

# AEROSPACE MATERIAL SPECIFICATION

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Superseding AMS 1385

## Compound, Hot Carbon and Paint Remover Aircraft Turbine Engine Components

### FOREWORD

Changes in this Reaffirm are editorial/format only.

#### 1. SCOPE:

##### 1.1 Form:

This specification covers a solvent-based compound in the form of a liquid.

##### 1.2 Application:

This compound has been used typically for removal of carbonaceous soils and paint from aircraft turbine engine parts by immersion in liquid at elevated temperature, but usage is not limited to such applications. This compound should not be used on steel parts having hardness of 40 HRC or over.

##### 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.

##### 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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## 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, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 1568        Sampling and Chemical Analysis of Alkylbenzene Sulfonates

ASTM D 2667        Biodegradability of Alkylbenzene Sulfonates

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

### 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 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.

- 3.1.1 Compounds containing solvents, volatile at the operating temperature, shall be provided with an upper liquid seal serving to retard evaporation from the lower working layer. Solution make up, depth of seal if required, and solution control for the lower and seal phases 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 at the maximum temperature recommended by the manufacturer; if a seal is specified, tests shall be performed on the lower liquid layer through the seal:

- 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 7. 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 Surface Attack: Test panels and bar stock 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. Slight surface discoloration is acceptable.
- 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 °C  $\pm$  5 (77 °F  $\pm$  9) for one year shall show no visual evidence of deterioration and shall meet all other technical requirements.
- 3.2.5 Hydrogen Absorption: Compound shall be non-embrittling, determined in accordance with ASTM F 519, Type 1a, 1c, or 2a, except that unstressed test specimens shall be immersed in the remover compound at producer's recommended operating temperature for 4 hours  $\pm$  0.1, rinsed, and dried. The test specimens shall then be stressed according to type, at room temperature, and left for the required time.
- 3.2.6 Performance: The compound, prepared and used in accordance with manufacturer's instructions, shall remove carbonaceous soils and paint from parts. Compounds which meet 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:

The compound, as received by purchaser, shall be clear, homogeneous, and free from solid particles and separation and from foreign materials detrimental to usage of the compound.

## 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. A lot shall not exceed 6,000 gallons (22,712 L).

### 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 the 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 1385A, manufacturer's identification, and quantity.

4.5.1.1 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 compound for production use. Each request for modification of compound formulation shall be accompanied by a revised data sheet for the proposed formulation.

4.5.2 The vendor of the compound shall furnish with each subsequent shipment a report stating that the compound is of the same composition and has the same properties as the approved sample compound. If results of the storage stability test were not included in the report on the initial shipment of compound, results of that test shall be included in the report on the first shipment following completion of that test. This report shall include the purchase order number, lot number, AMS 1385A, manufacturer's identification, and quantity. If compound from more than one lot is supplied in one shipment, a report shall be supplied for each lot of compound in the shipment.

4.5.3 A bulletin describing the compound and detailed instructions for its use shall be provided by the compound manufacturer. The bulletin shall also include at least mixing instructions, material compatibility, properties, control/analysis procedures, and safety practices including precautions for hazardous ingredients.

#### 4.6 Resampling and Retesting:

If any sample used in the above tests fails to meet the specified requirements, disposition of the compound 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 compound represented. Results of all tests shall be reported.