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

AEROSPACE MATERIAL SPECIFICATION

AMS 3122C
Superseding AMS 3122B
Issued 7-1-48
Revised 1-15-77

ENAMEL, PHENOLIC
Black Baking

1. SCOPE:

1.1 Type: This specification covers a semigloss black baking enamel based on a phenolic resin.

1.2 Application: Primarily as a coating for metal surfaces exposed to corrosive conditions.

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

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

ASTM D56 - Flash Point by Tag Closed Tester
ASTM D445 - Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM E11 - Wire-Cloth Sieves for Testing Purposes

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

3.1.1 Enamel (by weight):

	min	max
Nonvolatile	50%	--
Volatile	--	50%

3.1.1.2 Nonvolatile:

	min	max
Resin	74	75%
Pigment	25	26%

3.1.1.2.1 Resin: Shall be a thermosetting phenolic type with softening agents added; it shall be free from rosin, rosin derivatives, oils, and cellulose derivatives.

3.1.1.2.2 Pigment: Shall consist of carbon black and animal black in proportions required to produce an enamel meeting the requirements of 3.2.2.2.

3.1.1.3 Volatile: Shall be optional with the manufacturer but shall meet applicable air pollution control regulations. Ø

3.2 Properties:

3.2.1 Product Properties:

3.2.1.1 Viscosity: Shall be not less than 4 poises (0.4 Pa·s) at 77°F, (25°C) not less than 24 hr after manufacture, determined in accordance with ASTM D445. Ø

3.2.1.2 Flash Point: Shall be not lower than 60°F (16°C), determined in accordance with ASTM D56.

3.2.1.3 Skinning and Livering: Shall be absent in 1/4-filled closed containers after standing at least 7 days.

3.2.1.4 Coarse Particles: Not more than 0.1% by weight of the enamel shall be retained on a No. 325 (45μ m) sieve conforming to ASTM E11.

3.2.2 Applied Film Properties:

3.2.2.1 Leveling: Enamel, applied by brushing, spraying, or dipping, shall be a freely working product having leveling properties acceptable to the purchaser.

3.2.2.2 Color and Gloss: A coat, air-dried for not less than 30 min. and baked for 1 hr ± 0.1 at 325°F ± 5 (163°C ± 3), shall closely match the color and gloss of the standard panel specified by the purchaser.

3.2.3 Cured Film Properties: Shall be as specified in 3.2.3.1, 3.2.3.2, and 3.2.3.3, determined on panels prepared as in 4.5.1.

3.2.3.1 Appearance: Film shall be firm, hard, and free from streaks, blisters, silking, and other surface irregularities.

3.2.3.2 Adhesion: Film shall not peel when a panel is bent at 32°F ± 2 (0°C ± 1) through an angle of 180 deg (3.14 rad) around a diameter equal to 20 times the nominal thickness of the panel. Cracking of film on bent portion of panel will be acceptable.

3.2.3.3 Solvent Resistance: Film, immersed at room temperature for 2 hr ± 0.2 in a solution of 50% denatured alcohol and 50% acetone, shall not be softened or removed. Dulling or change in color will be acceptable.

3.3 Quality: Enamel shall be of uniform consistency, and free from bubbles, grit, rough particles, floating or caked pigments, and ingredients of respiratory toxicity under normal conditions of use. Component ingredients shall be intimately mixed and processed as required to produce a product which is stable and not subject to abnormal change with age in sealed containers.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of enamel shall supply all samples and shall be responsible Ø 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 enamel conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to composition (3.1.1), viscosity (3.2.1.1), color Ø and gloss (3.2.2.2), appearance (3.2.3.1), adhesion (3.2.3.2), and solvent resistance (3.2.3.3) requirements are classified as acceptance tests.

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

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification 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 Acceptance Test Sampling: Sufficient enamel shall be taken from each lot to permit making the follow- Ø ing number of tests; a lot shall be all enamel produced in one continuous manufacturing operation from the same lots of raw materials and presented for vendor's inspection at one time.

Requirement	Reference Paragraph	Number of Tests
Composition	3.1	1
Viscosity	3.2.1.1	1
Color and Gloss	3.2.2.2	2
Appearance	3.2.3.1	2 (See 4.3.1.1)
Adhesion	3.2.3.2	2
Solvent Resistance	3.2.3.3	2

4.3.1.1 This requirement is to be determined on the panels prepared for adhesion or solvent resistance tests.

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

4.4 Approval:

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

4.4.2 Ø Vendor shall use ingredients manufacturing procedures and processes, and methods of inspection on production enamel which are essentially the same as those used on the approved sample enamel. If any change is necessary in ingredients or in manufacturing procedures or processing, vendor shall submit for reapproval a statement of the proposed changes in material or processing and, when requested, sample enamel. Production enamel made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Panel Preparation: Panels shall be of sandblasted, low-carbon steel except that panels for color and gloss tests shall be of glass. Panels shall be completely coated with enamel thinned with alcohol-base thinner, of a type approved by purchaser, to viscosity of 30 - 33 sec in Ford No. 4 cup. Coated panels shall be air dried for not less than 20 min. at room temperature and baked at 325°F ± 5 (163°C ± 3) for 60 min. ± 5.

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

4.7 Ø Resampling and Retesting: If any sample or panel fails to meet the specified requirements, disposition of the enamel may be based on the results of testing three additional samples or panels 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 enamel represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

5.1.1 Ø Enamel shall be supplied in metal containers with sealed openings. Interior surfaces of containers shall be free from corrosion and, if treated to prevent corrosion, shall be coated with material which will be unaffected by the contents.

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

5.1.3 Ø Containers shall be prepared for shipment in accordance with commercial practice to ensure carrier acceptance and safe transportation to the point of delivery and in compliance with applicable regulations pertaining to the handling, packaging, and transportation of this material. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

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

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Enamel not conforming to this specification or to authorized modifications will be subject to rejection.