SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3126C

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Superseding AMS 3126B

Aluminum Coating Material, Corrosion and Heat Resistant Thermosetting, Inorganic Binder

NONCURRENT NOTICE

This specification has been declared “NONCURRENT” by the Aerospace Materials Division, SAE, as of August 2001. It is recommended, therefore, that this specification not be specified for new designs.

“NONCURRENT” refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs. Each of these “NONCURRENT” specifications is available from SAE.

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1. SCOPE:

1.1 Type:

This specification covers a corrosion and heat resistant aluminum coating material supplied as a liquid of suitable consistency for coating parts after being thoroughly mixed.

1.2 Application:

Primarily for coating ferrous parts to be exposed to temperatures below 650°C (1200°F).

2. APPLICABLE DOCUMENTS:

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

2.1 SAE Publications:

Available from SAE, 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 5040 Steel Sheet and Strip, 0.15 max Carbon, Deep Forming Grade

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 C430 Fineness of Hydraulic Cement by 45-µm (No. 325) Sieve
ASTM D471 Rubber Property - Effect of Liquids
ASTM D1084 Viscosity of Adhesives
ASTM D1475 Density of Paint, Varnish, Lacquer, and Related Products

2.3 U.S. 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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Total Solids	56 - 62% (by weight)
Volatile (Water)	remainder

3.1.1 Pigment: Shall consist of commercially pure (99% min aluminum) spherical aluminum powder or atomized powder having an average particle size not greater than 10 µm and shall contain no other filler or adulterant.

3.1.2 Binder: Shall be an acidic, water-base inorganic type.

3.1.3 Shelf Life: Shall be not less than 1 yr from date of manufacture when the product is stored in sealed containers between 7°C (45°F) and 29°C (85°F).

3.2 Properties:

The product shall conform to the following requirements:

3.2.1 Product Properties:

3.2.1.1 General: Material, after mixing thoroughly, shall be of uniform consistency, and free from hydrogen evolution, grit, and floating or caked pigments. Ingredients shall be processed as required to produce a product which is stable and not subject to abnormal change with age in sealed containers. The formation of agglomerates which can be dispersed by high speed mixing is permissible.

3.2.1.2 Density: Shall be not less than 13.2 lb per gal (1585 kg/m^3), determined at 25°C ± 1 (77°F ± 2) in accordance with ASTM D1475.

3.2.1.3 Coarse Particles: Not more than 0.1% by wt of the product shall be retained on a No. 325 (45 m) screen, determined in accordance with ASTM C430.

3.2.1.4 Viscosity: Shall be 16 - 18 sec at 25°C (77°F), determined in accordance with ASTM D1084, Method D.

3.2.2 Film Properties: Shall be as specified in 3.2.2.1 through 3.2.2.7, determined on panels prepared as in 4.3.2.1.

3.2.2.1 Appearance: Shall be uniform matte gray and shall closely match the color of the standard panel agreed upon by purchaser and vendor.

3.2.2.2 Adhesion: Film shall not loosen from the panel or flake at the bend when the panel is bent at room temperature through an angle of 90 deg around a diameter equal to eight times the nominal thickness of the uncoated panel. Flaking or loosening of film within 1/8 in. (3 mm) of edges is permissible.

3.2.2.3 Heat Resistance: Film shall show no cracking, checking, or blistering after heating for 23 hr ± 0.5 at 370°C ± 15 (700°F ± 25) followed by 4 hr ± 0.1 at 650°C ± 15 (1200°F ± 25). Discoloration of the film is acceptable.

3.2.2.4 Hot Water Resistance: Film shall withstand immersion in boiling water for 10 min. ± 0.2. When observed 5 min. after removal, film shall show no checking, blistering, or leaching-out of coating constituents. After 3 hr ± 0.1 air drying, film shall meet the adhesion test of 3.2.2.2. Discoloration of the film is acceptable.

3.2.2.5 Fuel Resistance: Film shall withstand immersion in ASTM Reference Fuel B (ASTM D471) at room temperature for 4 hr ± 0.1. Film, 24 hr after removal from fuel, shall meet the adhesion test of 3.2.2.2.

3.2.2.6 Hot Oil Resistance: Film shall show no peeling or blistering and not more than slight softening after immersion in ASTM Service Fluid No. 101 (ASTM D471) for 8 hr ± 0.2 at 205°C ± 15 (400°F ± 25).

3.2.2.7 Corrosion Resistance: Coated panels which have been exposed to heat as in 3.2.2.3, cross scratched "X" on one face with a sharp instrument so that each leg of "X" is approximately 1 - 1-1/2 in. (25 - 38 mm) long, and then subjected to salt spray test in accordance with ASTM B117 for 100 hr ± 0.5, shall show no pitting of the basis metal except within 1/8 in. (3 mm) of any edge or within 1/16 in. (1.5 mm) of scratches. Discoloration or superficial rust spots on the film is acceptable.

3.3 Quality:

Coating material, as received by purchaser and as applied to panels or parts, shall produce a cured coating which shall be smooth, uniform, and free from pinholes, sags, runs, bubbles, heavy edges, foreign materials, and other imperfections detrimental to usage of the coating.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for composition (3.1), pigment (3.1.1), binder (3.1.2), density (3.2.1.2), coarse particles (3.2.1.3), and viscosity (3.2.1.4) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for film properties (3.2.2) 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 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in material, processing, or both 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, preproduction test material shall be submitted to the cognizant 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 For Acceptance Tests: Sufficient product shall be taken at random from each lot to perform all required tests using two separate containers; two specimens for each test. A lot shall be all product produced in a single production run from the same batches of raw materials and presented for vendor's inspection at one time.

4.3.1.1 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5 shall state that such plan was used.

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

4.3.2.1 Panels for evaluation of film properties shall be prepared by spraying the coating on both sides of abrasive-blasted, clean, smooth, AMS 5040, or equivalent, steel panels to a total dried film thickness of 0.0015 - 0.0025 in. (0.038 - 0.064 mm), attained in two coats. Following each coat, finish shall be dried by heating to 80°C ± 15 (175°F ± 25) for not less than 15 min. and cured by heating to 345°C ± 15 (650°F ± 25) for not less than 30 minutes. Following the final cure at 345°C ± 15 (650°F ± 25), finish for the tests of 3.2.2.3, 3.2.2.6, and 3.2.2.7 shall be postcured by heating to 540°C ± 15 (1000°F ± 25) for not less than 90 minutes.

4.4 Approval:

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