Federal Spec. TT-P-1952(B)

PAINT, TRAFFIC AND AIRFIELD MARKING, WATERBORNE

www.raepaint.com
11638 South Mayfield Ave. ~ (708) 396-1984 ~ Alsip, IL 60803
FEDERAL SPECIFICATION

PAINT, TRAFFIC AND AIRFIELD MARKING, HMACR EMULSION BASE

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers ready-mixed paint for marking airfield pavement. The paint is suitable for application on such traffic-bearing surfaces as portland cement concrete, bituminous cement concrete, asphalt, tar, and previously painted areas of these surfaces. The paint may be used either alone or to bind reflective beads.

1.2 Classification.

1.2.1 Color. The traffic and airfield marking paint shall be furnished in the following colors, as specified (see 6.2).

Type I - White
Type II - Yellow

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bid or request for proposal, form a part of this specification to the extent specified herein.

Federal Specification:

TT-P-1325 - Beads (Glass Spheres), Retroreflective.

Federal Standards:


Fed. Std. No. 595 - Colors.

[Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.]

[Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston; New York; Philadelphia; Washington, DC; Atlanta; Chicago; Kansas City, MO; Fort Worth; Houston; Denver; San Francisco; Los Angeles; and Seattle, WA.]

RAE PRODUCTS AND CHEMICALS, CORP.
(DISTRIBUTION CENTER)
11600 S. ODAN AVE.
ALSIP, IL 60803
(312) 396-1984
(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standard:


(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., Traffic Department, 1516 P Street, N.W., Washington, D.C. 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, Ill. 60606.)

American Society for Testing and Materials (ASTM) Standards:

D 562 – Consistency of Paints Using the Stormer Viscosimeter.
D 711 – No-Pick-Up Time of Traffic Paint.
D 822 – Operating Light- and Water-Exposure Apparatus (Carbon-Arc Type) for Testing Paint, Varnish, Lacquer and Related Products.
D 968 – Abrasion Resistance of Coatings of Paint, Varnish, Lacquer and Related Products by the Falling Sand Method.
D 969 – Laboratory Test for Degree of Bleeding of Traffic Paint.
D 2369 – Volatile Content of Paints.
D 2486 – Scrub Resistance of Interior Latex Flat Wall Paints.
D 2805 – Hiding Power of Paints.
F 97 – 45-Deg, 9-Deg Directional Reflectance of Opaque Specimens by Filter Photometry.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

3. REQUIREMENTS

3.1 Qualification. All paint supplied under this specification shall be a product which has been tested and approved for listing on the applicable Qualified Products List (QPL) maintained by the Federal Supply Service (FSS), General Services Administration, Washington, D.C. 20406. Hereinafter the term "qualifying activity" shall mean GSA-FSS. All inquiries regarding qualification shall be directed to this address.

3.1.1 Qualifying samples. Two quarts each of type I or type II paint are required for testing. Method of payment for tests, testing schedules, and report of test results are available from the qualifying activity.
3.1.2 Qualification testing. Paint for qualification testing shall be submitted by prospective suppliers to the General Services Administration. Should the submitted product(s) fail to meet all requirements of the specification as defined herein, the qualifying activity reserves the right to refuse to accept such products for additional qualification testing until satisfactory data and test results have been submitted indicating correction of previous deficiencies. The qualifying activity reserves the right to levy a charge to cover the cost of testing for qualification of products.

3.1.3 Qualified products listing. The Qualified Products List shall consist of products which have been tested and have passed all qualification tests specified herein (see 4.2.1). Qualification and listing in the Qualified Products List does not guarantee acceptance of the products in any future procurement, nor constitute a waiver of the requirements of the specification as to acceptance, inspection, test, or other provisions of any contract involving these products. Different plants of the same manufacturer must be qualified individually in order to be listed on the Qualified Products List.

3.1.4 Formulation change. Qualification of a supplier's paint under this specification, once established, applies only to that paint manufactured according to the specific formulation in use at the time of qualification. Any change in formulation or manufacturing procedures may result in removal of the product from the Qualified Products List. If material supplied by a manufacturer on the Qualified Products List to any agency of the U.S. Government, or for U.S. Government end use, is found to deviate from the originally qualified formula, or not to meet all the requirements of the specification, this shall be considered cause for possible removal from the Qualified Products List (see 3.1.5). All proposed formulation changes shall be reported to the qualifying activity, with a statement by the supplier as to the general nature of the changes, and the extent and effect of such changes on the delivered product. Changes will be evaluated by the qualifying activity for possible removal of the product from the Qualified Products List.

3.1.5 Qualification withdrawal. A supplier's product may be removed from the Qualified Products List in accordance with “Provisions Governing Application by Manufacturers for Inclusion on Federal Qualified Products List (MPLs)” (see 6.4).

3.1.6 Requalification. A supplier's product, once removed from the Qualified Products List, shall not be accepted for requalification until satisfactory data and test results have been submitted to the qualifying activity by the supplier indicating correction of the product fault(s). The qualifying activity reserves the right to levy a charge to cover the cost of testing for requalification of product(s).

3.2 Requirements.

3.2.1 Condition in container. When tested as specified in 4.5.1, the paint as received shall show no evidence of biological growth, corrosion of the container, livering, or hard settling. The paint shall be readily dispersible by hand stirring for 5 minutes to form a homogeneous paint, free from persistent foam and air bubbles.

3.2.2 Appearance. When tested as specified in 4.5.2, the paint shall produce a film which is uniform, free from grit, undispersed particles, craters, and pinholes.

3.2.3 Storage stability. When tested as specified in 4.5.3, the paint shall conform to the requirements specified in 3.2.1 and 3.2.2. The consistency shall be within the limits as specified in Table II.

3.2.4 Flexibility. When tested as specified in 4.5.4, the paint shall not crack, chip, or flake after the test panel is bent 180 degrees over a 3.2-mm (1/8-in) mandrel.

3.2.5 Abrasion resistance. When tested as specified in 4.5.5, both baked and weathered paint films shall require not less than 65 liters of sand for the removal of the paint films.
3.2.6 Water resistance. When tested as specified in 4.5.6, the paint film shall not soften, blister, wrinkle, or lose adhesion.

3.2.7 Freeze-thaw stability. When tested as specified in 4.5.7, the paint shall show no breaking of the emulsion, coagulation, change in consistency greater than 5 K.U., or a decrease in scrub resistance of more than 10 percent.

3.2.8 Heat stability. When tested as specified in 4.5.8, the paint shall show no change in consistency greater than ± 5 K.U., nor coagulation, lumps or coarse particles.

3.2.9 Luminance factor. When tested as specified in 4.5.9, the luminance factor before accelerated weathering shall be as specified in table I.

<table>
<thead>
<tr>
<th>Entrance angle</th>
<th>Luminance factor, minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type I</td>
</tr>
<tr>
<td>75°</td>
<td>10.00</td>
</tr>
<tr>
<td>90°</td>
<td>70.00</td>
</tr>
</tbody>
</table>

3.2.10 Color. When tested as specified in 4.5.10, the nonreflectORIZED type II paint shall not be more than 6.0 CIE L*a*b* units different from color No. 33538 of Fed. Std. No. 595.

3.2.11 Accelerated weathering. When tested as specified in 4.5.11, the loss in the luminance factor shall not be more than 10 percent of the value required in table I. The loss of daylight directional reflectance of the type I paint shall not be more than one percent. The color of the type II paint shall not be more than 6.0 CIE L*a*b* units different from color No. 33538 of Fed. Std. No. 595.

3.2.12 Alkali resistance. When tested as specified in 4.5.12, the coating shall show no evidence of blistering, loss of adhesion, cracking or flaking.

3.2.13 Additional requirements. The following characteristics shall be as specified in table II.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total solids, percent by weight of paint</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Consistency, Krebs Units (K.U.)</td>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>Dry opacity, at 0.13 mm (0.005 in)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wet film thickness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I - white</td>
<td>0.92</td>
<td>-</td>
</tr>
<tr>
<td>Type II - yellow</td>
<td>0.95</td>
<td>-</td>
</tr>
<tr>
<td>Daylight directional reflectance at 0.13 mm (0.005 in) wet film thickness, percent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I, white</td>
<td>92</td>
<td>-</td>
</tr>
<tr>
<td>Bleeding ratio</td>
<td>0.95</td>
<td>-</td>
</tr>
<tr>
<td>Drying time, minutes</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>Scrub resistance, cycles</td>
<td>400</td>
<td>-</td>
</tr>
</tbody>
</table>

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein.

4.2 Classification of tests. Inspections specified herein are classified as follows:

(a) Qualification testing (see 4.2.1).
(b) Acceptance testing (see 4.2.3, 4.4, and 4.5).
(c) Inspection of preparation for delivery (see 4.3).
4.2.1 Qualification testing. Qualification testing shall be conducted at a laboratory designated by the qualifying activity (see 3.1) on paint submitted in accordance with 3.1.1. Qualification inspection shall consist of tests for all requirements in section 3. The results of each test shall be compared with the applicable requirement in section 3. Failure to conform to any requirement is grounds for rejection of the sample, and the paint represented by the sample tested shall not be approved for inclusion on the Federal Qualified Products List (QPL) under this specification.

4.2.2 Different plants of the same manufacturer must be qualified individually in order to be listed on the Qualified Products List.

4.2.3 Acceptance testing. Testing for acceptance of individual lots shall consist of tests and inspections specified in sections 4.3, 4.4, and 4.5, for all requirements specified in section 3, with the exception of storage stability (3.2.3), luminance factor (3.2.9), accelerated weathering (3.2.11), and alkali resistance (3.2.12).

4.3 Sampling and inspection for acceptance.

4.3.1 Lot. For the purpose of sampling, a lot of the paint shall consist of a manufacturer's batch. A batch is defined as the end product of all raw materials mixed, blended, or processed in a single operation.

4.3.2 Inspection of preparation for delivery. An inspection shall be made to determine that the packaging, packing, and marking comply with the requirements of section 5 of this specification. The sample unit shall be one complete shipping container. Sampling shall be in accordance with MIL-STD-105. The inspection level shall be 8-2 and the AQL shall be 4.0 expressed in terms of percent defective.

4.4 Sampling for testing. Sampling shall be in accordance with MIL-STD-105. The lot shall be expressed in units of gallons. The inspection level shall be S-1 and the AQL shall be 4.0 defects per hundred units.

4.5 Test methods. Samples shall be tested as specified in table III. Unless otherwise specified, tests shall be performed at standard conditions, which are 25°C ± 1°C and 50 ± 5 percent relative humidity. All test reports shall contain the individual values utilized in expressing the final result. Test results shall be evaluated for conformance to requirements. The sample shall be unacceptable if any test result is not in conformance with the corresponding requirement in section 3.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Requirement reference</th>
<th>Test method</th>
<th>Test reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition in container</td>
<td>3.2.1</td>
<td></td>
<td>4.5.1</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.2.2</td>
<td></td>
<td>4.5.2</td>
</tr>
<tr>
<td>Storage stability</td>
<td>3.2.3</td>
<td></td>
<td>4.5.3</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3.2.4</td>
<td></td>
<td>4.5.4</td>
</tr>
<tr>
<td>Abrasion resistance</td>
<td>3.2.5</td>
<td>D 968</td>
<td>4.5.5</td>
</tr>
<tr>
<td>Water resistance</td>
<td>3.2.6</td>
<td></td>
<td>4.5.6</td>
</tr>
<tr>
<td>Freeze-thaw stability</td>
<td>3.2.7</td>
<td></td>
<td>4.5.7</td>
</tr>
<tr>
<td>Heat stability</td>
<td>3.2.8</td>
<td>370</td>
<td>4.5.8</td>
</tr>
<tr>
<td>Luminance factor</td>
<td>3.2.9</td>
<td>D 2244</td>
<td>4.5.9</td>
</tr>
<tr>
<td>Color</td>
<td>3.2.10</td>
<td>Sec. 5D</td>
<td>4.5.10</td>
</tr>
<tr>
<td>Accelerated weathering</td>
<td>3.2.11</td>
<td>D 822</td>
<td>4.5.11</td>
</tr>
<tr>
<td>Alkali resistance</td>
<td>3.2.12</td>
<td></td>
<td>4.5.12</td>
</tr>
<tr>
<td>Consistency</td>
<td>Table II</td>
<td>D 562</td>
<td></td>
</tr>
<tr>
<td>Dry opacity</td>
<td>Table II</td>
<td>D 2805</td>
<td></td>
</tr>
<tr>
<td>Reflectance</td>
<td>Table II</td>
<td>F 97</td>
<td></td>
</tr>
<tr>
<td>Bleeding ratio</td>
<td>Table II</td>
<td>D 969</td>
<td>4.5.13</td>
</tr>
<tr>
<td>Drying time, no-pick-up</td>
<td>Table II</td>
<td>D 711</td>
<td></td>
</tr>
<tr>
<td>Scrub resistance</td>
<td>Table II</td>
<td>D 2486</td>
<td></td>
</tr>
<tr>
<td>Total solids</td>
<td>Table II</td>
<td>D 2369</td>
<td></td>
</tr>
</tbody>
</table>

TABLE III. Tests and test methods.
4.5.1 Condition in container. Before stirring the contents of the container in which the material was originally packaged, check for evidence of biological growth and corrosion. Then lower a spatula into the container and determine whether the paint has livered or developed hard settling. Disperse the paint with the spatula for 5 minutes and examine for compliance with 3.2.1.

4.5.2 Appearance. Draw down the paint on a clear glass panel to a wet film thickness of 0.38 mm (0.015 in), and allow to dry for 24 hours at standard conditions. Evaluate for compliance with 3.2.2.

4.5.3 Storage stability. Fill a 550 cc (1 pt) resin-lined friction-top can with the sample as received, close tightly, and store at a temperature of 50°C. After 2 weeks, cool to standard conditions and examine paint for livering and hard settling; disperse the paint with a spatula for 5 minutes and determine the viscosity; draw down the paint on a clear glass panel to a wet film thickness of 0.38 mm (0.015 in) and allow to dry for 24 hours at standard conditions. Evaluate for compliance with 3.2.3.

4.5.4 Flexibility. Draw down the paint on a clean tin panel to a wet film thickness of 0.13 mm (0.005 in). The tin panel shall be plated manufacturers' standard gauge No. 31, measuring 76 by 127 mm (3 by 5 in). Air dry the panel for 24 hours at standard conditions, then bake for 5 hours at 107° ± 3°C, and finally condition the panel for 30 minutes at standard conditions. Place the test panel with coated side up on a 3.2-mm mandrel at a point equally distant from the top and bottom edges of the panel, and bend the panel double in approximately 1 second. Examine the film at the bend under a magnification of 7 diameters for compliance with 3.2.4.

4.5.5 Abrasion resistance. Draw down the paint on four glass panels measuring 100 by 200 mm to a dry film thickness of 0.102 to 0.107 mm (0.0040 to 0.0042 in).

4.5.5.1 Baked films. Air dry two of the panels prepared in 4.5.5 for 24 hours at standard conditions and then bake for 5 hours at 107° ± 3°C. After baking, condition the panel for 30 minutes at standard conditions and then run the abrasion test as specified in 4.5.5.2.

4.5.5.2 Weathered films. Air dry the other two panels prepared in 4.5.5 for 48 hours at standard conditions. Then subject the panels to accelerated weathering in accordance with ASTM Method D 882 for 300 hours. Remove the panels and condition for 24 hours at standard conditions, then run the abrasion test as specified in 4.5.5.2.

4.5.5.3 Test. Subject the panels prepared in 4.5.5.1 and 4.5.5.2 to the abrasion test in accordance with ASTM Method D 968, except that the inside diameter of the metal guide tube shall be from 18.97 to 19.05 mm (0.747 to 0.750 in). Five liters of unused sand shall be used for each test panel. The test shall be run on two test panels. [Note: Five liters of sand weighs 7.94 kg (17.5 lb)]. Evaluate for compliance with 3.2.5.

4.5.6 Water resistance. Apply the paint on a clean glass plate to a wet film thickness of 0.38 mm (0.015 in), and allow to dry in a horizontal position at standard conditions for 72 hours. Immerse one-half of the painted plate in distilled water at 25° ± 1°C. After 12 hours, remove the panel from the water and allow it to dry for 2 hours at standard conditions. Examine the panel for compliance with 3.2.6.

4.5.7 Freeze-thaw stability. Put 450 ml of paint in a 473-ml (1-pint) lined container, close the container, invert, and place in a chamber maintained at -10° ± 1°C. Remove the container after 16 hours and maintain at standard conditions for 8 hours. Repeat this procedure four more times. At the completion of the freeze-thaw cycles, emulsify the paint at standard conditions, mix thoroughly with gentle stirring, and examine for smoothness and uniformity. Repeat the scratch resistance and consistency tests as specified in Table III. Evaluate for compliance with 3.2.7.
4.5.8 Heat stability. Put 450 ml of paint in a 473-ml (1-pint) lined container, close the container, seal it with tape, and put it in an oven maintained at 60° + 1°C for one week. Equilibrate the paint at standard conditions and mix thoroughly with gentle stirring. Perform the consistency test as specified in table III. Evaluate for compliance with 3.2.8.

4.5.9 Luminance factor. The luminance factor shall be determined in accordance with Fed. Test Method Std. No. 370.

4.5.9.1 Test panels. Use the test panels prepared for the accelerated weathering test (4.5.11).

4.5.9.2 Test conditions. As required by section 4 of Fed. Test Method Std. No. 370, the test conditions are:

(a) Observation angle - 1.33°.
(b) Entrance angle - 75° and 88°, respectively.
(c) Presentation angle - 0°.
(d) Viewing angle - 73.67° and 86.67°, respectively.
(e) Test distance between sample and photoceptor - 50 ft.
(f) Photoceptor angular aperture - 10 minutes of arc.
(g) Angular aperture of the light projector - 10 minutes of arc.

4.5.9.3 Results. The value of each determination shall be evaluated for conformance with the luminance factor requirements in Table I (3.2.9).

4.5.10 Color. Use the nonbeaded panel with the type II paint prepared for the accelerated weathering test (4.5.11). Determine the color difference of the paint before and after weathering in accordance with ASTM Method D 2244 using the following equations to calculate the CIE \( L^*a^*b^* \) units:

\[
\Delta E = (\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2 \times 2^{1/2}
\]

where:

\[
L^* = 25(100Y/Y_*)^{1/3} - 16; \quad a^* = 500 [(X/X_*)^{1/3} - (Y/Y_*)^{1/3}]
\]

\[
b^* = 200 [(Y/Y_*)^{1/3} - (Z/Z_*)^{1/3}]
\]

\(X_*, Y_*, Z_* \) are as defined in CIE 1976 (L*a*b*)

Evaluate the results for compliance with 3.2.10.

4.5.11 Accelerated weathering. Apply the paint at a wet film thickness of 0.18 mm (0.015 in) to three glass panels measuring 165 by 432 by 6.5 mm. After 15 seconds drop 25 ± 0.2 g of glass beads on two of the panels to an area measuring 140 by 380 mm (5-1/2 by 15 in). The glass beads shall conform to TT-B-1325, type III, gradation A. Apply the glass beads in accordance with apparatus and test procedure as described in 4.5.11.1 and 4.5.11.2.

4.5.11.1 Bead dropping device. The bead dropping device (figures 1, 2, and 3) shall have a series of "V" shaped hoppers tied together mechanically to permit simultaneous opening when triggered. The bead-retaining mechanism shall be attached to the top of a box having inside dimensions of 140 by 380 by 610 mm high. To disperse the beads uniformly, an internal screen shall be provided approximately 25 mm below the bead-retaining mechanism. The base of the structure shall be open so that the paint film can be inserted. Mechanical means shall be provided to lower the structure onto the test plate and to tilt the structure so that the base may be cleaned.

[Mechanical drawings of the head dropper can be obtained from GSA-FSB; Paints Branch (FMBP), Washington, DC 20406.]
4.5.11.2 Head dropping procedure. The measured amount of heads shall be distributed uniformly in the closed "U" shaped hoppers. The paint is applied to the glass plate. The glass plate is inserted under the structure and the structure is lowered onto the plate. Exactly 15 seconds after drawdown, the head retaining device shall be mechanically triggered, allowing the heads to drop uniformly onto the painted surface.

4.5.11.3 Test procedures before weathering.

a. Air dry the panels at standard conditions for 72 hours.

b. Determine the daylight directional reflectance of the nonbeaded panel with type I paint.

c. Determine the color of the type II paint as specified in 4.5.10.

d. Determine the luminance factor of the beaded panels in accordance with 4.5.9.

4.5.11.4 Weathering. Expose the three panels for 300 hours as described in ASTM Method E 822.

4.5.11.5 Tests after weathering.

a. Dry the beaded panels at standard conditions and lightly brush the panels to remove loose glass beads. Redetermine the luminance factor in accordance with 4.5.9.

b. Wash the nonbeaded panel under running water with a degreased lamb's wool pad to remove any scum or dirt. Wipe off water with a clean cheesecloth and let dry for two hours at standard conditions. Determine the daylight directional reflectance of the type I paint. Determine the color of the type II paint, and calculate the color difference from the original color as in 4.5.10. Evaluate results for compliance with 3.7.11.

4.5.12 Alkal resistance. Prepare concrete panels from a mix of 1 part of type I portland cement and 1 part of graded Ottawa silica sand. Mix thoroughly with water to obtain a workable consistency and cast into panels measuring 76 by 76 by 13 mm. The ton surface of the panel to be coated shall be troweled smooth. Allow the panel to cure for 1 week and immediately apply the paint at a spreading rate of 100 sq ft per gallon. Allow to cure for 24 hours. Immerse the test panels in water to such depth as to have the prepared surface about 4 mm above the surface of the water for 28 days. Remove, let dry for 2 hours, and immediately examine for compliance with 3.7.12.

4.5.13 Bleeding ratio. Determine the bleeding characteristics in accordance with ASTM Method E 989, except as specified herein. The test panel shall be asphalt-naturated roofing felt. The nonbleeding contrast surface shall be provided by affixing 19 mm (3/4 in) wide collonhane tape, with firm pressure, to the entire width of the panel so that half of the 180 by 250 mm (7 by 10 in) test panel is covered. Using an applicator to give a width of 150 mm (6 in), the paint shall be applied at a wet-film thickness of 0.38 mm (0.015 in). Keep the coated panel in a flat position and allow to dry for 48 hours. Determine the 45°, 90° directional reflectance of the film in direct contact with the panel and the film on the tape in accordance with ASTM Method E 97. Five readings at different positions of the film in direct contact with the panel shall be made, and the values averaged. The same measurement procedure shall be followed for the film on the tape. The bleeding ratio shall be determined using the average value of the readings taken for the film in direct contact with the panel, and dividing this value by the average value of the readings taken from the film over the tape. Evaluate for compliance with the requirement in Table II.

5. PREPARATION FOR DELIVERY

5.1.1 Level A. The 5-gallon and 30-gallon quantities of paint shall be furnished in metal cans and metal drums, respectively, conforming to Item 260 of the National Motor Freight Classification and rule 40 of the Uniform Freight Classification.
5.1.2 Commercial. The 5-gallon and 30-gallon paint shall be packed in containers that will assure acceptance by common carrier and provide product protection against loss and damage during multiple shipments, handling and storage. The shipping container shall be in compliance with National Motor Freight Classification and Uniform Freight Classification.

5.2 Special marking. Instructions shall be included on the container as follows:

"This paint is to be used for marking airfield pavements.

"This paint is reflectorized by dropping onto the wet paint glass beads conforming to TT-R-1325, type III, gradation A. Any suitable dispensing equipment may be used provided the glass beads are uniformly spread on the surface at the specified rate.

"The surface shall be well prepared for painting, free from dirt, oil and grease, other surface contaminants, and from loose, peeling, or poorly bonded paint.

"The paint shall be applied to the surface at a rate of 100 to 110 square feet per gallon. The paint shall be applied at air and surface temperatures of 7°C (45°F) or above. The glass beads shall be dispensed at the rate of 10 pounds per gallon of paint."

6. NOTES

6.1 Intended use. This paint, either reflectorized or non-reflectorized (see 5.2), is intended to be used to mark airfield and other pavements. To form the reflectorized paint, reflective glass beads are dropped onto the surface before the paint dries or sets up.

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

(a) Title, number, and date of this specification.
(b) Unit quantity required (see 5.1).
(c) Type required (see 1.2.1).

6.3 With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bid, been tested and approved for inclusion in Qualified Products List (QPL TT-P-1952), whether or not such products have actually been listed by that date. The attention of suppliers is called to this requirement and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Federal Supply Service (FSSM), General Services Administration, Washington, DC 20406, and information pertaining to qualification of products may be obtained from that activity. Application for qualification tests shall be made in accordance with "Provisions Governing Application by Manufacturers for Inclusion on Federal Qualified Products Lists (QPL's)" (see 6.4).

6.4 Copies of "Provisions Governing Application by Manufacturers for Inclusion on Federal Qualified Products Lists (QPL's)" (published as Appendix IV-A to the Federal Standardization Handbook), may be obtained upon application to Director, Standards Control and Support Division (FSSM), Federal Supply Service, General Services Administration, Washington, DC 20406.

Military custodian: Air Force - 99

Preparing activity: GSA-PSS
FIGURE 1
BEAD DROPPING DEVICE
FIGURE 2
BEAD DROPPING DEVICE
FIGURE 3
READ DROPPING DEVICE