

TT-P-86a

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SUPERSEDED
Fed. Spec. TT-P-86
September 8, 1949

FEDERAL STANDARD STOCK CATALOG

Section IV

(Part 5)

FEDERAL SPECIFICATION

FOR

PAINT; RED-LEAD-BASE, READY-MIXED

This specification was approved on the above date by the Director, Bureau of Federal Supply for the use of all departments and establishments of the Government, and shall become effective not later than August 15, 1949, for use in procurement initiated on or after that date. It may be put into effect, however, at any earlier date after promulgation.

A. APPLICABLE SPECIFICATIONS

A-1. The following Federal Specifications, of the terms in effect on date of invitation for bids, shall form a part of this specification:

- RR-S-346—Sieves, Standard, Testing.
- TT-D-643—Drawers; Naphthenate, Liquid, Concentrated.
- TT-O-843—Oil; Linseed, Raw (For Use in Organic Coatings).
- TT-P-141—Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.
- TT-R-191—Red-Lead; Dry and Paste-in-Oil.
- TT-R-386—Resin, Alkyd; Solutions.
- TT-T-391—Thinner; Paint, Volatile Mineral Spirits (Petroleum-Spirits).

B. TYPES

B-1. Ready-mixed red-lead-base paint covered by this specification shall be furnished in the following types, as specified in the invitation for bids, contract, or order (see par. 1-1):

- Type I.—Red lead-based oil paint.
- Type II.—Red lead mixed pigment-alkyd varnish-based oil paint.
- Type III.—Red lead-alkyd varnish paint.
- Type IV.—Red lead mixed pigment-phenoctic varnish paint.

C. MATERIAL

C-1. See section E.

D. GENERAL REQUIREMENTS

D-1. See section E.

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2. DETAIL REQUIREMENTS

E-1. Color.—Type I, type III, and type IV paint shall have the usual red lead color, and type II paint shall have the color characteristic of a blend of red lead and red iron oxide.

E-2. Pigment.—The pigment used in the formulation of the paint shall be as specified in table I for the respective types.

TABLE I.—Pigment composition.

Pigment	Requirements (Percent by weight)							
	Type I		Type II		Type III		Type IV	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Red lead (TV-2-154, type I, grade C)	80.0	85.0	80.0	85.0	80.0	85.0	80.0	85.0
Aluminum silicate	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0
Red iron oxide pigment								
Min. percent (Total)			15					
Maximum silicate				5				5
Iron, all oxides								0.5
Uncombined silica								0.5

* The iron oxide pigment shall be an α-Chrome base iron oxide.

E-2a. The extracted pigment upon analysis shall conform to the quantitative requirements of table II for the respective types.

TABLE II.—Quantitative requirements of pigment.

Characteristics	Requirements (Percent by weight)							
	Type I		Type II		Type III		Type IV	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Free red lead (PbO)	80.0		80.0		80.0		80.0	
Iron oxide (Fe ₂ O ₃)								
Maximum content				15				15

E-3. Vehicles.—All vehicles shall be free from resin and resin derivatives when tested as described in paragraph F-2a. The component parts of the vehicle used in the paint shall be as follows and in the proportions specified in table V for the respective types.

E-3a. Type I.—The vehicle for type I paint shall be a blend of raw linseed oil, pale heat-bodied linseed oil, mineral spirits, and drier.

E-3b. Type II.—The vehicle for type II paint shall consist of raw linseed oil blended with a glyceryl-phthalate-type varnish composed of a linseed-oil-modified resin together with the necessary driers and volatile thinners.

E-3c. Type III.—The vehicle for type III paint shall consist of a glyceryl-phthalate-type varnish composed of a linseed-oil-modified resin together with the necessary amounts of driers and volatile solvents and thinners.

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E-24. Type IV.—The vehicle for type IV paint shall be a straight phenolic spar varnish suitable for grinding with red lead and shall consist of a 15-gallon-length varnish composed of 85 gallons of tung oil and 100 pounds of a 100-percent-pure, non-heat-hardening phenolic resin plus the necessary driers and volatile thinners.

E-25(1). The resin as specified herein for use in the vehicle for type IV paint shall be of the one grade, namely, that known commercially as a 100-percent para-tertiary amyl, para-formaldehyde resin and shall conform to the requirements of table III.

TABLE III.—Properties of the phenolic resin.

Characteristics	Requirements	
	Minimum	Maximum
Specific gravity at 25°C.	1.25	1.30
Softening point (ring and ball method)	125	135
Color (25 percent solution in toluene, Gardner system 1928)	10	15
Ash, percent	0	0.05
Compatibility in oil at 25°C. (25 percent solution)	Clear	

¹ Resin was checked and checked before. It shall be checked after it is used.

E-26(1). The phenolic resin tung oil varnish as specified herein for use in the vehicle for type IV paint shall conform to the requirements of table IV. A suggested formula and cooking schedule for the varnish is outlined in paragraph 1-7, note (1).

TABLE IV.—Properties of the phenolic varnish.

Characteristics	Requirements	
	Minimum	Maximum
Hardness (measured, percent by weight)	7	8
Viscosity (measured, Brookfield Viscometer, 100°F.)	12	15
Color (measured, Gardner 1928)	10	15
Weight per gallon in pounds	12	15
Drying time, to harden one coat, 2-4 days	1	1
Hardness (measured, Brookfield Viscometer, 100°F.)	12	15
Color (measured, Gardner 1928)	10	15
Weight per gallon in pounds	12	15
Drying time, to harden one coat, 2-4 days	1	1
Clear finish	What you test	
Appearance	What you test	
Shrinkage of film	What you test	

TABLE V—Volatile composition^a

Ingredients	Representative Quantities by weight							
	Type I		Type II		Type III		Type V	
	Mm.	Max.	Mm.	Max.	Mm.	Max.	Mm.	Max.
Raw Soybean Oil	25	30	30	35	35	40	40	45
Flax Seed Oil	15	20	20	25	25	30	30	35
Castor Oil	10	15	15	20	20	25	25	30
Linseed Oil	5	10	10	15	15	20	20	25
Other Vegetable Oils	5	10	10	15	15	20	20	25
Other Ingredients	5	10	10	15	15	20	20	25

* Tablets may contain appropriate amounts of non-actives and filling oils.

E-4. Load quantification requirements.—The points shall meet the quantitative requirements specified in table VI for the respective types.

TABLE VI—Quantitative requirements of the points.

[illegible]

* Conforming to Federal Specification QQ-B-492A.

B-6. Qualitative requirements—

E-4. Condition in container.—The paint shall not show excessive settling in a freshly-opened, full can, and shall be easily re-dispersed with a paddle to a smooth, homogeneous state. The paint shall show no curdling, flaking, caking, or color separation, and shall be free from lumps and skins. (See part E-6f and I-4.)

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E-3h. Dilution stability.—The paint shall remain stable and uniform after reduction in the proportions of eight parts by volume of the packaged material with not more than one part by volume of mineral spirits conforming to Federal Specification TT-T-191, grade 1.

E-3i. Brushing properties.—The paint as received shall brush easily, possess good leveling properties, and show no running or sagging tendencies when applied at a spreading rate of 800 square feet per gallon to smooth steel vertical surfaces.

E-3j. Spraying properties.—The paint when reduced as specified in paragraph E-3h, shall spray satisfactorily, show no tendency to orange-peel, sag, creep, or run, and show satisfactory spraying properties, in all other respects.

E-3k. Flexibility.—The paint shall show no cracking when tested in accordance with paragraph F-2a. (See applicable footnotes to table in par. F-2a.)

E-3l. Shinning.—The paint shall not skin within 48 hours in a three-quarters-filled, closed container.

E-3m. Appearance.—The paint shall dry to a smooth uniform finish free from roughness, grit, unevenness, and other surface imperfections (see par. F-2d(1)). The paint shall show no streaking or separation when flowed on clean glass. (See par. F-2d(2).)

E-3n. Hot water resistance (type IV, varnish only).—The phenolic varnish film after recovery from immersion in boiling water (see footnote 4 to table in par. F-2a) shall show no evidence of blistering, dulling, whitening, or loss of adhesion.

E-3o. Alkali resistance (type IV, varnish only).—The phenolic varnish film after recovery from alkali immersion (see footnote 4 to table in par. F-2a) shall show no change in appearance such as haze spots, pits, or loss of adhesion.

E-3p. Cold water resistance (type IV, paint).—When exposed to acid distilled water as specified in paragraph F-2c, the film of paint shall show no blistering or wrinkling immediately upon removal of the panel. There shall be no softening of the film and not more than a very slight whitening when examined 2 hours after removal.

E-3q. Storage stability.—Unless otherwise specified by the procuring agency, the paint shall show no thickening, rudding, gelling, or hard caking when stored for 6 months, from the date of delivery to the Government procuring agency, in a full, tightly-covered container, at a temperature of 21° to 31° C. (70° to 88° F.).

V. METHODS OF SAMPLING, INSPECTION, AND TESTS

F-1. Sampling.—Sampling shall be performed in accordance with method 1021 of Federal Specification TT-P-141. Samples of type IV paint shall be accompanied by samples of the resin and the varnish used in its manufacture. (See pars. I-3 and I-4.)

F-2. Tests.—Tests shall be made in accordance with the applicable methods of Federal Specification TT-P-141 and as specified hereinafter:

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P-3a. The following tests shall be conducted in accordance with Federal Specification TT-P-141:

Test	Method
Percentage of pigment	401
Free and bound Pigment	402
Free and bound Pigment	403
Percentage of binder	404
Percentage of binder	405
Percentage of binder	406
Percentage of binder	407
Percentage of binder	408
Percentage of binder	409
Percentage of binder	410
Percentage of binder	411
Percentage of binder	412
Percentage of binder	413
Percentage of binder	414
Percentage of binder	415
Percentage of binder	416
Percentage of binder	417
Percentage of binder	418
Percentage of binder	419
Percentage of binder	420
Percentage of binder	421
Percentage of binder	422
Percentage of binder	423
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Percentage of binder	426
Percentage of binder	427
Percentage of binder	428
Percentage of binder	429
Percentage of binder	430
Percentage of binder	431
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Percentage of binder	495
Percentage of binder	496
Percentage of binder	497
Percentage of binder	498
Percentage of binder	499
Percentage of binder	500

* A gravity separation test may be used to determine the non-volatile content of the superconcentrated material if the procedure outlined in method 404.1 is modified as follows: Each sample (from 0.2 to 1.0 grams) of the sample, by difference, test for 1 hour, and add weight. Use the lower value to determine the percentage of non-volatile matter.

* Make the test on a portion of the indicated vehicle.

* Apply the paint to the test piece with a 0.002 inch (0.051 mm) thickness. Apply the paint by using variable means. The testing and handling conditions for each type of paint are given below.

Type I—Allow the paint to dry for 16 hours at room temperature and then bake for 6 hours at 100° ± 2° (212° ± 2°). Condition the panel for a minimum of 16 minutes at 50° ± 1° (122° ± 1°) and then bake at that temperature over a 1/4 inch diameter. Examine for cracks in a strong light at 5 diameter magnification.

Type II—Allow the paint to dry for 16 hours at room temperature. Bake for 6 hours at 100° ± 2° (212° ± 2°). Condition the panel for a minimum of 16 minutes at 50° ± 1° (122° ± 1°) and then bake at that temperature over a 1/4 inch diameter. Examine for cracks in a strong light at 5 diameter magnification.

Type III—Allow the paint to dry for 16 hours at room temperature. Bake for 6 hours at 100° ± 2° (212° ± 2°). Condition the panel for a minimum of 16 minutes at 50° ± 1° (122° ± 1°) and then bake at that temperature over a 1/4 inch diameter. Examine for cracks in a strong light at 5 diameter magnification.

Type IV—Allow the paint to dry for 16 hours at room temperature. Bake for 6 hours at 100° ± 2° (212° ± 2°). Condition the panel for a minimum of 16 minutes at 50° ± 1° (122° ± 1°) and then bake at that temperature over a 1/4 inch diameter. Examine for cracks in a strong light at 5 diameter magnification.

The following immersion tests shall be made on the plastic vehicle specified in paragraph 5.4d.1, subject as specified in paragraph P-4g.1.

1. Hot water resistance, type IV, normal only—The vehicle shall be passed on a panel freshly cleaned with solvent and of the size and type required for the hot-water test. After drying on the vehicle, it shall be allowed to spread over the entire face of the panel except for the upper 0.5 inch and then allowed to dry in a fairly vertical position for 16 hours. When dry, a 0.5 inch strip of the panel shall be cut off at the edge which was the

7-H(1). Specific gravity.—A piece of resin, 4 to 6 grams in weight shall be weighed first in air and then in water at 77° F. to

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the nearest milligram. The resin shall be free from bubbles, cracks, dust, and abrupt depressions. The piece shall be suspended on a loop of fine wire during the weighings. The determination shall be repeated on three separate pieces and the average result reported.

F-22(2). Softening point.

F-22(2)a. Apparatus (see fig. 1).—The apparatus shall consist of the following:

(a) Two circular brass plates, $\frac{1}{8}$ inch thick and $2\frac{1}{4}$ inches in diameter; one plate has three holes equally spaced about its center, each $\frac{1}{8}$ inch in diameter. A shoulder $\frac{1}{16}$ inch deep and $\frac{1}{8}$ inch wide is cut around each hole so that the molds will fit snugly without danger of sliding off. These plates shall be attached to one end of a threaded steel rod, $\frac{1}{4}$ inch by 12 inches, through their centers, by means of $\frac{1}{8}$ inch hexagonal nuts, in such a manner that their opposing faces are $\frac{1}{8}$ inch apart and parallel.

(b) Three corrosion-resisting steel molds, $\frac{1}{8}$ inch outside diameter, $\frac{1}{8}$ inch deep, diameter of hole at top $\frac{1}{8}$ inch, diameter of hole at bottom $\frac{1}{8}$ inch; permissible variation in all dimensions of 0.01 inch.

(c) Steel ball bearings, $\frac{1}{8}$ inch in diameter, and weighing between 1.97 and 2.07 grams.

(d) Glass beaker, 1.5 liter capacity.

(e) Well-annealed glass test tube, 8 inches long by $2\frac{1}{8}$ inches inside diameter.

(f) Two standardized thermometers, 0 to 400° F. range, 0.25 inch in diameter, and 18 inches long.

F-22(2)b. Preparation of sample.—Powder the sample in a mortar or break into pieces the size of wheat grains. Place the empty molds on an amalgamated brass plate, fill with the ground resin, apply slight heat to the brass plate, and pack the melting resin down into the mold with a spatula. Continue until the mold is filled level with the top and there are no bubbles showing. Separate the mold from the amalgamated plate and trim off the excess resin with a knife. It is convenient to make an indentation of not more than 1 millimeter in the center of the molded resin to prevent the steel ball from rolling off. The resin in the molds should be clear, fused masses. Only enough heat is applied during filling to melt the resin sufficiently to be packed down smoothly. All this operation should be done as rapidly as possible to avoid excessive loss of resin by volatilized substances in the resin.

F-22(2)c. Procedure.—Assemble the apparatus as illustrated by figure 1. See that the bottom of the inner thermometer is even with the bottom of the steel ball on top of the molded resin and the bulb of the outer thermometer is so suspended as to be opposite the lower brass plate. Fill the beaker with water-white glycerine to within $\frac{1}{8}$ inch of the top when the test tube is inserted. Heat the beaker containing the glycerine, with test tube and outer thermometer in place, to 150° F. (64°C.). Introduce the resin plug and inner thermometer so that the bottom plate is $1\frac{1}{8}$ inches above the bottom of the test tube. Continue heating and regulate it so that there will be a rise in temperature of 4° to 5° F. (2° to 3°C.) per minute in the bath. The temperature

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JAN-P-106—Packaging and Packing for Overseas Shipments—Boxes: Wood, Nailed.

JAN-P-108—Packaging and Packing for Overseas Shipments—Boxes, Fiberboard (Wallboard and Wireboard), Lateral and Interior.

JAN-P-124—Packaging and Packing for Overseas Shipments—Containers (Cans, Pails, and Drums), Metal (for Other than Substantive Items).

U. S. Army Specifications

100-2—Standard Specification for Marking Shipments by Contractors.

(Contents of specifications required for Army purchases may be obtained upon application to the procuring agency. Both the title and identifying symbol or number should be stipulated when requesting copies.)

H-2b. Packaging for overseas shipment.—Unless otherwise specified, the paint shall be packaged in 1-gallon cans, 5-gallon steel pails, or in 55-gallon steel drums, as specified in the invitation for bids.

H-2b(1). One-gallon cans.—When specified, 1-gallon cans shall conform to the requirements for class A of Federal Specification RR-C-56 for cylindrical friction-cover cans.

H-2b(2). Five-gallon steel pails.—Five-gallon steel pails shall conform to the requirements for type VI of Joint Army-Navy Specification JAN-P-124. Pails shall be of the lug-cover type with 16 lugs.

H-2b(3). Fifty-five gallon steel drums.—When specified, 55-gallon steel drums shall conform to the requirements for type IV of Federal Specification RR-D-141.

H-3a. Packing for overseas shipment.

H-3a(1). One-gallon cans.—Four 1-gallon cans shall be packed in a single-layer closed plywood or nailed wood box, conforming to the requirements of Joint Army-Navy Specifications JAN-P-106 and JAN-P-108, respectively. Each can shall be separated from the adjacent cans by a full-height, full-width, double-faced corrugated board divider. In addition, top and bottom pads shall be provided. Corrugated board shall conform to the requirements of Joint Army-Navy Specification JAN-P-108, type CY, grade E.

H-3a(2). Five-gallon pails and 55-gallon drums.—Five-gallon steel pails and 55-gallon steel drums will not require crisscrossing.

H-3d. Marking and labeling.

H-3d(1). Packages.—Unless otherwise specified, each package shall be marked or labeled in accordance with the requirements of paragraph G-2.

H-3d(2). Shipping containers.—In addition to any marking required by the contract or order, marking of shipping containers for Army purchases shall conform to the requirements of U. S. Army Specification 100-2.

H-3e. Use of type IV paint for drums.—Interiors of potable water tanks will not be given red lead coatings. For other work,

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type IV will be used where suitable for the intended use. However, formulations for submerged exposures frequently must be based on local conditions.

H-1. Notes.

H-1a. Applicable specifications and other publications.

Federal Specifications:

LLL-B-631—Boxes, Fiber, Corrugated (for Domestic Shipments).

LLL-B-634—Boxes, Fiber, Solid (for Domestic Shipments).

Joint Army-Navy Specifications:

JAN-P-105—Packaging and Packing for Overseas Shipments—Boxes: Wood, Nailed.

JAN-B-107—Boxes, Wood, Wirebound (Overseas Type).

JAN-P-124—Packaging and Packing for Overseas Shipments—Containers (Cans, Pails, and Drums), Metal (for Other than Substances Items).

Navy Department Specifications:

General Specifications for Inspection of Material

Bureau of Supplies and Accounts Publications:

Navy Shipment Marking Handbook

(Copies of Federal and Joint Army-Navy specifications required for Navy purchases, Navy Department specifications, and the Navy Shipment Marking Handbook may be obtained without cost upon application to the Bureau of Supplies and Accounts, Navy Department, Washington 25, D. C., except that Naval activities should make application to the Supply Officer in Command, Naval Supply Center, Norfolk 11, Va. Both the title and identifying symbol or number should be stipulated when requesting copies of specifications.)

H-1b. Packaging for domestic and overseas shipment.—The point shall be furnished in 1-gallon, multiple-friction-top cans or in 1-gallon, lug-cover steel pails, as specified in the contract or order.

H-1b(1). One-gallon cans.—One-gallon, multiple-friction-top cans shall conform to the requirements for type IV of Joint Army-Navy Specification JAN-P-124.

H-1b(2). Five-gallon steel pails.—Five-gallon, lug-cover, steel pails shall conform to the requirements for type VI of Joint Army-Navy Specification JAN-P-124.

H-2a. Packaging.

H-2a(1). For domestic shipment.

H-2a(1)a. One-gallon cans.—Four 1-gallon cans shall be packed in a nailed wood box or wire-bound wood box conforming to the requirements of Joint Army-Navy Specifications JAN-P-106 and JAN-B-107, respectively, or in a style ESC corrugated or solid fiberboard box having a minimum Wallen test of 7.1 pounds and conforming to the requirements of Federal Specifications LLL-B-631 and LLL-B-634, respectively. No strapping will be required.

H-2a(1)b. Five-gallon steel pails.—Five-gallon, lug-cover, steel pails will require no overpacking.

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H-3c(1). For overseas shipment—

H-3c(1)a. One-gallon cans.—Four 1-gallon cans shall be packed in a nailed wood box or wirebound wood box conforming to the requirements of Joint Army-Navy Specifications JAN-P-104 and JAN-B-107, respectively.

H-3c(1)b. Five-gallon steel pails.—Five-gallon, lug-cover, steel pails will require no overpacking.

H-3d. Marking.—In addition to any special marking required by the contract or order, marking of interior packages and shipping containers shall be in accordance with the requirements of the Navy Shipment Marking Handbook.

H-3e. Ordering information.—Requests, requisitions, schedules, and contracts or orders should specify the type of container required and whether domestic or overseas packing is required. (See para. H-3b and H-3d.)

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H-4. Air Force.—Unless otherwise specified in the contract or order, each shipping container shall be marked in accordance with the requirements of U. S. Army Specification 94-40644, Marking; Exterior, Domestic and Export Shipment, by Contractors. (Copies of specifications required for Air Force purchases may be obtained from the Commanding General, Air Material Command, Wright-Patterson Air Force Base, Dayton, Ohio).

1. NOTES

1-1. Intended use of the paint—

1-1a. Types I and II.—Type I and type II paints are intended for use on bridges, similar structural steel, and other ferrous metal surfaces. They are suitable for priming and body coats, either in the shop or field, where good resistance to the corrosive effects of aerial atmospheric environments is required. Type I paint may be used wherever painting schedules do not demand recoating in less than 24 hours. The vehicle solids, being all linseed oil, offer the best opportunity to wet the metal surface painted and therefore to obtain an intimate bond of the paint with the surface despite the presence of small amounts of corrosion products found impractical to remove. Type II paint is designed for use where painting schedules require handling and recoating in 16 hours. The presence of the specified amount of free linseed oil in this type of paint is desirable for the purpose of obtaining intimate bonding with the metal surface due to the wetting characteristics of the oil.

1-1b. Type III.—Type III paint is intended for use in painting thoroughly clean iron and steel surfaces and for touch-up work where drying within a 6-hour period is desired. It is intended for use on smooth steel particularly, as an industrial primer for priming articles fabricated at the factory, such as railroad cars, window sash, air-conditioning conduits, etc. It may be used as a general maintenance primer for touch-up work on thoroughly cleaned steel where rapid drying is essential and where the application of two coats within a day is desired. It is essential that paints of this type be applied to exceptionally clean surfaces, since due to their fast drying properties and reduced oil content, they do not

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have the surface wetting properties which characterize paints containing free linseed oil. Thus, because structural steel (bridges, tanks, etc.) is rarely cleaned free of corrosion products, this paint is not generally intended for such use, although with due consideration to surface preparation it can be so used for spot priming.

1-1c. **Type IV.**—Type IV paint is intended for use as a primer on iron and steel surfaces particularly as those subjected to severe humid conditions or fresh water immersion. In addition to its excellent water impermeability, the paint film exhibits good resistance to acid and alkali environments. Water storage tanks, structural work on dams, structural metal and equipment in bottling plants, laundries, and mines are typical of the steel surfaces for which this paint is particularly effective as a protective coating. The same precautionary steps should be taken to insure a clean surface for application as required for the type III paint.

1-1. **Ordering data.**—Purchasers should specify the type of paint required, and should exercise any desired options offered herein. (See parts B-1, E-4k, G-1, G-2, G-3, H-2a, H-2d(1), H-2e, and H-4.)

1-2. Paint covered by this specification should be purchased by volume (231 cubic inches equals 1 U. S. gallon).

1-3. It is suggested to procurement officers making purchases of red lead paint for stock that amounts sufficient to cover the needs for not over approximately 6 months in advance be purchased at one time. Storage of the product under normal warehouse conditions is permissible, although long exposure to either extremely high or low temperatures should be avoided.

1-4. Attention of Government procuring agencies is directed to paragraph E-4k. In order that the testing laboratory may make the "storage stability" determination, it will be necessary that the date of delivery be marked on the sample submitted for test or that this information be contained in the letter of transmittal.

1-5. Samples of delivered paint of types I, II, and III may be taken in the regular manner and submitted for test. In order to determine compliance of type IV paint with the specification, however, it will be necessary for the purchaser to submit to the testing laboratory samples of the resin and the varnish used in the manufacture of the paint in addition to a sample of the finished paint.

1-7. Typical formulas (with all percentages by weight) for the four types of paint meeting this specification are as follows:

[illegible]¹ A different type of red iron oxide averaging not less than 95 percent Fe_2O_3 .

* Measurements of type I pods are continued to see a second all seeds having low oil content, but over 8 inches in total length. An important point in this investigation is that the base of the seed in the young should be distinct of a low temperature.

[illegible]

1-2. The addition of a small amount of aluminum stearate to all four types of paint is required to insure loose suspension of the pigment in the vehicle during storage.

1-8 The paint equivalent to that covered by UTS 1 of this specification may be made by thinning 100 pounds of dry red lead in oil paste (Fed. Spec. TT-R-181, type II, grade C) with 2 to 4 gallons of linseed replacement oil (Fed. Spec. TT-O-181) and 1 to 3 pints of turpentine or mineral spirits. The formula may yield 4 to 5 gallons of paint depending upon the amount of reducing liquids used. A similar paint may be made by mixing 100 pounds of dry red lead (Fed. Spec. TT-R-181, type I, grade C) with 3 1/2 to 4 gallons of linseed replacement oil (Fed. Spec. TT-O-181). This formula will yield 4 1/2 to 5 gallons of paint. These formulas have been used for the mixing of paint. The paint obtained from the various raw materials, in accordance with these mixing formulas, it is realized that only such amounts of paint will be mixed as will be used in a short time. Therefore, the omission of the required aluminum stearate is permissible.

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1-10. It is believed that this specification adequately describes the characteristics necessary to secure the desired material and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid sample should be definitely stated, the specification to apply in all other respects.

1-11. Federal specifications do not include all types, classes, grades, sizes, etc., of the commodities indicated by the titles of the specifications, or which are commercially available, but are intended to cover the types, etc., which are suitable for Federal Government requirements.

1-12. An Index of Federal Specifications may be purchased as noted in the paragraph below, prior to be obtained from the Superintendent of Documents.

1-13. Copies of this specification and of those referred to in paragraph A-1 may be obtained upon application, accompanied by postal note, money order, coupon, or cash to the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price 5 cents each; except TT-P-141, \$2.00.

Notes.—When Government drawings, specifications, or other data are used for any purpose other than in connection with a delivery ordered Government procurement operation, the United States Government thereby incurs no responsibility, and the fact that the Government may have furnished, furnished, or in any way approved the said drawings, specifications, or other data, is not to be construed by implication or otherwise as in any manner limiting the liability of any other person or corporation, or restricting any rights or privileges to manufacture, sell, or sell any patented invention that may in any way be related thereto.

VI-2-34-11 FEDERAL STANDARD STOCK CATALOG
(Spec 201) (Section IV, Part 2)

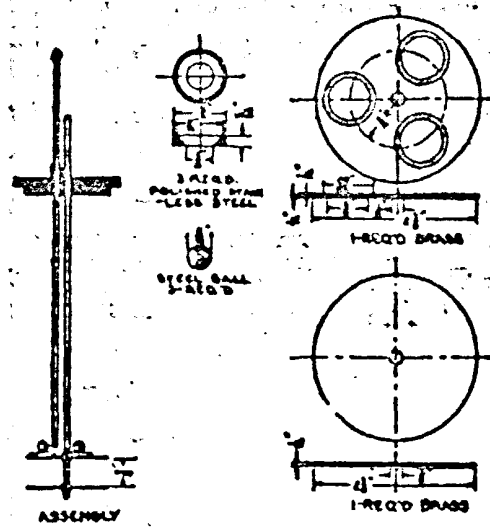


FIGURE 1.—Detail of softening point apparatus for phenolic resin in type IV grade.

FEDERAL STANDARD STOCK CATALOG
(Section IV, Part 5)

77-2-26-27
(May 1964)

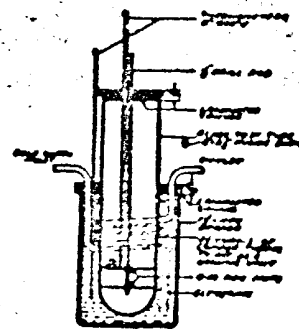


FIGURE 2.—Cross section of confining point apparatus assembly.

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Price 6 cents.

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(Section IV, Part 2)

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recorded by the inner thermometer at the instant the ball drops through the ring and touches the bottom brass plate shall be taken as the softening point of the sample.

F-2g. Analysis of phenolic varnish.

F-2g(1). Tests on varnish as specified.—The following tests shall be made on the varnish as specified for use in type IV paint before the addition of driers and additional thinners: (See part F-2a.) Viscosity, color, and weight per gallon. (See part F-2a.)

F-2g(2). Tests on varnish after thinning and adding driers.—All other tests to be run on the varnish specified (part F-2d(1)) shall be made after the following additions of driers and thinners: Sufficient naphthenate driers conforming to the requirements for types I (lead), II (cobalt), and III (manganese) of Federal Specification TT-C-643 shall be added to the varnish to give 0.3 percent lead, 0.04 percent cobalt, and 0.01 percent manganese, expressed as metals and based on the solids in the varnish. Sufficient thinner conforming to Federal Specification TT-T-141, grade 1, shall also be added to give a viscosity of C-I (Gardner-Bulbule Viscometer). Driers should be allowed an incorporation time of 48 hours before proceeding with any of the tests.

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT

G-1. Packaging.—Unless otherwise specified, commercial packages will be acceptable.

G-2. Packing.—Unless otherwise specified, the subject commodity shall be packed in substantial commercial containers of the type, size, and kind commonly used for the purpose, so constructed as to insure acceptance and safe delivery by common or other carriers, at the lowest rate, to the point of delivery called for in the contract or order.

G-3. Marking.—Unless otherwise specified, shipping containers shall be marked with the name of the material, the type, and the quantity contained therein, as defined by the contract or order under which the shipment is made, the name of the contractor, and the number of the contract or order.

H. REQUIREMENTS APPLICABLE TO INDIVIDUAL DEPARTMENTS

H-1. The following specifications and other publications, of the Bureau in effect on date of invitation for bids, and special requirements, shall form a part of this specification, and shall be applicable to purchases made under this specification by the respective departments.

H-2. Army.—

H-2a. Applicable specifications.—

Federal Specifications:

RR-C-44—Cans, Steel (Tinned-Plate, Terne-Plate, and Black Sheet); Friction-Covers.

RR-D-741—Drums; Steel, Type 4C (for Inflammable Solids or Oxidizing Materials).

Joint Army-Navy Specifications:

JAN-F-106—Packaging and Packing for Overseas Shipment—Boxes, Wood, Cleated, Plywood.