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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 2503E

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Submitted for recognition as an American National Standard

Superseding AMS 2503D

BLACK FINISHING
Low Baking Enamel

1. SCOPE:

1.1 Form: This specification covers the engineering requirements for finishing aircraft parts and assemblies with a black enamel.

1.2 Application: Primarily for parts and assemblies operating in service up to 350°F (177°C).

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.

2.1.1 Aerospace Material Specifications:

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 3120 - Enamel, Glyceryl Phthalate, Black Baking

2.2 U.S. Government Publications: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.2.1 Military Standards:

MIL-STD-2073-1 - DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Preparation: Parts, 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 are subsequently 0 assembled with parts made of other materials constitute assemblies, shall be anodized in accordance with AMS 2470 or AMS 2471 prior to assembly, unless such other materials are masked. Anodizing shall be performed in accordance with AMS 2470 on aluminum assemblies where solutions could become entrapped.

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 phosphate 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 (121" - 149°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 AMS 3120 black enamel shall be applied to magnesium alloy parts for use on other than aircraft power plants.

3.2.4.2 Two coats of AMS 3120 black enamel 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 not higher than 300°F (149°C) or preliminary coats may be air-dried dust-free and the final coat baked firm and hard at not higher than 300°F (149°C).

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

3.3 Quality: Painted surfaces, as received by purchaser, shall be smooth, 0 uniform in color and gloss, and free from pinholes, sags, runs, heavy edges, foreign materials, and other imperfections detrimental to usage of the coating.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The processing vendor shall supply all 0 samples for vendor's tests and 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 for quality (3.3) and for coverage in accordance with drawing requirements or other instructions are acceptance inspections and shall be performed to represent each lot.

4.3 Sampling and Testing: Each part shall be examined. 0

4.4 Reports: The vendor of painted parts shall furnish with each shipment a report stating that the parts have been processed and inspected in accordance with the requirements of this specification and that they conform. This report shall include the purchase order number, AMS 2503E, part number, and quantity.

5. PREPARATION FOR DELIVERY:

5.1 Packaging:

5.1.1 Painted parts shall be handled and packaged to ensure that the required 0 physical characteristics and properties of the coating are preserved.