Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS3065E
Superseding AMS 3065D
Issued 1-1-46
Revised 1-15-80

COMPOUND, CORROSION PREVENTIVE
Thin Film, Fingerprint Removing

1. SCOPE:

1.1 Form: This specification covers corrosion-preventive organic substances dissolved or emulsified in a volatile solvent and supplied in the form of a ready-to-use liquid.

1.2 Application: As a coating to neutralize the corrosive effect of fingerprints on metals, when applied cold before or immediately after handling. Primarily for use during shop processing and interplant shipment, not for extended storage.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2825 - Material Safety Data Sheets
AMS 3120 - Enamel, Glyceryl Phthalate, Black Baking
AMS 3125 - Enamel, Glyceryl Phthalate, Engine Gray
AMS 3132 - Varnish, Phenolic Resin, Corrosion-Preventive
AMS 3160 - Solvent, Petroleum

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D56 - Flash Point by Tag Closed Tester
ASTM D130 - Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test
ASTM D445 - Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM D1748 - Rust Protection by Metal Preservatives in the Humidity Cabinet

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-290 - Packaging, Packing and Marking of Petroleum Products

2.4 ANSI Publications: Available from American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

ANSI B46.1 - Surface Texture

Printed in U.S.A.

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall consist of corrosion-preventive organic substances dissolved or emulsified in a volatile solvent.

3.1.1 Odor: Compound shall be free from disagreeable and offensive odors.

3.1.2 Toxicity: Compound shall contain no ingredients which may be injurious to persons using it under normal conditions and reasonable safety precautions.

3.1.3 Removability: Compound, after evaporation of the volatile portion, shall be readily removable by spraying with, or dipping in, AMS 3160 solvent; no residue shall remain on the piece.

3.2 Properties: Compound shall conform to the following requirements; tests shall be performed in accordance with specified test methods:

3.2.1	Flash Point, min	100° F (38° C)	ASTM D56
3.2.2	Viscosity at 100° F (38°C), max	30cSt (0.000030 m^2/s)	ASTM D445
3.2.3	Corrosion, Copper Strip, at 212° F (100° C)	No pitting and no discoloration darker than ASTM Classification No. 1	ASTM D130
3.2.4	Film Thickness, max	0.001 in. (0.03 mm)	4.5.1

3.2.5 Protection: Compound shall protect polished low-carbon steel and sand blasted low-carbon steel against corrosion for not less than 168 hr, determined in accordance with 4.5.2.

3.2.6 Corrosiveness: Compound shall produce no evidence of pitting or other corrosion, no significant weight change, and no other adverse effect on steel, silver, tin, zinc, cadmium, lead-indium, magnesium, aluminum, brass, and bronze specimens, couples or combinations thereof, glyceryl phthalate enamels, and phenolic varnish; weight change of lead shall be not greater than 10 mg/cm^2, determined in accordance with 4.5.3.

3.2.7 Fingerprint Neutralization: Compound shall suppress corrosion from fingerprints when tested in accordance with 4.5.4.

3.2.8 Water Displacement: Compound shall displace water to such a degree that sandblasted low-carbon steel panels completely wetted with water and then immersed in the compound shall withstand corrosion when tested in accordance with 4.5.5.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of compound shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.6. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the compound conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for copper strip corrosion (3.2.3), film thickness (3.2.4), and protection (3.2.5) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for flash point (3.2.1), viscosity (3.2.2), corrosiveness (3.2.6), fingerprint neutralization (3.2.7), and water displacement (3.2.8) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.2.3 Qualification Tests: Tests to determine conformance to all technical requirements of this specification are classified as qualification tests and shall be performed on the initial shipment of compound to a purchaser, when a change in ingredients or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.3.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

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

4.3.1.1 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 submitted for vendor's inspection at one time.

4.3.2 Periodic Tests and Qualification Tests: As agreed upon by purchaser and vendor.

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. Results of tests on production compound shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production compound which are essentially the same as those used on the approved sample compound. If any change is necessary in ingredients or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material and 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 Film Thickness: A clean, polished panel of shim stock shall be weighed, immersed in compound for 1 min., removed, allowed to drain, and dried in air for 24 hours. Excess compound accumulated at bottom of panel shall be removed with 2 clean blotters, one in each hand, applied to both sides of panel within 1/8 in. (3 mm) of bottom. The coated panel shall be reweighed and film thickness calculated from the equation:

$$F = \frac{C - P}{2.54AD} \quad \text{or} \quad F_1 = \frac{C - P}{10AD}$$

where, F = Film thickness in inches
F_1 = Film thickness in millimetres
C = Weight of coated panel in grams
P = Weight of uncoated panel in grams
A = Total area of both faces of panel in square centimetres
D = Density of nonvolatile portion in grams per cubic centimetre (May be determined by pycnometer after evaporation of solvent.)

4.5.2 Protection:

4.5.2.1 Panels of low-carbon steel, 1/8 x 4 x 1 in. (3 x 100 x 25 mm), some polished to surface roughness of 6 - 12 microin. (0.15 - 0.30 µm), determined in accordance with ANSI B46.1, and others sandblasted, shall be prepared to have smooth edges and rounded corners. Panels shall be wiped with clean dry cloth to remove loose abrasive, thoroughly rinsed in hot hydrocarbon solvent, rinsed in boiling anhydrous methanol, and placed in a dust-free enclosure for drying. Panels not to be used immediately shall be stored in a desiccator.

4.5.2.2 Panels shall be immersed in compound at room temperature for 1 min. without agitation, removed, and allowed to drain at room temperature overnight.

4.5.2.3 Coated panels shall be suspended vertically for 168 hr in a humidity cabinet operated in accordance with ASTM D1748. Total corrosion of both surfaces, except within 1/8 in. (3 mm) of the long edges or within 1/4 in. (6 mm) of the short edges, shall not exceed either one corroded area 2 mm in diameter or two areas each between 1 and 2 mm in diameter on a single panel.

4.5.3 Corrosiveness:

4.5.3.1 Panels of lead, low-carbon steel, brass, bronze, aluminum, and magnesium, and electroplates of silver, tin, lead-indium, cadmium, and zinc, cleaned and, if possible, polished, shall be provided; similar panels coated with either AMS 3120 or AMS 3125 enamel over a primer and panels coated with AMS 3132 varnish shall also be provided. Recommended panel size is 1 in. (25 mm) square.

4.5.3.2 Panels shall be weighed, immersed in compound for 72 hr, except that panels of lead shall be immersed separately and individually in 15 g of compound, removed, washed in clean hydrocarbon solvent, dried, and reweighed. Panels shall be evaluated for significant change in weight or other evidence of corrosion of the metals, except lead, or electroplates, loss of weight of lead greater than that permitted in 3.2.3, and evidence of staining or deterioration of the enamel or varnish films.

4.5.4 Fingerprint Neutralization:

4.5.4.1 A synthetic perspiration solution shall be prepared by dissolving 7 g of sodium chloride, 1 g of urea, and 4 g of lactic acid in 175 mL of distilled water and 525 mL of ethyl alcohol and adjusted to pH of 3.5 ± 0.1, by addition of lactic acid or dilute ammonium hydroxide as necessary.