SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 2505E

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Superseding AMS 2505D

Aluminum Paint Finishing
Low Baking

NONCURRENT NOTICE

This specification has been declared “NONCURRENT” by the Aerospace Materials Division, SAE, as of January 2000. 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 upon request.

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1. SCOPE:

1.1 Purpose:

This specification covers the engineering requirements for finishing aircraft parts and assemblies with an aluminum enamel.

1.2 Application:

Primarily for parts and assemblies operating in service up to 350 °F (175 °C).

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 2400 Cadmium Plating
AMS 2470 Anodic Treatment of Aluminum Alloys, Chromic Acid Process
AMS 2471 Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coating
AMS 2475 Protective Treatments, Magnesium Alloys
AMS 2480 Phosphate Treatment, Paint Base
AMS 3110 Primer, Zinc Chromate
AMS 3128 Aluminum Pigment Paste
AMS 3130 Paint Vehicle, Glyceryl Phthalate
AMS 3165 Solvent, Petroleum, Aromatic

2.2 U.S. Government Publications:

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

2.2.1 Military Standards:

MIL-STD-794 Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Preparation:

Parts and assemblies, before being painted, shall be prepared as follows; elapsed time between preparatory treatments and priming shall be as short as practicable:

3.1.1 Aluminum and Aluminum Alloys: Both wrought and cast parts shall be anodized in accordance with AMS 2470 or AMS 2471.

3.1.1.1 Aluminum Assemblies: Aluminum alloy parts which with parts made of other materials constitute assemblies shall be anodized in accordance with AMS 2470 or AMS 2471 before assembling with such other parts. Anodizing in accordance with AMS 2470 should be used on assemblies in which sulfuric acid could be trapped. Assemblies with parts made of other metals may be anodized if such other parts are insulated.

3.1.2 Magnesium Alloys: Both wrought and cast parts shall be treated in accordance with AMS 2475. Machining of external surfaces shall be completed prior to such treatment.

3.1.3 Steel: Cadmium plated parts shall be thoroughly neutralized in accordance with AMS 2400. Unplated parts shall be cleaned free from oil, grease, dirt, and rust and then treated in accordance with AMS 2480.

3.2 Procedure:

3.2.1 Priming: One coat of AMS 3110 zinc chromate primer shall be applied to all surfaces of metallic parts requiring enameling, except as follows:

3.2.1.1 Anodized rivets shall not be primed as details.

3.2.1.2 Two coats of primer shall be applied to magnesium alloy parts.

3.2.2 Cleaning: When there are intervening operations between priming and enameling, such as assembling or additional machining, the parts shall be thoroughly cleaned by spraying with clean naphtha, or other solvent of low volatility, and given another coat of AMS 3110 zinc chromate primer before the first coat of enamel is applied.

3.2.3 Baking: Each coat of primer shall be baked at 250° - 300°F (120° - 150°C) unless baking at a lower temperature or air drying is permitted by purchaser.

3.2.4 Enameling: The following requirements apply to all metallic surfaces which are exposed after parts are assembled in the power plant or aircraft. Magnesium alloy parts used as covers but not in contact with oil shall be enameled on both inside and outside surfaces except on contacting machined surfaces. Enameling of spot faces is optional.

3.2.4.1 Three coats of aluminum enamel prepared as in 3.2.5 shall be applied to magnesium alloy parts for use on other than aircraft power plants.

3.2.4.2 Two coats of aluminum enamel prepared as in 3.2.5 shall be applied to magnesium alloy parts for use on aircraft power plants and to parts of all other metals for all applications.

3.2.4.3 Each coat of enamel shall be thoroughly baked at a temperature within the range 250° - 310°F (120° - 155°C) or preliminary coats may be air-dried dust-free and the final coat baked firm and hard at a temperature within the range 250° - 310°F (120° - 155°C).

3.2.4.4 Enameling is not required on nonmetallic materials and associated metal parts, on threaded sections, or on removable steel parts.

3.2.5 Aluminum Enamel: Shall be prepared immediately before use, in the necessary quantity, by thoroughly mixing AMS 3128 aluminum pigment paste into AMS 3130 paint vehicle in proportions of 16 oz per gal (120 g/L) and, if too thick for proper application, thinning as necessary with AMS 3165 solvent.

3.2.5.1 If user desires to purchase aluminum enamel already mixed and if vendor can supply it, it may be so purchased provided such ready-mixed enamel conforms in all requirements to enamel prepared as in 3.2.5.

3.3 Quality:

Finish on parts, as received by purchaser, shall be smooth, uniform in color and gloss, and free from pinholes, sags, runs, heavy edges, foreign materials, and other imperfections detrimental to appearance or performance of the coating.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The finishing vendor shall be responsible for performing all required inspections. Purchaser reserves the right to sample and to perform any confirmatory inspection deemed necessary to ensure that finishing conforms to the requirements of this specification.

4.2 Classification of Inspections:

Inspection to determine conformance to requirements for quality (3.3) and for coverage in accordance with drawing requirements or other instructions are classified as acceptance inspections.

4.3 Sampling:

Each part or assembly shall be examined.