SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS3130 REV. H

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Superseding AMS3130G

Paint, Vehicle, Glyceryl Phthalate

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by SAE G-8, Aerospace Organic Coatings Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

1.1 Type: This specification covers a glyceryl-phthalate-base paint vehicle in the form of a liquid.

1.2 Application: Primarily as a vehicle for aluminum-pigmented paint but may be used as a transparent finish coating for metal and wood.

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 3128 - Aluminum Pigment Paste
AMS 3165 - Solvent, Petroleum, Aromatic

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 D1639 - Acid Value of Organic Coating Materials

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 (by weight):

3.1.1 Vehicle:

	min max
Resin	34 - 37%
Solvent, AMS 3165	63 - 66%
Drier	See 3.1.1.2

3.1.1.1 Resin: Shall be a glyceryl phthalate type containing not less than 30% phthalic anhydride. It shall be free from rosin and rosin derivatives.

3.1.1.2 Drier: Shall be free from lead and shall be used as required to obtain the specified drying and curing properties with a high degree of package stability.

3.2 Properties: Vehicle shall conform to the following requirements:

3.2.1 Properties as Received:

3.2.1.1 Viscosity: Shall be 0.50 - 1.00 poise (0.05 - 0.10 Pa•s) at 77°F (25°C), determined in accordance with ASTM D445.

3.2.1.2 Weight: Shall be not less than 7.3 lb per gal (0.875 Kg/L) at 77°F ± 2 (25°C ± 1).

3.2.1.3 Ash: Shall be not more than 0.1% by weight.

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

3.2.1.5 Acid Number: Shall be not higher than 8.0, determined in accordance with ASTM D1639.

3.2.1.6 Skinning and Livering: Shall be absent in a 1/4-filled closed container after standing for not less than one week at room temperature.

3.2.2 Application Properties:

3.2.2.1 Clear Vehicle: Shall be a freely working product with leveling properties acceptable to purchaser when applied by either brushing or spraying. Recoating after 7 hr and again after 18 hr shall produce no film irregularities:

3.2.2.2 Pigmented Vehicle: Vehicle pigmented with AMS 3128 paste in the proportion of 16 oz of paste per gallon of vehicle (120 g of paste per litre of vehicle) and reduced, if necessary, with AMS 3165 solvent shall produce a satisfactory aluminum paint suitable for application by either brushing or spraying.

3.2.3 Cured Film Properties: Shall be as follows, determined on panels of bright finish, low-carbon steel approximately 0.020 x 6 x 3 in. (0.5 x 150 x 75 mm) and having smooth edges and rounded corners, cleaned with steel wool, washed in clean toluene or other suitable solvent, dried with clean cloths, coated to dried film thickness of 0.0005 - 0.0075 in, (13 - 19 m), and dried and/or cured as specified:

3.2.3.1 Clear Vehicle:

3.2.3.1.1 Hot Water Resistance: Film, cured at 250°F ± 5 (120°C ± 3) for 90 min. ± 10, immersed in boiling water for 10 min. ± 0.2, and observed 5 min. after removal, shall show no cracking, no blistering, no appreciable whitening, and only very slight dulling; when observed 15 min. after removal, film shall show no whitening. After 3 hr air-drying, the film on the immersed panel shall be equal in hardness, toughness, and adhesion to that on a duplicate, unimmersed panel, determined by drawing a knife blade over the respective films. The immersed film shall also be equal in gloss to the unimmersed film.

3.2.3.1.2 Solvent Resistance: Film, cured at 250°F ± 5 (120°C ± 3) for 90 min. ± 10 and immersed in AMS 3165 solvent for 4 hr ± 0.2 at room temperature, shall resist removal by rubbing with the fingers.

3.2.3.2 Pigmented Vehicle: Films of vehicle pigmented as in 3.2.2.2 shall have the following properties:

3.2.3.2.1 Air Drying: Film shall air dry to touch in not more than 3 hr; the dried film shall be free from streaks, blisters, silking, and other surface irregularities.

3.2.3.2.2 Baking: Film, air-dried for approximately 15 min. and cured at 300°F ± 5 (150°C ± 3) for 60 min. ± 5, shall be hard, tough, smooth, lustrous, and free from checking, wrinkling, dulling, and other surface irregularities.

3.2.3.2.3 Heat Resistance: Film, air-dried for approximately 15 min. and cured at 400°F ± 5 (205°C ± 3) for 4 hr ± 0.25 shall not show discoloration when compared with the film of 3.2.3.2.2. The film shall not crack or flake at the end or loosen from the panel when bent rapidly, at 32°F ± 2 (0°C ± 1), through an angle of 180 deg around a 1/8-in. (3 mm) diameter.

3.2.3.2.4 Coating Adhesion: Film, applied over a primer and air-dried for 18 hr ± 0.5 shall show satisfactory adhesion of the top coat to the primer. It shall be impossible to separate any of the top coat from the primer by means of a diagonally applied knife or razor blade.

3.2.3.2.5 Weather Resistance: Film, applied by spraying, shall show no visually evident difference in appearance, integrity, or protection from those of a film of a control product agreed upon by purchaser and vendor. The panels shall be similarly prepared and simultaneously exposed to weather continuously for 1 yr at an angle of 45 deg from vertical, facing south, at approximately 40 deg north latitude.

3.3 Quality: Vehicle, as received by purchaser, shall be clear, transparent, and homogeneous and shall contain no substance of known toxicity under normal conditions of use. Component ingredients shall be intimately mixed and processed in accordance with the best practice for high quality aircraft glyceryl phthalate vehicle to produce a product which is stable and not subject to abnormal change with age in a sealed container.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of vehicle 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 vehicle 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 (3.1.1), viscosity (3.2.1.1), hot water resistance of clear vehicle (3.2.3.1.1.1), and baking (3.2.3.2.2) and coating adhesion (3.2.3.2.4) of pigmented vehicle are classified as acceptance tests and shall be performed on each lot.

4.2.2 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.

4.2.2.1 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 vehicle shall be taken at random from each lot to perform following number of tests; a lot shall be all vehicle produced in one continuous manufacturing operation from the same lots of raw materials and presented for vendor's inspection at one time. A lot may be packaged and delivered in small quantities under the basic lot approval provided lot identification is maintained.

Requirement	Reference Paragraph	Number of Tests
Composition	3.1.1	1
Viscosity	3.2.1.1	1
Hot Water Resistance	3.2.3.1.1	2
Baking	3.2.3.2.2	2
Coating Adhesion	3.2.3.2.4	2

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 Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

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

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

4.5 Reports: The vendor of vehicle shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the vehicle conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3130H, formula number, lot number, and quantity.

4.5.1 A material safety data sheet conforming to AMS 2825, or equivalent, shall be supplied to each purchaser prior to, or concurrent with, the report of preproduction test results or, if preproduction testing be waived by purchaser, concurrent with the first shipment of vehicle for production use. Each request for modification of vehicle formulation shall be accompanied by a revised data sheet for the proposed formulation.