

TT-S-223B
June 6, 1978
SUPERSEDING
Fed. Spec. TT-S-223A
December 9, 1964

FEDERAL SPECIFICATION

SEALER, SURFACE, FLOOR, WATER EMULSION

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

1. SCOPE

1.1 Scope. This specification covers one type of resin base, water emulsion sealer, intended for sealing and reducing dust on floors such as concrete, asphalt tile, vinyl or vinyl asbestos, linoleum, and masonry. This material is not intended for wood floors.

2. APPLICABLE DOCUMENTS

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

Federal Specification:

PPP-B-636 - Boxes, Shipping, Fiberboard.

Federal Standard:

Fed. Test Method Std. No. 141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling and Testing.

(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 Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Philadelphia, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Houston, Denver, San Francisco, Los Angeles, and Seattle, WA.)

(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:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

(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.)

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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.

American Society for Testing and Materials (ASTM) Standards:

- D 29 - Lac Resins.
- D 445 - Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity).
- D 523 - Specular Gloss.
- D 1296 - Odor of Volatile Solvents and Diluents.
- D 1644 - Nonvolatile Content of Varnishes.
- E 70 - pH of Aqueous Solutions with the Glass Electrode.

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

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Association, Inc., Traffic Department, 1616 P Street, NW, Washington, DC 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, IL 60606.)

3. REQUIREMENTS

3.1 Quantitative requirements. When tested as specified in table II, the sealer shall meet the requirements specified in table I.

TABLE I. Quantitative requirements.

| Characteristics | Requirements | |
|---|--------------|---------|
| | Minimum | Maximum |
| Drying time (dry hard) (minutes) | - | 30 |
| Nonvolatile content (percent by weight) | 16.5 | 17.2 |
| pH | 7.5 | 9.5 |
| Viscosity (cSt) | - | 1.90 |
| Specular gloss, 60 degree | 80 | - |
| Sediment (percent by volume) | - | 0.2 |

3.1.1 Organic solvent and petroleum distillate. When tested as specified in 4.4.4, the sealer shall contain no organic solvent or petroleum distillate.

3.1.2 Wax. When tested as specified in 4.4.5, the sealer shall contain no wax.

3.2 Qualitative requirements.

3.2.1 Condition in container. When tested as specified in table II, the sealer shall show no evidence of skinning, gelling, separation, settling, or corrosion of the container.

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3.2.2 Odor. When tested as specified in table II, the odor of the sealer immediately after opening and during applications shall not be pungent. There shall be no residual odor after 24 hours of air drying.

3.2.3 Deleterious effect. When tested as specified in 4.4.6, the sealer shall not whiten, discolor, soften, dissolve, or blister any of the tiles.

3.2.4 Accelerated aging. When tested as specified in 4.4.7, the sealer shall not gel, separate, settle, curdle, gas, or liver.

3.2.5 Accelerated yellowing. When tested as specified in table II, the yellowness index increase of the sealer shall not be more than 0.10 percent.

3.2.6 Freeze-thaw resistance. After the sealer has been subjected to the freeze-thaw test performed as specified in 4.4.8, the viscosity of the sealer shall not be greater than 2.5 cSt.

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. Except as otherwise specified in the contract or order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government.

4.2 Inspection of preparation for delivery. As inspection shall be made to determine whether the packaging, packing and marking comply with the requirements of section 5. The sample unit shall be one shipping container. Sampling shall be in accordance with MIL-STD-105. The inspection level shall be S-2 with an AQL of 4.0 percent defective.

4.3 Testing of the end item. The methods of testing specified in 4.4 shall be followed. Sampling shall be in accordance with MIL-STD-105. The lot shall be expressed in units of gallons. The sample unit for testing shall be one gallon. The adhesive shall be marked and forwarded to the testing laboratory. The inspection level shall be S-2 and the AQL shall be 1.5 defects per hundred units. Unless otherwise specified, all test specimens shall be prepared and tested at a temperature of 23 +/- 1 degree C and a relative humidity of 50 +/- percent.

4.4 Test methods. All tests shall be conducted in accordance with the methods specified in table II to determine compliance with the requirements of section 3.

TABLE II. Test methods.

| Test | Methods | | |
|---|------------------|---------------------------------|------------------------|
| | ASTM Standard | Fed. Test Method St. No. 141 | Reference Paragraph |
| Drying time | - | 4061 | 4.4.1 |
| Nonvolatile content | D 1644 | - | 4.4.2 |
| pH | E 70 | - | - |
| Viscosity | D 445 | - | - |
| Specular gloss | D 523 | - | - |
| Sediment | - | - | 4.4.3 |
| Organic solvent and petroleum distillate | - | - | 4.4.4 |

| | | | |
|------------------------|--------|------|-------|
| Wax | D 29 | - | 4.4.5 |
| Condition in container | - | 3011 | - |
| Odor | D 1296 | - | - |
| Deleterious effect | - | - | 4.4.6 |
| Accelerated aging | - | - | 4.4.7 |
| Accelerated yellowing | - | 6132 | - |
| Freeze-thaw resistance | - | - | 4.4.8 |

4.4.4 Drying time. Draw down a film of the sealer on a clean glass panel using a Byrd film applicator that will deposit a wet film 38.1 μm in thickness. Allow the panel to dry in a horizontal position, and test as specified in method 4061 of Fed. Test Method Std. No. 141 to determine compliance with the requirement of table I.

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4.4.2 Nonvolatile content. Use method B of ASTM D 1644.

4.4.3 Sediment. Centrifuge 100 ml of the sealer in a graduated conical centrifuge tube, for 15 minutes at 2000 rpm. After centrifuging, make a direct reading of the sedimentation from the graduated tube.

4.4.4 Organic solvent and petroleum distillate. Pour 100 ml of the sealer into a distillation flask with ground glass fittings. Acidify the sealer with 10 ml of concentrated sulfuric acid. Distill the mixture, and collect the distillate in a 50-ml graduated cylinder. Collect 50 ml of distillate. Organic solvents and petroleum distillates will appear as distinct layers above or below the water layer or both. Observe the distillate for such separated layers to determine compliance with the requirements of 3.1.1.

4.4.5 Wax. Use the wax test method in ASTM D 29.

4.4.6 Deleterious effect. Obtain 2 pieces (50 by 150 mm) each of linoleum, asphalt, vinyl, and vinyl asbestos tile. Place each piece in a separate 250-ml beaker containing 150 ml of the sealer for 2 hours. Remove the tiles, and air dry for 1 hour, after which examine to determine compliance with the requirement of 3.2.4.

4.4.7 Accelerated aging. Place a tightly closed screw-top glass jar filled with the sealer in an oven set to maintain a temperature of 52 +/- 2 degrees C for 168 hours. Remove the jar from the oven, allow to cool at standard conditions (see 4.3), and examine the sealer to determine compliance with the requirement of 3.2.4.

4.4.8 Freeze-thaw resistance. Fill a 1-pint resin-lined friction-top can two-thirds full with the sealer, and close the can tightly. Expose the can and contents three times to the following temperature cycle:

- (a) Low temperature of -9 +/- 1 degree C for 16 hours.
- (b) High temperature of 23 +/- 1 degree C for 8 hours.

At the completion of the exposure test, measure the consistency of the sealer using ASTM D 445 to determine compliance with the requirement of 3.2.6.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be Level A or Commercial, as specified (see 6.2).

5.1.1 Level A. The 1-gallon quantities of sealer shall be furnished in metal cans having a minimum thickness of 28 gage (0.0129 inch). The cans shall be round, square, oval, or oblong. Both ends shall be compound lined and double-seamed in position. Side seams shall be soldered or welded in a continuous and uniform way throughout the length of the seam. Soldered seams shall have excess solder and flux removed. The cans shall be fitted with a multiple friction plug closure. The 1-gallon cans shall be provided with wire handles which shall be galvanized or otherwise protectively coated to resist corrosion. The wire shall have a diameter not less than 12 gage (0.1055 inch). The tops, bodies and bottoms shall be coated on the exterior with an olive drab, rust-resistant coating. All cans, when used to package materials having a deleterious effect on the metals, or vice versa, shall be coated on the inside with a coating which shall neither affect, nor be affected by, the product being packaged. Spot coatings on tops and bodies to facilitate soldering of trimmings shall be permitted. The side seam shall be striped with a corrosion-resistant coating.

See paragraph 5.2 for the preparation for delivery of 5-gallon and 55-gallon quantities.

5.1.2 Commercial. The 1-gallon quantities of paint shall be packaged in accordance normal commercial practice. The complete package shall be designed to protect the item against damage during shipment, handling and storage.

See paragraph 5.2 for the preparation for delivery of 5-gallon and 55-gallon quantities.

5.2 Packing. Packing shall be Level A or Commercial, as specified (see 6.2).

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5.2.1 Level A.

5.2.1.1 One gallon. Four 1-gallon cans of sealer, packaged as specified in 5.1, shall be packed in close-fitting fiberboard boxes conforming to PPP-B-636, grades V3c, V3s or V2s. The boxes shall be closed, waterproofed and reinforced in accordance with the appendix to PPP-B-636. Alternatively, wirebound, cleated plywood or nailed wood boxes shall be acceptable shipping containers when lined with a waterproof barrier material. The barrier material shall be sealed at the edges with waterproof tape or adhesive.

5.2.1.2 Five gallon. The 5-gallon quantities of sealer shall be furnished in metal pails conforming to Item 260 of the National Motor Freight Classification and Rule 40 of the Uniform Freight Classification.

5.2.1.3 Fifty-five gallon. The 55-gallon quantities of sealer shall be furnished in metal drums conforming to Item 260 of the National Motor Freight Classification and Rule 40 of the Uniform Freight Classification.

5.2.2 Commercial. The 1-gallon sealer, packaged as specified in 5.1, shall be packed in fiberboard boxes 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 the National Motor Freight Classification or Uniform Freight Classification. Five gallon pails or 55-gallon drums need no further packing.

5.3 Marking. Marking shall be as specified in the contract or order.

6. NOTES

6.1 Intended use. This specification covers a water emulsion sealer for application by flooding and spreading over asphalt tile, vinyl, vinyl-asbestos, linoleum, concrete, and masonry floors.

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) Size of container required (see 5.1 and 5.2).
- (c) Level of packaging and packing (see 5.1 and 5.2).

MILITARY INTERESTS:

PREPARING ACTIVITY:

Custodian:

GSA - FSS

Army - MR

CIVIL AGENCY COORDINATING ACTIVITY:

Review activity:

NASA - JFK

Army - ME

User activity:

Army - CE

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Priced 60 cents each.

TT-S-223B
AMENDMENT-2
January 26, 1993
SUPERSEDING
AMENDMENT-1
January 16, 1985

AMENDMENT TO FEDERAL SPECIFICATION

SEALER, SURFACE, FLOOR, WATER EMULSION TYPE

This amendment has been approved by the Commissioner, General Services Administration for the use of all Federal Agencies.

Page 1

Add under 2.1, Federal Standard:

FED-STD-313 - Preparation and Submission of Material Safety Data Sheets.

Page 3

Add 3.2.7 Alkali resistance. When tested as specified in 4.4.9, the sealer shall not whiten, discolor, soften, blister, or show any sign of detrimental effect.

Add 3.3 Material Safety Data Sheets (MSDS). An MSDS shall be submitted in accordance with FED-STD-313 (see 6.2).

In Table II, add following test method: Add "Alkali resistance" under Test, "D 1308" under ASTM, and "4.4.9" under Reference paragraph.

Page 4

Add 4.4.9 Alkali resistance. Flow the sealer on black and white vinyl composition tiles and dry vertically for 24 hours. Perform the test in accordance with the covered spot test procedure described in ASTM D 1308, using a 0.5 percent solution of reagent-grade sodium hydroxide. The reagent shall remain in contact with the sealer for 4 hours. Wipe dry and allow the panels to recover for 2 hours and examine for conformance to 3.2.7.

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Add under 6.2:

(d) Instructions and address for submission of MSDS (see 3.3).

CIVIL AGENCY INTERESTS:

VA - OSS

PREPARING ACTIVITY:

GSA - FSS

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