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400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3065G

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Superseding AMS 3065F

Submitted for recognition as an American National Standard

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:

This compound has been used typically, during shop processing and interplant shipment, but not for extended storage, as a coating to neutralize the corrosive effect of fingerprints on metals when applied before or immediately after handling, but usage is not limited to such applications.

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.

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
AMS 3120 Enamel, Glyceryl Phthalate, Black Baking
AMS 3125 Enamel, Glyceryl Phthalate, Engine Gray Baking
AMS 3132 Varnish, Phenolic Resin, Corrosion-Preventive
AMS 3160 Solvent, Petroleum

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 56	Flash Point by Tag Closed Tester
ASTM D 130	Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tamish Test
ASTM D 445	Kinematic Viscosity of Transparent and Opaque Liquids (the Calculation of Dynamic Viscosity)
ASTM D 1748	Rust Protection by Metal Preservatives in the Humidity Cabinet

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-290 Packaging of Petroleum and Related Products

2.4 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI B46.1 Surface Texture

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 personnel using it under manufacturers recommended conditions and using 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 requirements shown in Table 1, 3.2.5, 3.2.6, 3.2.7, and 3.2.8, determined in accordance with specified test methods.

TABLE 1 - Properties

	Property	Requirement	Test Method
3.2.1	Flash Point, min	100 °F (38 °C)	ASTM D 56
3.2.2	Viscosity at 100 °F (38 °C), max	30 cSt (0.000030 m^2/S)	ASTM D 445
3.2.3	Corrosion, Copper Strip at 212 °F (100 °C)	No pitting and no discoloration darker than ASTM Classification No. 1	ASTM D 130
3.2.4	Film Thickness, max	0.001 inch (0.025 mm)	4.4.1

3.2.5 Protection: Compound shall protect polished, low-carbon steel and sand blasted low-carbon steel against corrosion for not less than 168 hours, determined in accordance with 4.4.2.

3.2.6 (R) 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, copper, lead, cadmium, lead-indium, magnesium, aluminum, brass, and bronze specimens, couples, or combinations thereof, glyceryl phthalate enamels, and phenolic varnish, determined in accordance with 4.4.3. Weight change of lead shall be not greater than 10 mg/cm^2.

3.2.7 Fingerprint Neutralization: Compound shall suppress corrosion from fingerprints when tested in accordance with 4.4.4.

3.2.8 Water Displacement: Compound shall displace water such that sandblasted low-carbon steel panels completely wetted with water and then immersed in the compound shall withstand corrosion when tested in accordance with 4.4.5.

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: Copper strip corrosion (3.2.3), film thickness (3.2.4), and protection (3.2.5) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: 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 periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient compound shall be selected at random from each lot to perform all required tests. The number of determinations 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 presented for vendor's inspection at one time.

4.3.2 For Periodic Tests: Shall be acceptable to purchaser. (R)

4.4 Test Methods:

4.4.1 (R) Film Thickness: A clean, polished panel of shim stock shall be weighed, immersed in compound for 1 minute, removed, allowed to drain, and dried in air for 24 hours ± 1. Excess compound accumulated at bottom of panel shall be removed with two clean blotters, one in each hand, applied to both sides of panel within 1/8 inch (3.2 mm) of bottom. The coated panel shall be reweighed and film thickness calculated using Equation 1.

$$F = \frac{C - P}{2.54AD} \text{ or } F_1 = \frac{10\,(C - P)}{AD} \qquad \text{(Eq. 1)}$$

where:

F = Film thickness in inches
F_1 = Film thickness in millimeters
C = Weight of coated panel in grams
P = Weight of uncoated panel in grams
A = Total area of both faces of panel in square centimeters
D = Density of nonvolatile portion in grams per cubic centimeter (may be determined by pycnometer after evaporation of solvent)

4.4.2 Protection:

4.4.2.1 Panels of low-carbon steel, 1/8 x 1 x 4 inches (3.2 x 25 x 102 mm), some panels polished to surface roughness of 6 to 12 microinches (0.15 to 0.30 µm), determined in accordance with ANSI B46.1, and other panels 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 used immediately shall be stored in a desiccator.

4.4.2.2 (R) Panels shall be immersed in compound at room temperature for 60 seconds ± 5 without agitation, removed, and allowed to drain at room temperature overnight.

4.4.2.3 Coated panels shall be suspended vertically for 168 hours ± 1 in a humidity cabinet operated in accordance with ASTM D1748. Total corrosion of both surfaces, except within 1/8 inch (3.2 mm) of the long edges or within 1/4 inch (6.4 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.

4.4.3 Corrosiveness:

4.4.3.1 (R) Panels of lead, low-carbon steel, brass, bronze, aluminum, and magnesium, and electrodeposits of copper, 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 inch (25 mm) square.

4.4.3.2 Panels shall be weighed, immersed in corrosion preventive compound for 72 hours ± 1, except that panels of lead shall be immersed separately and individually in 15 grams of the 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 of electrodeposits, loss of weight of lead greater than that permitted in 3.2.6, and evidence of staining or deterioration of the enamel or varnish films.

4.4.4 Fingerprint Neutralization:

4.4.4.1 Synthetic perspiration shall be prepared by dissolving 7 grams of sodium chloride, 1 gram of urea, and 4 grams of lactic acid in 175 mL of distilled water and 525 mL of ethyl alcohol and adjusted to a pH of 3.5 ± 0.1 by addition of lactic acid or dilute ammonium hydroxide as necessary.

4.4.4.2 (R) Four sandblasted panels shall be prepared and cleaned as in 4.4.2.1. Each panel shall be dipped in synthetic perspiration solution for 5 seconds, removed, and immediately immersed in corrosion preventive compound for three immersions of 30 seconds each. After the third immersion in the compound, panels shall be removed and allowed to drain in air at room temperature for 24 hours ± 1. Compound shall be washed from two panels with hydrocarbon solvent and examined for corrosion. The remaining two panels shall be exposed to humidity as in 4.4.2.3 for 24 hours ± 1, removed, compound washed from panels with hydrocarbon solvent, and examined for corrosion. Any evidence of corrosion, pitting, or staining, except within 1/8 inch (3.2 mm) of the long edges or within 1/4 inch (6.4 mm) of the short edges, is cause for rejection.

4.4.5 Water Displacement:

4.4.5.1 (R) Four sandblasted panels shall be prepared and cleaned as in 4.4.2.1. Panels shall be immersed in tap water, removed, and immersed immediately in corrosion preventive compound. Water-displacing properties shall be observed after 30 seconds immersion, the panels removed, and the continuity of oil film observed. Any break in the oil film is not acceptable. Two panels shall be allowed to drain in air at room temperature for 24 hours ± 1. The remaining two panels shall be exposed to humidity as in 4.4.2.3 for 24 hours ± 1, compound washed from all panels with hydrocarbon solvent, and all panels examined for corrosion. Any evidence of corrosion, except Within 1/8 inch (3.2 mm) of the long edges or within 1/4 inch (6.4 mm) of the short edges, is cause for rejection.

4.5 (R) Reports:

The vendor of the corrosion preventive compound shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the compound conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS 3065G, manufacturer's identification, and quantity.