.5 Performance: The compound, prepared and used in accordance with manufacturer's instructions, shall remove oxidation products from parts. Compounds, which meet all other technical requirements of this specification, shall be tested for cleaning performance in an approved engine overhaul facility for not less than six months, during which time at least ten turboprop or turbojet engines shall be processed with satisfactory results before approval for service use is granted by the applicable engine manufacturer.
- 3.3 Quality: The compound, 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 compound 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: 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: Shall be in accordance with ASTM D 1568 or other method specified by purchaser. A lot shall be all compound 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 (4536 kg) if a powder.

4.4 Approval:

4.4.1 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 compound.

4.4.1.1 A new or revised compound 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 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 Reports:

4.5.1 The vendor of compound shall furnish with the initial shipment 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 stability test may be omitted. This report shall include the purchase order number, lot number, AMS 1382A, manufacturer's identification, and quantity.