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

AEROSPACE MATERIAL SPECIFICATION

AMS 3135B
Superseding AMS 3135A
Issued 6-15-59
Revised 1-15-76

COATING MATERIAL, SILICONE RESIN
400°F (204°C) Cure

1. SCOPE:

1.1 Type: This specification covers an unpigmented silicone-resin-base coating material.

1.2 Application: Primarily for use on chemically or electrochemically treated magnesium and aluminum alloy surfaces to improve the high temperature corrosion and abrasion resistance and the air flow characteristics. The coating may also be used on steel for improvement of corrosion resistance.

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 2475 - Protective Treatments, Magnesium Base Alloys
AMS 2476 - Electrolytic Treatment for Magnesium Base Alloys, Alkaline Type, Full Coat
AMS 4375 - Magnesium Alloy Sheet and Plate, 3.0Al - 1.0Zn (AZ31B-0)

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

ASTM B117 - Salt Spray (Fog) Testing
ASTM D56 - Flash Point by Tag Closed Tester
ASTM D445 - Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM D471 - Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids
ASTM D1475 - Density of Paint, Varnish, Lacquer, and Related Products

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

2.3.1 Federal Specifications:

PPP-P-1892 - Paint, Varnish, Lacquer, and Related Materials; Packaging, Packing, and Marking of

Printed in U.S.A.

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall be as follows:

3.1.1 Resin Coating (by weight):

Nonvolatile	18 - 22%
Volatile	78 - 82%

3.1.1.1 Nonvolatile: Shall be a thermosetting silicone resin.

3.1.1.2 Volatile (by volume):

	min	max
Aromatics	57%	--
Olefins	--	1%
Aliphatics	remainder	

3.2 Properties:

3.2.1 Product Properties:

3.2.1.1 Viscosity: Shall be 3 - 8 centipoises (0.003 - 0.008 Pa·s) at 77° F (25° C), determined in accordance with ASTM D445.

3.2.1.2 Specific Gravity: Shall be 0.88 - 0.89 at 77° F (25° C), determined in accordance with ASTM D1475.

3.2.1.3 Flash Point: Shall be not lower than 80° F (27° C), determined in accordance with ASTM D56.

3.2.1.4 Stability: Seeding out of resin material shall not occur within 30 days of date of manufacture. Skinning and livering shall be absent in partially filled, closed containers at any time up to one week of standing.

3.2.2 Applied Film Properties: The product shall be freely working and shall have acceptable leveling properties when applied by brushing, spraying, or dipping. Recoating, following air drying for not less than 15 min., shall produce no film irregularity.

3.2.3 Cured Film Properties: Shall be as specified in 3.2.3.1 through 3.2.3.6, determined on panels prepared as in 4.5.1.

3.2.3.1 Color and Appearance: The cured film shall be transparent, smooth, uniform, and free from craters, pin holes, sags, runs, bubbles, heavy edges, and other imperfections affecting its continuity. The film shall retain a distinct coloration.

3.2.3.2 Heat Resistance: The film shall withstand exposure to air at 600° F ± 10 (315.6° C ± 5.6) for not less than 48 hr without evidence of chalking, blistering, or loss of adhesion.

3.2.3.3 Corrosion Resistance: Panels subjected to the heat resistance test of 3.2.3.2 shall show no evidence of corrosion after exposure for not less than 200 hr to salt spray test conducted in accordance with ASTM B117.

3.2.3.4 Fuel Resistance: Films shall withstand immersion for not less than 100 hr in ASTM Reference Fuel B (ASTM D471) at room temperature without appreciable softening or other evidence of deterioration.

3.2.3.5 Oil Resistance: Films shall withstand immersion for not less than 100 hr in ASTM Service Fluid No. 101 (ASTM D471) at 300° F ± 5 (148.9° C ± 2.8) without appreciable softening. Slight discoloration of the film will not be objectionable.

3.2.3.6 Adhesion: Film shall not crack, loosen from the panel, or flake at the bend when a panel is bent rapidly at room temperature through an angle of 180 deg (3.14 rad) around a diameter equal to six times the nominal thickness of the panel.

3.3 Quality: Material shall be clear, transparent, homogeneous, and amber colored. It shall be free from bubbles. There shall be no trace of grit or rough particles. Material shall contain no substance of known toxicity under normal conditions of use.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the coating material 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 coating material conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to composition (3.1), viscosity (3.2.1.1), specific gravity (3.2.1.2), flash point (3.2.1.3), applied film properties (3.2.2), color and appearance (3.2.3.1), fuel resistance (3.2.3.4), and adhesion (3.2.3.6) requirements are classified as acceptance or routine control tests.

4.2.2 Qualification Tests: Tests to determine conformance to all technical requirements of this specification are classified as qualification or periodic control tests.

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

4.3 Sampling: Shall be as follows:

4.3.1 Acceptance Tests: Sufficient coating material shall be taken from each lot to permit making the following numbers of tests; a lot shall be all coating material produced in one continuous manufacturing operation from the same lots of raw materials and presented for vendor's inspection at one time.

Property	Reference Paragraph	Number of Tests
Composition	3.1	1
Viscosity	3.2.1.1	1
Specific gravity	3.2.1.2	1
Flash point	3.2.1.3	1
Applied film properties	3.2.2	3 (See 4.3.1.1)
Color and appearance	3.2.3.1	3 (See 4.3.1.1)
Fuel resistance	3.2.3.4	2
Adhesion	3.2.3.6	1

4.3.1.1 These requirements are to be determined on the panels prepared for other tests.

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

4.4 Approval:

4.4.1 To assure adequate performance characteristics, coating material shall be approved by purchaser before coating material for production use is supplied, unless such approval be waived. Results of tests on production coating material shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use the same ingredients and manufacturing processes for production coating material as for approved sample coating material. If any change is necessary in ingredients or processing, ø vendor shall submit for reapproval a statement of the proposed changes in material or processing and, when requested, sample coating material. No production coating material made by the revised procedure shall be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Panel Preparation: Panels shall be AMS 4375 or equivalent magnesium alloy sheet, approximately 0.020 x 3 x 6 in. or 0.5 x 75 x 150 mm, and shall have smooth edges and rounded corners. Panels shall be treated in accordance with AMS 2475 or AMS 2476. The coating material shall be applied by spraying a sufficient amount to wet the surface completely. Application shall be controlled to provide a continuous, uniform film free from bubbles, heavy edges, and other surface irregularities. Panels treated in accordance with AMS 2475 shall have a total of two coats applied; panels treated in accordance with AMS 2476 shall have a total of three coats. Each coat shall be air dried for not less than 15 min. at room temperature. After air-drying the final coat, panels shall be heated at 400°F ± 10 (204.4°C ± 5.6) for 4 to 4-1/4 hours.

4.6 Reports: The vendor of coating material shall furnish with each shipment three copies of a report of the results of tests to determine conformance to the acceptance test requirements and stating that ø the coating material conforms to the other technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, formula number, batch number, and quantity.

4.7 Resampling and Retesting: If any sample or panel fails to meet the specified requirements, disposition of the coating material may be based on the results of testing three additional samples or panels ø for each original nonconforming sample or panel. Failure of any retest sample or panel to meet the specified requirements shall be cause for rejection of the coating material represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Marking:

5.1.1 Coating material shall be supplied in 5 gal or 20 dm^3 containers with sealed openings. Interior of containers shall be free from corrosion and, if treated to prevent corrosion, shall be coated with a material unaffected by the solvent action of the contents.

5.1.2 Each container shall be legibly marked to show this specification number and its revision letter, ø manufacturer's identification, formula number, batch number, date of manufacture, and quantity.

5.1.3 Containers shall be prepared for shipment in accordance with commercial practice to ensure carrier acceptance and safe transportation to the point of delivery. Packaging shall conform to ø carrier rules and regulations applicable to the mode of transportation.

5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with Federal PPP-P-1892, Level A or Level C, as specified in the request for procurement. Commercial packaging as in ø 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.