

Issued 1979-01
Reaffirmed 2000-06
Revised 2011-12
Superseding AMS1640B

**Corrosion Removing Compound
for Aircraft Surfaces**

RATIONALE

Normal specification review.

1. SCOPE

1.1 Form

This specification covers a corrosion-removing compound in the form of a liquid concentrate.

1.2 Application

This method is primarily concerned with the removal of pitting corrosion and heavy surface oxidation from exterior aluminum surfaces of aircraft.

1.3 Precautions

Compounds meeting the requirements of this specification may cause hydrogen embrittlement of high-strength steels and will remove cadmium plate.

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 issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2011 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

**SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AMS1640C>**

SAE WEB ADDRESS:

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2350	Standards and Test Methods
AMS2825	Material Safety Data Sheets
AMS4049	Aluminum Alloy, Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075; -T6 Sheet -T651 Plate), Solution and Precipitation Heat Treated
AMS-QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D 93	Flash Point by Pensky-Martens Closed Cup Tester
ASTM D 1193	Reagent Water
ASTM D 1568	Sampling and Chemical Analysis of Alkybenzene Sulfonates
ASTM D 2196	Viscosity Measurements and Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer
ASTM F 483	Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
ASTM F 484	Stress Cracking of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds
ASTM F 502	Effects of Cleaning and Chemical Maintenance Materials on Plated Aircraft Surfaces
ASTM F 503	Preparing Aircraft Cleaning Compounds, Liquid Type, for Storage Stability Testing
ASTM F 2111	Measuring Intergranular Attack or End Grain Pitting on Metals Caused by Aircraft Chemical Processes

2.3 U. S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

MIL-PRF-25690	Plastic, Sheets and Parts, Modified Acrylic Base, Monolithic, Crack Propagation Resistant
MIL-STD-794	Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS

3.1 Material

Compounds meeting the requirements of this specification shall be viscous, thixotropic, and concentrated. Compounds will readily mix with water to form a homogeneous solution. Compound, diluted with ASTM D 1193, Type IV, water, to use concentration in accordance with manufacturer's recommendations, shall retain its thixotropic properties, shall be suitable for application by rinsing or spraying, and shall be readily removable by wiping or rinsing procedures.

3.1.1 There shall be no violent or dangerous reactions when the concentrate is diluted for use in accordance with manufacturer's recommendations.

3.2 Properties

Compound shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the product supplied in concentrated form and at use dilution recommended by the manufacturer as hereinafter specified.

3.2.1 Concentrated Compound

3.2.1.1 Flash Point

Shall be not lower than 150 °F (65 °C), determined in accordance with ASTM D 93 Pensky Martins Closed Cup Tester.

3.2.1.2 Solubility

Compound shall be completely soluble in water to make a uniform solution free from gelatinous lumps, layering of ingredients, and sediment.

3.2.1.3 Stability

Compound shall remain homogeneous and free from sedimentation and layering of ingredients, determined in accordance with ASTM F 503. Compound, stored in unopened shipping container or use package, shall meet all other technical requirements of this specification at any time up to one year from date of receipt by purchaser.

3.2.2 Concentrated Compound and at Use Dilution

3.2.2.1 Viscosity

Shall be not lower than the following, determined in accordance with ASTM D 2196 at 68 °F ± 4 (20 °C ± 2) using a No. 1 spindle at 6 RPM:

Concentrated Compound	550 cP (mPa·s)
50% Solution of Concentrate in ASTM D 1193, Type IV, Water	55 cP (mPa·s)

3.2.2.2 Immersion Corrosion

Compound shall neither show evidence of pitting, or corrosion nor cause an average weight change on AMS4049 and AMS-QQ-A-250/4 aluminum alloys panels greater than 2.5 mg/in² per 30 minutes (0.4 mg/cm² per 30 minutes), determined in accordance with ASTM F 483 under the test conditions given in 3.2.2.2.1. Staining is not acceptable for AMS4049 panels but is allowable for the AMS-QQ-A-250/4 panels.

3.2.2.2.1 The weighed panels shall be totally immersed in 100 mL of compound, immediately removed, and suspended vertically for 30 minutes ± 1 at 77 °F ± 4 (25 °C ± 2).

3.2.2.3 Intergranular and Pitting Attack on Aluminum.

The compound shall not cause end grain pitting in excess of 0.001 inch (25.4 microns) or intergranular attack in excess of 0.0002 inch (5.1 microns) depth of AMS-QQ-A-200 aluminum alloy 7075-T6511 or 7178-T6511 when tested in accordance with ASTM F 2111 and 3.2.2.3.1.

3.2.2.3.1 Clean the ASTM F 2111 aluminum alloy specimens by wiping with a clean cloth wet with methyl ethyl ketone or other suitable solvent. Allow specimens to air dry. Immerse specimens for 30 minutes in 500 mL of compound. Remove specimens, immediately flush residual compound from the specimen surfaces with flowing water, followed by rinsing with flowing ASTM D 1193, Type IV, water. Allow to air dry. Examine specimens for pitting and intergranular attack in accordance with ASTM F 2111.

3.2.2.4 Effect on Transparent Plastics

Compound shall not craze, stain, or discolor MIL-PRF-25690 stretched acrylic plastic, determined in accordance with ASTM F 484.

3.2.2.5 Effect on Painted Surfaces

Compound shall neither decrease the hardness of the paint film by more than one pencil hardness level nor shall it produce any streaking, discoloration, or blistering of the paint film, determined in accordance with ASTM F 502.

3.3 Quality

Compound, as received by purchaser, shall be a homogeneous liquid free from sediment, abrasives, skins, lumps, and other impurities detrimental to usage of the compound.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

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

4.2 Classification of Tests

4.2.1 Acceptance Tests

Viscosity (3.2.2.1) and immersion corrosion (3.2.2.2) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Flash point (3.2.1.1), solubility (3.2.1.2), effect on transparent plastics (3.2.2.3), and effect on painted surfaces (3.2.2.4) are classified as periodic tests and shall be performed at a frequency selected by the manufacturer unless frequency of testing is specified by purchaser.

4.2.3 Preproduction Tests

All technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of compound to a purchaser, when a change in material, processing, or both requires re-approval as in 4.4.2, and when purchaser deems confirmatory testing to be required.