SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS-P-21600 REV. A

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Superseding AMS-P-21600

(R) Paint System, Fluorescent, Removable, for Aircraft Application

RATIONALE

This revision is a complete rewrite update and incorporates the committee G-8 standard format.

1. SCOPE

This specification establishes the requirements for a high visibility, durable, exterior fluorescent coating system consisting of a pigmented fluorescent coating with a clear protective overcoat containing a weathering stabilizer. This coating system is capable of being removed without softening the permanent undercoats.

1.1 Application

The coating materials (Flourescent Coating and Clear Overcoat), covered by this specification are typically applied to the outer moldline of aircraft for high visibility.

1.2 Classification

The coating materials covered by this specification shall be classified as one grade of fluorescent coating system furnished in the following colors, as specified (See 8.6).

Army - Navy Aeronautical Color Number	Fed Std 595 Color number	Color Name
633	28913	Fluorescent red-orange
634	28915	Fluorescent yellow-orange

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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http://www.sae.org/technical/standards/AMSP21600A

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS3819	Cloths, Cleaning for Aircraft Primary and Secondary Structural Surfaces
AMS-QQ-A-250/5	Aluminum Alloy ALCLAD 2024. Plate and Sheet

2.2 U.S. Government Publications

Available from the Document Automation and Produciton Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, https://assist.daps.dla.mil/quicksearch/.

TT-I-735	Isopropyl Alcohol
TT-N-97	Naphtha; Petroleum, Aromatic (for use in organic coatings)
A-A-857	Thinner, Dope and Lacquer (cellulose nitrate)
A-A-2793	Cleaner – Disinfectant (Pine Type) (Commercial Item Description)
A-A-59107	Toluene, Technical (Commercial Item Description)
A-A-59760	Ten Degree Xylene (Commercial Items Description)
A-A-59921	Cleaning Compounds, Aircraft Surface
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-C-8514	Coating, Pretreatment, Smooth Finish, Spray Type
MIL-PRF-680	Degreasing Solvent
MIL-PRF-81352	Coatings, Aircraft Touch-Up
FED-STD-141	Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing
FED-STD-313	Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities
FED-STD-595	Colors used in Governement Procurement
MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-1916	Department of Defense Test Method Standard

2.3 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D 330 Standard Specification for 2-Butoxyethanol

ASTM D 476 Standard Classification for Dry Pigmentary Titanium Dioxide Products

ASTM D 823 Standard Practice for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels

ASTM D 1200 Cup, Viscosity by Ford Viscosity

ASTM D 1210 Fineness of Dispersion of Pigment – Vehicle Systems, by Hegman – Type Gage

ASTM D 1296 Volatile Solvents and Diluents, Odor of

ASTM D 1974 Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes

ASTM D 2244 Standard Practice for Calculation of Color Toleracnes and Color Differences from Instrumentally Measured Color Coordinates

ASTM D 2369 Standard Test Method for Volatile Content of Coatings

ASTM D 3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

ASTM G 7 Standard Practice for Atmospheric Environmental Exposure Testing of Nonmetalic Materials

ASTM G 155 Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metalic Materials

2.4 ANSI Publications

Available from the American National Standards Insititue, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI Z400.1 Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

2.5 ISO Publications

Available from the American National Standards Insititue, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories

ISO 11890-1 Paints and Varnishes – Determination of Volatile Organic Compound (VOC) Content

3. REQUIREMENTS

3.1 Material Qualifications

The basic ingredient shall be a mineral spirits soluable polybutylmethacrylate for the pigmented coating and an unmodified acrylic which shall be soluable in aromatic hydrocarbons and shall contain no ketones, cellosolve acetate or aliphatic hydrocarbons for the clear overcoat. The pigment material shall consist of a powdered resin which contains the fluorescent dye(s).

3.1.1 Prohibited Materials

The coating materials shall contain no benzene.

3.1.2 Toxicity

The coating materials shall have no adverse effects on the health of personnel when used for its intended purpose in accordance with the manufacturer's instructions and with appropriate handling procedures per the Material Safety Data Sheet (MSDS), see 4.8.2.

3.1.3 Composition

The composition of the fluorescent coating and the clearcoat overlay shall be in accordance with Table 1.

TABLE 1 - COMPOSITION

Property	Pigmented Coating (percent by weight)	Clear Overcoat (percent by weight)
Volatile	48 max	64 max
Nonvolatile	52 max	36 min
Substituted dihydroxy benzophenone 1/ (percent of total solids)		2 min

1/ A maximum of 10 percent (based on total solids) of this stabilizer may be included in the pigmented coating

3.2 Quality

The coating material as received by the purchaser, shall be uniform in quality and condition, as free from foreign materials as commercially practical and free from imperfections detrimental to the usage of the coating. There shall be no separation of ingredients that cannot be readily dispersed by hand mixing.

3.3 Volatile Organic Compound (VOC) Content

The VOC content of the admixed coating material (when thinned to a typical spraying consistency) shall be reported in lb/gal (g/l) on the qualification test report when tested in accordance with ASTM D 3960 and ISO 11890-1. Both values shall be included in the report. The volatile portion of the pigmented coating shall be aliphatic and aromatic hydrocarbons. The volatile portion of the clear overcoat shall be aromatic hydrocarbons. Benzene shall not be present in either the pigmented coating or the clear overcoat coating.

3.4 Properties

The coating materials, when prepared in accodance with the manufacturer's instructions, shall conform to the requirements described in the following paragraphs of Table 2 determined in accordance with the specified test methods.

TABLE 2 - PROPERTIES

3.4.1	Fineness of Grind	Fineness of grind of the pigmented paint shall be a minimum of 5, reference 4.7.1.
3.4.2	Drying Time	When tested as specified in 4.7.2, separate films of pigmented paint and clear overcoat shall both dry hard within one hour. When the clear overcoat is drawn down over the pigmented film, the system shall dry hard and exhibit no tack (to touch) within 3 hours and shall dry tack free within 4 hours when tested per FED-STD-141, Method 4061.3.
3.4.3	Color (Spectrophotometric)	After drying for 24 hours, the color values of the red-orange and yellow-orange paint systems shall be in accordance with the respective "Before Exposure" values specified in Tables 3 and 4, reference 4.7.3
3.4.4	Accelerated Weathering	After exposure in the weatherometer for 300 hours (See 4.7.4), the red- orange or yellow-orange paint systems, shall meet the respective requirements specified in Tables 3 and 4 and there shall be no evidence of deterioration of the film properties (loss of intercoat adhesion, cracking, flaking, peeling, etc.).
3.4.5	Weather Resistance	The red-orange system when exposed in southern Florida for 120 000 Langley units or the yellow-orange system when exposed in southern Florida for 90 000 units, shall meet the respective requirements specified in Tables 3 and 4 and there shall be no evidence of deterioration of the film properties (loss of intercoat adhesion, cracking, flaking, peeling, etc.) reference 4.7.5
3.4.6	Condition in Container	The packaged paint, pigmented and clear, shall pour freely without stirring. There shall be no traces of grit, coarse particles, or separation of pigments, nor shall there be settling which cannot be readily redispersed with a paddle to a uniform and homogeneous state, reference 4.7.1
3.4.7	Working Properties	When the unstrained pigmented or clear paint is reduced for spraying (naphtha, TT-N-97, Type I, Grade B for the pigmented paint and toluene (A-A-59107) or xylene (A-A-59760) for the clear coat), there shall be no evidence of separation and the paint (pigmented or clear) shall show good working properties and shall dry to a uniform smooth surface free of runs, sags, bubbling, wrinkling, streaking, or other defects. When the clear coat is applied by spray over the pigmented coating, the complete fluorescent system shall be uniformly smooth and free of the above noted defects (a 1-mil film of clear is applied over a 3-mil film of pigmented coating after the latter has air-dried 4 hours at reference 4.5.2).
3.4.8	Odor	The odor of the pigmented or clear coating, wet or dry, shall be characteristic of the solvents specified in Tables 3 and 4, reference 4.7.1
3.4.9	Reduced Viscosity	Upon reducing 3 volumes of the pigmented paint with 2 volumes of aromatic naphtha (TT-N-97, Type I, Grade B) the viscosity shall be not more than 24 seconds (#4 Ford Cup). Upon reducing one volume of the clear coating with one volume of toluene A-A-59107, the viscosity shall be not more than 15 seconds (#4 Ford Cup), reference 4.7.1
3.4.10	Solvent Resistance	The clear coating shall not be affected by mineral spirits when tested as specified in 4.7.7.
3.4.11	Dilution Stability	There shall be no evidence of incompatibility when one volume of the pigmented paint is reduced with one volume of aromatic naphtha (TT-N-97, Type I, Grade B) and when one volume of the clear coating is reduced with one volume of toluene (A-A-59107) or xylene (A-A-59760). Examination of the reduced coatings shall be made after one hour, reference 4.7.1
3.4.12	Appearance (Clear Coating)	A flow-out of the clear coating as received on a glass panel shall be clear and show no evidence of incompatibility, reference 4.7.8
3.4.13	Adhesion (Knife Test)	The red-orange and yellow-orange paint systems shall show satisfactory adhesion and shall ribbon without flaking or chipping when tested in accordance with 4.7.1

TABLE 2 – PROPERTIES (CONTINUED)

3.4.14	Removability	The fluorescent paint system shall be removable (both before and after the required Florida exposure) with the remover listed in Table 5 without impairment of more than slight staining of the lacquer substrate, reference 4.7.9
3.4.15	Tape Adhesion	When tested as specified in 4.7.10, the fluorescent paint system shall show satisfactory adhesion to the lacquer base coat shown in Table 5.
3.4.16	Lifting Test	When tested as directed in 4.7.11, the fluorescent coating under test shall exhibit no film defects such as lifting or cracking when applied over the white test paint.

TABLE 3 COLOR LIMITS BEFORE AND AFTER WEATHERING FOR RED-ORANGE 1/

Exposure	Dominant wave Length (millimicrons) Min	Max	Excitation Purity % min	Luminance Factor % Min	Peak "Reflectance" 2/ Compared to $MgCO_3$ % Min
Before Exposure	610	614	98	31	195
Weatherometer - 300 hours 4/	607	614	95	31 (min) 37 (max)	175
Florida Exposure (120 000 Langley Units)	603	614	93	31 (min) 42 (max)	160

TABLE 4 COLOR LIMITS BEFORE AND AFTER WEATHERING FOR YELLOW-ORANGE 1/

Exposure	Dominant wave Length (millimicrons) Min	Max	Excitation Purity % min	Luminance Factor % Min	Peak "Reflectance" 3/ Compared to $MgCO_3$ % Min
Before Exposure	602	606	98	47	215
Weatherometer - 300 hours 4/	599	606	97	46 (min) 58 (max)	185
Florida Exposure (90 000 Langley Units)	595	606	94	48 (min) 58 (max)	160

Notes to Tables 2 and 3

1/ In accordance with the Selected Ordinate Method described in Section 4, which is abstracted from the “Handbook of Colorimetry” - Hardy, Arthur C., Color Measurement Laboratory, Massachusetts Institute of Technology, 1936.

2/ This value is to be the highest reflectance obtained in the wavelength range of 624 to 630 millimicrons.

3/ This value is to be the highest reflectance obtained in the wavelength range of 607 to 620 millimicrons.

4/ Values based on weatherometer performance in accordance with the procedure in “Accelerated Weathering” in Section 4.

TABLE 5 FORMULA FOR REMOVER

Ingredient	Percent by Weight
Xylene (A-A-59760)	56.3
Triton X-102 Surfactant (Dow Chemical co.)	3.4
Pine Oil based cleaner (A-A-2793)	2.6
Cyclohexanol (Honeywell co.)	2.6
Butyl Cellosolve (Dow Chemical co.) ASTM D330 (Ethylene Glycol Monobutyl Ether)	1.7
Isopropyl Alcohol (TT-I-735, Gr B)	0.4
Water (Distilled)	17.8
Corn Starch (Commercial)	15.0

Compounding Procedure

The ingredients shall be added in the order listed above accompanied by constant stirring at a moderate speed.

Small portions at a time shall be added and each portion shall be thoroughly dispersed before another is added.

After dispersing the final ingredient, the mixture shall be stirred for an additional 5 minutes.

3.5 Shelf life

3.5.1 Storage Stablility

The pigmented and clear coating materials, after storage in the original, unopened containers for 1 year between 35 to 115 °F (1.7 to 46 °C), shall meet all requirements of this specification.

4. QUALITY ASSURANCES PROVISIONS

4.1 Qualification of Coating Material

4.1.1 Workmanship

The component ingredients of the pigmented and clear coatings shall be intimately assembled and processed in accordance with the best practuice for the manufacture of high quality coatings.

4.1.2 Qualification

The coatings furnished under this specification shall be a product which has been tested and has passed the qualification tests specified herein.

4.2 Resonsibilty for Testing

The manufacturer is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the manufacturer may utilize his own or any other inspection facilities capable of ISO 17025 and services acceptable to the purchaser. The purchaser reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure supplies and services conform to specified requirements.

4.3 Classification of Tests

4.3.1 Acceptance Tests

Acceptance tests are those tests accomplished on material samples submitted for acceptance under contract. Acceptance tests shall consist of all the tests of this specification. Acceptance testing shall be conducted in accordance with Method 1031.1 of FED STD 141.

4.4 Sampling and Testing

4.4.1 Samples for Acceptance Tests

Samples shall consist of three (3), 1 quart containers of the fluorescent pigmented coating and three (3), 1 quart containers of the clear overcoat materials. The sample coatings shall be selected at random in accordance with FED-STD-141, Method 1031.1 and shall be forwarded to the activity responsible for testing, as designated in the letter of authorization from the activity responsible for testing. The samples shall be plainly identified by securely attached durable tags marked with the following information:

Coating, Fluorescent, Removable, for Aircraft Use
Manufacturer's name and identification number
Date of manufacture
Batch or Lot Number
Color

Submitted by (name of manufacturer) (date) for Acceptance testing in accordance with the requirements of Specification AMS-P-21600 (revision) (date) under authorization (reference letter authorizing the test)

4.4.2 Statistical Sampling Plan

A statisical sampling plan, acceptable to the purchaser, may be used in lieu of the sampling plan in 4.4.5

4.4.3 Materials Examination

The coating materials shall be examined to determine conformance with this specification with respect to materials and workmanship.

4.4.4 Sampling of Filled Containers

A sample of filled containers shall be taken at random in accordance with Military Standard MIL-STD-105 at inspection level 1 and acceptable quality level equals 2.5% defective to verify compliance with this specification in regards to fill, closure, marking and other requirements not involving specific tests.

4.5 Test Conditions

4.5.1 Laboratory Conditions

Standard laboratory test conditions shall be in accordance with FED-STD-141 and as described herein.

4.5.2 Test Conditions

Standard test conditions shall be 77 °F ± 5 (25 °C ± 3) and 50% ± 5 relative humidity. Unless otherwise specified herein, all tests specimens shall be cured and tested under these conditions.

4.5.3 Standard Tolerances

Unless otherwise specified herein, standard tolerances shown in Table 6 shall be applied throughout the test method.

TABLE 6 - TOLERANCE

Measurement Units	Tolerance
Temperatures	±5 °F
Days	±2 hours
Hours	±5 minutes
Minutes	±10 seconds
Inches (mm)	±0.010 inch (0.25 mm)

4.6 Test Panels

4.6.1 Description of Test Panels

Test panels to be 0.020 inch x 3 inch x 6 inch; clad aluminum alloy, AMS QQ-A-250/5; anodized per MIL-A-8625, Type I for each panel required.

4.6.2 Preparation of Test Panels

4.6.2.1 Preparation of Test Panel Material

Unless otherwise specified herein, all materials utilized in test panel preparation shall be prepared according to the material manufacturer's instructions.

4.6.2.2 Clean Test Panels

The test panels shall be cleaned using A-A-59921 cleaning materials until there is no discoloration on the AMS3819 cloth.

4.6.2.3 Application of Pretreatment

4.6.2.3.1 Spray 1 coat of wash primer, MIL-C-8514, to a dry film thickness of 0.0002 to 0.0004 inch per ASTM D 823 and air dry for 30 minutes.

4.6.2.3.2 The test panels with the wash primer applied, shall then be sprayed to a dry film thickness of 0.0003 to 0.0005 inch per ASTM D 823 with control formula primer and air dried for 30 minutes.

4.6.2.4 Application of Control Coating

4.6.2.4.1 Two spray coats of control formula white, MIL-PRF-81352 lacquer shall then be applied over the primer with a 30 minutes drying interval between coats. The total dry film thickness of the two coats of lacquer shall be 0.001 inch ± 0.0002 per ASTM D 823. After application of the lacquer, the panels shall be air dried for two hours and force dried for one hour at a temperature of 180 °F (82 °C).

4.6.2.5 Application of Fluorescent Coating Material

4.6.2.5.1 The pigmented fluorescent coating shall be reduced to a #4 Ford Cup viscosity of 20 to 22 Seconds with thinner conforming to TT-N-97, type 1, grade B. Three coats of pigmented fluorescent coating shall be sprayed to a total dry film thickness of 0.0028 to 0.0032 inch per ASTM D 823 allowing a 30 minute air drying interval between coats. Prior to overcoating with the clear covercoat material, the fluorescent coating shall air dry for 18 hours.

4.6.2.5.2 The clear overcoat shall be reduced with toluene conforming to A-A-59107 to a #4 Ford Cup viscosity of 14 to 16 seconds, and applied in two coats to a dry film thickness of 0.0009 to 0.0011 inch per ASTM D 823, allowing a 30 minute air dry interval between coats. The panels shall be air dried 72 hours before testing.

4.7 Test Methods

4.7.1 The tests shown in Table 7 shall be conducted in accordance with the specified methods as given in FED-STD-141 and ASTM D as noted in Table 7 - Test Methods.

TABLE 7 - TEST METHODS

Test Description	Fed STD 141	ASTM D
Volatile & Nonvolatile Content 1/		2369
Fineness of grind		1210
Condition of container	3011	
Odor		1296
Viscosity		1200
Drying Requirements	4061.3	
Dilution Stability	4203.2	
Adhesion (Knife Test)	6304.2	

1/ An approximately equal weight of tricresyl phosphate be thoroughly mixed with the sample in the solids cup when conducting this determination for both the pigmented and clear coatings.

4.7.2 Drying Time

When tested separately or as a system, the pigmented and clear coatings shall be drawn down over clean plate glass with 0.008 inch and 0.005 inch clearance blades respectively. When tested as a system, the clear coating shall be drawn down perpendicular to the pigmented coating after the latter has air dried for 4 hours at reference 4.5.2. Dry hard and tack free requirements are described in FED-STD-141, Method 4061.3. The tack tester is described in FED-STD-141, Method 4061.3 and shall be used with a 1 pound weight over an interval of 1 minute.

4.7.3 Color (Spectrophotometric)

The painted specimen prepared in 4.6 is illuminated directly with light having the spectral quality of C I E Source “D65” as tested per ASTM D 2244.

The light emitted and reflected by the sample is picked off at an angle of approximately 45 degrees. The Beckman Model DU spectrophotometer or equivalent is used as the instrument for obtaining the spectral data. The use of a lucite rod (1 inch in diameter and 1 inch long) to transmit the light to the spectrometer is optional.

A magnesium carbonate block (resurfaced until comparison with a vitrolite standard at 400 millimicrons reaches a reproducible minimum value) is used as a reference standard.

Measurements are made at 30 wavelength points as the ratio expressed as a percent of the energy reflected from the coated sample compared to the energy reflected from the block of magnesium carbonate.

4.7.4 Accelerated Weathering

The weathering machine used shall be an ATLAS XW type open arc Weatherometer operated in accordance with ASTM G155 with the following exceptions:

Successively replace 1 of the 8 COREX D glass filters every 250 hours, rather than replace all 8 filters after 2000 hours of when discolored.

An Alternate 20 minute wet and dry cycle shall be used

The impurities in the water used shall be less than 6 parts per million (ppm) calculated as NaCl.

4.7.5 Weather Resistance

Weather resistance panels prepared as specified in 4.6 shall be exposed in southern Florida in accordance with ASTM G 7. The exposure period shall be as specified in 3.4.5. Upon any evidence of failure of the coating system, the test shall be immediately terminated.

4.7.6 Storage Stability

Filled, closed containers of the pigmented and clear coating materials shall be stored under warehouse conditions at a temperature of 70 to 90 °F for one year. At the end of the storage period, the containers shall be opened and the materials tested for conformance to the requirements of this specification.

4.7.7 Solvent Resistance

A panel of the clear overcoat prepared as specified in 4.6 shall be air dried for 72 hours and then partially immersed in mineral spirits (MIL-PRF-680) for 15 minutes. The panels shall then be removed and allowed to recover for 30 minutes and then examined for film irregularities.

4.7.8 Appearance

The clear overcoat shall be flowed out on a glass panel and allowed to drain for 15 minutes. The film shall then be examined for conformity with the requirements,

4.7.9 Removability

Panels shall be prepared as specified in 4.6 except that the finish system shall be force dried for 24 hours at 180 °F. The panel shall be placed on a rack so that the 6 inch dimension forms a 60 degree angle with the horizontal plane. Approximately 20 mls of the thoroughly mixed remover (Table 5) shall be poured on the painted area at a constant rate taking 30 to 35 seconds for the pouring procedure. Allow the remover to act on the coating for 5 minutes. The panel shall be removed from the rack and placed on a clean, dry horizontal surface for scrubbing. The brush used for the scrubbing operation shall be a dry brush, having a block (metal or wood) measuring ½ by 1-1/2 by 3-1/2 inches with brush stock of 59 appropriately staggered tufts, each tuft of 50 ± 5 straight 0.091 inch diameter nylon fibers extending 5/8 inch beyond the block. The scrubbing brush shall be weighted with a 5 pound weight and shall be passed over the remover coated areas 10 times with the 1-1/2 inch edges of the brush blocks facing the direction of brushing motion. The 3 panels shall be rinsed under tap water for 1 minute. Place the panels on the rack and repeat the entire operation again. The above test shall be repeatetd on the panels which have been subjected to the required Florida exposure (See 3.4.5).

4.7.10 Tape Adhesion

Duplicate panels prepared as in 4.6 shall be tested as directed in Method 6301.3 of FED-STD-141 except that the panels shall be immersed in water for 16 hours.

4.7.11 Lifting Test

For this test, panels shall be prepared per 4.6 except that the white test paint of Table 8 shall be applied (2 passes to a total dry film thickness of 1.0 mil ± 0.3, ½ hour air dry between passes) over the force dried MIL-PRF-81352, type 1 acrylic base coating. After an air dry of 2 hours, the white test paint shall be overcoated with the fluorescent coating under test. This coating shall be applied in three passes (approximately 1 mil per pass) to a total dry film thickness of 3 mil ± 0.2, ½ hour air dry between passes. At no time, either during or after a sufficient air dry, shall the fluorescent coating exhibit cracking, lifting, sagging or any other film defect.

TABLE 8 - WHITE TEST PAINT FORMULA

Ingredient 1/	Weight (gm)	Source of Ingredients
Titanium Dioxide	400	ASTM D476
Silica	120	CELITE 281, World Minerals
Magnesium Silicate Hydrous	280	TALC 200 mesh, ACROS Organics
Polybutylmethacrylate	1336	PARALOID F-10 Dow Chemical Co. 2/
Aromatic Naphtha	370	TT-T-97, Type 1, Grade B

1/ The above materials shall be ground for 24 hours in a 1 - gallon capacity pebble mill previously filled to about 1/3 of its capacity with approximately1/2 inch diameter white flint pebbles.

2/ 40% solids in a mixture of 9 parts by volume of mineral spirits to 1 part by volume of aromatic naphtha.

4.8 Reports

4.8.1 Qualification Report

The supplier shall submit reports of the qualification product in accordance with the requirements of FED-STD-141, showing the results of all tests specified herein, except Weather Resistance and Storage Stability. Regarding the composition of the coatings, the supplier may report such results as “calculated” provided in his opinion, analysis made by the purchaser will yeild the same result.

4.8.2 Material Safety Data Sheet (MSDS)

An MSDS, conforming to an acceptable format for the purchaser, shall be supplied to the purchaser prior to, or concurrent with, the first shipment of the product for production use. ANSI Z400.1 is one possible format. An MSDS must be prepared and submitted in accordance with FED-STD-313. The MSDS must also meet the requirements of 29 CFR 1910.1200. The 29 CFR 1910.1200 requires that the MSDS for each hazardous chemical used in an operation must be readily available to personnel using the material. Questions pertinent to the effect(s) of these coatings on the health of personnel using them should be referred by the procuring activity to the appropriate medical service, who will act as its adviser.

4.9 Resampling and Retesting

If any specimen used in the above tests fails to meet the specified requirements, disposition of the coating material may be based on results of testing three (3) additional specimens for each original non-conforming specimen. Failure of any retest specimen to meet the specified requirement shall be cause for rejection of the coating material represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Packaging

5.1.1 Unit Package

The coating materials shall be delivered in kit form, if multi-component. The parts of the coating material shall be packaged in their own containers.

5.1.2 Containers

For acquisition purposes, the metal container packaging requirements shall be as specified in the contract or order (See 8.6). Packaging requirements are maintained by the Inventory Control Point’s packaging activities within the Military Service or Defense Agency.

5.1.3 Exterior Shipping Container

Exterior shipping containers shall conform to ASTM D 1974.

5.1.4 Preparation for Shipment

5.1.4.1 Protection

Packaging shall be accomplished to ensure that the coating materials will be protected against damage from exposure to weatherr and any other normal hazard during shipment or storage.

5.1.4.2 Commercial Practice

Packaging Shall be accomplished in accordance with recommended commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging and transportation of the coating material to ensure carrier acceptance and safe delivery.

5.1.4.3 Direct Governement Purchase

For direct purchase or by direct shipments to the Government, the packaing, packing and marking for shipment shall be in accordance with MIL-STD 129 and as specified herein.

5.2 Identification

5.2.1 Container Marking

Marking of the containers shall be in accordance with the provisions of MIL-STD-129. In addition, individual containers shall bear a printed label, with a clear weatherproof overcoat, showing the following information.

Specification: AMS-P-21600 (revision)
Color & color number or Clear overcoat
Manufacturers's Name
Batch / Lot number
Date of Manufacture (month and year)
Date of Expiration
Net Weight or Volume Measure

5.2.2 The following shall appear on the containers of the pigmented coating material.

5.2.2.1 Thinning Directions for the Fluorescent Coating

Thin the fluorescent coating to spray consistency by adding approximately 1 volume of naphtha, TT-N-97, type 1, grade B, to 2 volumes of the fluorescent coating material to obtain a #4 Ford Cup viscosity of 20 to 22 seconds.

5.2.2.2 Application of the Fluorescent Coating

Apply aproximately 3 mils (0.003 inch) of the fluorescent coating. Normally 3 wet coats will achieve this thickness. Avoid too thick of a coating, which will reduce the brightness and too thin of a coating will reduce its fluorescence life.

5.2.2.3 Air-Dry of the Fluorescent Coating

One half hour between coats and four hours between the last coat of fluorescent coating and the first coat of the clear overcoat material. Remove fluorescent overspray by light wiping with a clean tack cloth before applying subsequent coats and after the last coat of the fluorescent coating has been applied.