



S. L. DAVIDSON  
CHIEF—PAINT DEVELOPMENT

# NATIONAL LEAD COMPANY

P. O. BOX 831, PERTH AMBOY, N. J.  
TELEPHONE: VALLEY 6-6000

December 13, 1956

Mr. J. A. Southworth  
National Lead Company  
111 Broadway  
New York, New York

Dear Jack:

Attached in triplicate are -

1. Formula for 116 White Lead Paint.
2. Certificate of analysis and compliance of 116 White Lead Paint versus TT-P-104.
3. Certificate of analysis and compliance of Soft Paste White Lead versus TT-W-251C, Type C.
4. Federal Specification, TT-P-104, dated April 21, 1951.
5. Federal Specification, TT-W-251C, dated May 14, 1954.

I am sending TT-W-251C as that specification was in effect in September 1955 and superseded TT-W-251B.

Very truly yours,

S. L. Davidson

SLD:feg

Encl. 15

0000-NLI-000020565

MANUFACTURING FORMULA - DATED 12-1-54

116 WHITE LEAD PAINT

| <u>MATERIAL</u>                           | <u>CODE</u> | <u>LBS.</u> | <u>GALS.</u> |
|-------------------------------------------|-------------|-------------|--------------|
| BASIC CARBONATE WHITE LEAD IN LINSEED OIL | WH-20P *    | 1693.25     | 54.62        |
| MODIFIED REFINED LINSEED OIL              | O-9         | 209         | 26.62        |
| BODIED LINSEED OIL SOLUTION               | V-39 **     | 83          | 10.94        |
| MINERAL SPIRITS - HEAVY                   | TH-81       | 77.25       | 11.44        |
| 24% LEAD NAPHTHENATE                      | DR-33       | 2           | .21          |
| 6% MANGANESE NAPHTHENATE                  | DR-35       | 5/8         | .06          |
|                                           |             | 2065.13     | 103.91       |

|                     | <u>Min.</u> | <u>Max.</u> |
|---------------------|-------------|-------------|
| Weight/Gallon:      | 19.72       | 20.02       |
| Consistency, grams: | 290         | 360         |
| Fineness of Grind:  | 4.0         | 5.0         |
| Drying Time, Hours: |             | 18          |

|                       |       |
|-----------------------|-------|
| * White Lead          | 87.5% |
| Linseed Oil           | 10.0% |
| Mineral Spirits       | 2.5%  |
| ** Bodied Linseed Oil | 70.5% |
| Mineral Spirits       | 29.5% |

0000-NLI-000020566

N 2441.01

December 12, 1956

Gentlemen:

This is to certify that we have tested Dutch Boy 116 White Lead Paint manufactured according to the manufacturing formula for this product which is attached, against the requirements of Federal Specification TT-P-104 dated April 23, 1951 using the test methods therein specified and obtained the following results:-

These results indicate that the paint complies with all specification requirements.

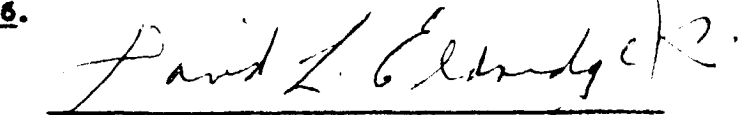
| <u>Specification Requirements</u> | <u>Min.</u> | <u>Max.</u> | <u>Sample Performance</u> |
|-----------------------------------|-------------|-------------|---------------------------|
| Pigment, %                        | 71          | 73          | 71.74                     |
| White Lead, %                     | 99          |             | 99.9                      |
| Weight per gallon, lbs.           | 19.5        |             | 19.87                     |
| Water, %                          |             | 1           | Trace                     |
| Non Volatile Vehicle/Vehicle      | 70          | 75          | 74.8                      |
| Kauri Reduction, %                | 225         |             | Passes 250                |
| Coarse Particles and Skins, %     |             | 2           | .35                       |
| Consistency, grams                | 175         | 375         | 350                       |
| Drying Time, Hours                |             | 18          | 15                        |
| Reflectance                       | 75          |             | 86                        |
| Absorption, inches                |             | 1           | 3/4                       |
| Working Properties                |             |             | Pass                      |

Very truly yours,

  
S. L. Davidson

SLD:feg

SUBSCRIBED AND SWORN TO BEFORE ME, A NOTARY PUBLIC OF THE STATE OF NEW JERSEY  
THIS 13th DAY OF DECEMBER, 1956.

  
DAVID L. ELDRIDGE, JR.

December 12, 1956

Gentlemen:

This is to certify that we have tested Dutch Boy Soft Paste White Lead against Federal Specification TT-W-251C, Type C dated May 14, 1954 using the test method therein specified and obtained the following results:

These results indicate that this material complies with all specification requirements.

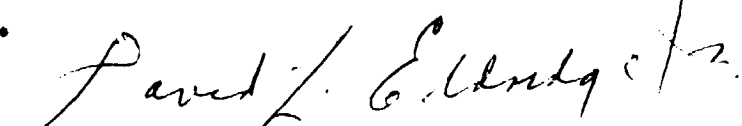
| <u>Specification Requirements</u>  | <u>Min.</u> | <u>Max.</u> | <u>Sample Performance</u> |
|------------------------------------|-------------|-------------|---------------------------|
| Pigment, %                         | 87.5        |             | 88.0                      |
| Linseed Oil, %                     |             | 10.5        | 9.8                       |
| Volatile Matter and Moisture, %    | 1.5         | 3.0         | 2.2                       |
| Coarse Particles and Skins, %      |             | 1.5         | .3                        |
| Moisture, %                        |             | .7          | Trace                     |
| Iodine Number of Linseed Oil Acids | 175         |             | 180                       |

Very truly yours,

  
S. L. Davidson

SLD:feg

SUBSCRIBED AND SWORN TO BEFORE ME, A NOTARY PUBLIC OF THE STATE OF NEW JERSEY  
THIS 13th DAY OF DECEMBER, 1956.

  
DAVID L. ELDRIDGE, JR.

NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires March 1, 1961

0000-NLI-000020568

N 2441.03

NATIONAL LEAD COMPANY

JUL 22 1951

SPECIFICATIONS DEPARTMENT

TT-P-104

23 APRIL 1951

SUPERSEDED

Fed. Spec. TT-P-44, Type II

19 May 1948

## FEDERAL SPECIFICATION

# PAINT (WHITE LEAD AND OIL, EXTERIOR, READY-MIXED, WHITE AND LIGHT TINTS)

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

### 1. SCOPE AND CLASSIFICATION

1.1 Scope.—White lead and oil ready-mixed paint covered by this specification is for general exterior use, particularly on wooden structures. (See 6.1 and 6.3.)

#### 1.2 Classification.

1.2.1 Type and color.—The paint covered by this specification shall be of but one type; it may be procured, however, in white and tints (light colors) as specified by the procuring agency. (See 3.2.4.3 and 6.2.)

### 2. APPLICABLE SPECIFICATIONS

2.1 The following Federal Specifications, of the issues in effect on date of invitation for bids, form a part of this specification:

RR-S-366 —Sieves; Standard, Testing.  
TT-D-651 —Drier, Paint, Liquid.  
TT-O-367 —Oil; Linseed, Heat-Polymerized (Bodied), for Paint, Varnish, and Enamel.  
TT-O-369 —Oil; Linseed, Raw (for Use in Organic Coatings).  
TT-P-141 —Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.  
TT-P-143 —Paint, Varnish, Lacquer, and Related Materials; General Specification for Packaging, Packing, and Marking.

TT-T-291 —Thinner; Paint, Volatile Mineral Spirits (Petroleum-Spirits).

TT-T-801 —Turpentine; Gum Spirits and Wood (Steam-Distilled and Sulfate) (for Use in Organic Coatings).

TT-W-251 —White-Lead; Basic-Carbonate, Dry, Paste-In-Oil, and Semipaste Containing Volatile Thinner.

(Copies of Federal specifications and the Federal Specifications Index may be obtained upon application, accompanied by money order, coupon, or cash, to the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Prices may be obtained from the Superintendent of Documents.)

2.2 Specifications and publications applicable only to individual departments are listed in section 7.

### 3. REQUIREMENTS

3.1 General requirements.—The paint shall be ready-mixed.

#### 3.2 Detail requirements.

3.2.1 Pigment.—In white paint the pigment shall contain not less than 99 percent of basic carbonate white lead; in tinted paint the pigment shall contain not less than 95 percent of basic carbonate white lead, the remainder to be tinting colors of high strength. (See table III, item 2.)

## TT-P-104

**3.2.1.1 White lead.**—The white lead in white or tinted paint shall be entirely basic carbonate white lead conforming to Federal Specification TT-W-251, type A.

**3.2.1.2 Matter soluble in water.**—The pigment shall contain no more than 0.8 percent by weight of matter soluble in water. (See table III, item 8.)

**3.2.2 Vehicle (liquid).**—The vehicle shall conform to the following requirements of composition:

TABLE I.—Vehicle composition

| Ingredients             | Percent by weight |         |
|-------------------------|-------------------|---------|
|                         | Minimum           | Maximum |
| Linseed oil -----       | 70.0              | 75.0    |
| Thinner and drier ----- | 25.0              | 30.0    |

**3.2.2.1 Drying oils.**—The nonvolatile vehicle shall consist of linseed oil. The linseed oil may be any mixture of raw or refined and heat-bodied linseed oils. The selection of the types and quantities of linseed oils must be consistent with the provisions covering paint consistency (3.2.3), absorption (3.2.3), kauri reduction test (3.2.3) and working properties (3.2.4.2). Bodied oil shall conform to Federal Specification TT-O-367. Raw linseed oil shall conform to Federal Specification TT-O-369.

**3.2.2.2 Thinner and drier.**—The thinner shall be turpentine conforming to Federal Specification TT-T-801, volatile mineral spirits conforming to Federal Specification TT-T-291, grade 1, or a mixture of the two. The drier shall conform to Federal Specification TT-D-651, type I. As determined by the methods prescribed in table III, the nonvolatile content of the drier will be included with the nonvolatile vehicle; the volatile part of the drier and any water in the paint will be included with the volatile vehicle.

**3.2.3 Paint, quantitative requirements.**—The ready-mixed paint shall meet the quantitative requirements specified in table II.

TABLE II.—Quantitative requirements of paint

| Characteristics                                                                                             | Requirements |         |
|-------------------------------------------------------------------------------------------------------------|--------------|---------|
|                                                                                                             | Minimum      | Maximum |
| Weight of 1 gallon of paint, pounds -----                                                                   | 19.5         | ---     |
| Pigment, percent by weight of paint -----                                                                   | 71           | 73      |
| Water, percent by weight -----                                                                              | ---          | 1       |
| Nonvolatile vehicle, percent by weight of vehicle -----                                                     | 70           | 75      |
| Kauri reduction of supercentrifuged vehicle, based on nonvolatile in the vehicle, percent -----             | 225          | ---     |
| Coarse particles and skins (residue retained on No. 325 standard sieve), percent by weight of pigment ----- | ---          | 2       |
| Consistency, Krebs-Stormer, shearing rate 200 r.p.m.:<br>Grams -----                                        | 175          | 375     |
| Equivalent K.U. -----                                                                                       | 77           | 102     |
| Drying time, hours -----                                                                                    | ---          | 18      |
| Daylight 45°, 0° directional reflectance for white paint -----                                              | 75           | ---     |
| Absorption, inch -----                                                                                      | ---          | 1       |

### 3.2.4 Paint, qualitative requirements.

**3.2.4.1 Condition in container.**—The paint shall be thoroughly mixed and ground. It shall not be settled, caked, or thickened to such a degree that it cannot be redispersed easily with a paddle to a smooth, uniform paint of good brushing consistency. (See table III, item 14.)

**3.2.4.2 Working properties.**—When applied by brushing on wood, the paint herein specified shall have good flowing and brushing properties, shall not pull under the brush, and shall dry to a uniform, smooth, level

appearance without streaking, running, or sagging. The dried paint shall show moderate but not excessive brush marks and shall have an oil-gloss appearance. (See table III, item 15.)

**3.2.4.3 Color.**—The paint shall be white unless it is otherwise specified in the invitation for bids. When tinted paint is specified, the color shall match the color specified by the purchaser. (See 6.2.)

#### 4. SAMPLING, INSPECTION, AND TESTING PROCEDURES

**4.1 Methods.**—The paint shall be sampled, inspected, and tested in accordance with the applicable methods of Federal Specification TT-P-141 and as specified hereinafter.

**4.2 Tests in TT-P-141.** — The following tests shall be made in accordance with Federal Specification TT-P-141:

TABLE III.—Applicable test methods of Federal Specification TT-P-141

| Item | Name of test                                     | Method and section number in TT-P-141 | Section of this specification giving requirements | Section of this specification with further reference |
|------|--------------------------------------------------|---------------------------------------|---------------------------------------------------|------------------------------------------------------|
| 1    | Sampling -----                                   | 102.1                                 | ----                                              | ----                                                 |
| 2    | Basic carbonate white lead -----                 | 704.1                                 | 3.2.1                                             | 3.2.1.1                                              |
| 3    | Water-soluble matter in pigment -----            | 524.1                                 | 3.2.1.2                                           | ----                                                 |
| 4    | Weight per gallon -----                          | 401.1                                 | Table II                                          | ----                                                 |
| 5    | Pigment, percent by weight -----                 | 402.1                                 | Table II                                          | ----                                                 |
| 6    | Volatile and nonvolatile content by weight ----- | 404.1                                 | ----                                              | 3.2.2.2                                              |
| 7    | Water -----                                      | 408.1                                 | Table II                                          | 3.2.2.2                                              |
| 8    | Vehicle solids -----                             | 405.1                                 | Table II                                          | Table I                                              |
| 9    | Kauri reduction test -----                       | 415.1                                 | Table II                                          | ----                                                 |
| 10   | Coarse particles and skins -----                 | 409.1                                 | Table II                                          | ----                                                 |
| 11   | Consistency -----                                | 428.1                                 | Table II                                          | ----                                                 |
| 12   | Drying properties -----                          | 406.2                                 | Table II                                          | ----                                                 |
| 13   | Directional daylight reflectance -----           | 612.1                                 | Table II                                          | ----                                                 |
| 14   | Condition in container -----                     | 301.1                                 | 3.2.4.1                                           | ----                                                 |
| 15   | Working properties -----                         | 454.1                                 | 3.2.4.2                                           | 4.3.1                                                |
| 15a  | Preparation of wood panels -----                 | 203.1                                 | ----                                              | 4.3.1                                                |
| 15b  | Application of brushed films -----               | 205.1                                 | ----                                              | 4.3.1                                                |
| 16   | Color -----                                      | 423.1                                 | 3.2.4.3                                           | ----                                                 |
| 17   | Absorption -----                                 | 442.1                                 | Table II                                          | ----                                                 |

#### 4.3 Additional tests.

**4.3.1 Working properties and appearance of dried film.**—Thin some of the paint with 1 pint of raw linseed oil (Federal Specification TT-O-369) to the gallon and brush it at approximately 600 square feet per gallon on an unprimed panel of southern yellow pine of not less than 100 square-inch area. The panel shall conform to Federal Specification TT-P-141, method 203.1 (table III, item 15a), and application shall conform to Fed-

eral Specification TT-P-141, method 205.1 (table III, item 15b). Observe whether the paint brushes easily and permits lapping without difficulty for at least 5 minutes. Let stand 24 hours until the priming coat has dried. Then brush one coat of the paint, unthinned, over the primed panel at approximately 600 square feet per gallon. Observe whether the paint has good flowing and brushing properties, does not pull under the brush, and dries to a uniform, smooth, level appearance without streaking, running, or

## TT-P-104

sagging. The dried paint should show moderate but not excessive brush marks. Inspect for an oil-gloss appearance.

### 5. PREPARATION FOR DELIVERY

**5.1 Packaging.**—The paint shall be packaged in 1-gallon multiple-friction-top cans, in 5-gallon lug-cover steel pails, or in 55-gallon steel drums, as specified.

**5.1.1 One-gallon cans.**—When specified, 1-gallon multiple-friction-top cans shall conform to the requirements of Federal Specification TT-P-143, 3.2.1, except that no exterior coating will be required.

**5.1.2 Five-gallon steel pails.**—When specified, 5-gallon lug-cover steel pails shall conform to the requirements of Federal Specification TT-P-143, 3.2.3, except that the exterior coating may be of the commercial type.

**5.1.3 Fifty-five-gallon steel drums.**—When specified, 55-gallon steel drums shall conform to the requirements of Federal Specification TT-P-143, 3.2.5, except that the exterior coating may be of the commercial type.

**5.2 Packing.**—The unit containers shall be packed for shipment as follows:

**5.2.1 One-gallon cans.**—The number and arrangement of unit containers shall be in accordance with the applicable portion of table III of Federal Specification TT-P-143.

**5.2.1.1 Shipping container.**—The shipping container shall conform to the requirements of Federal Specification TT-P-143, 3.2.10.1.

**5.2.1.2 Cushioning.**—Each can shall be separated and cushioned from the adjacent cans as specified in Federal Specification TT-P-143, 3.3.2.

**5.2.2 Five-gallon steel pails and fifty-five-gallon steel drums.**—Five-gallon steel pails and fifty-five-gallon steel drums will not require overpacking.

### 5.3 Marking and labeling.

**5.3.1 Cans, pails, and drums.**—Unless otherwise specified, each can, pail, and drum shall be suitably marked or labeled. The markings shall be of a permanent nature, and the labels shall be securely attached so as not to come off the containers. The following information shall be shown on the front side of the containers:

NAME OF COMMODITY (using Federal specification title)

FED. SPEC. TT-P-104

COLOR

MANUFACTURER'S BATCH NUMBER

STOCK NUMBER

CONTRACT OR ORDER NUMBER

DATE OF MANUFACTURE

QUANTITY OF PAINT IN CONTAINER

INFORMATION AS MAY BE REQUIRED BY FEDERAL AND STATE LAWS

MANUFACTURER'S NAME AND ADDRESS

**5.3.2 Directions for use.**—The directions for use, which shall be clearly legible, shall be shown on the reverse side of the container and shall read as follows:



## DIRECTIONS FOR USE OF FEDERAL SPECIFICATION TT-P-104 PAINT

This is a pure white lead house paint. It is intended for use on exterior wood, properly primed concrete, or metal. It is particularly recommended where repainting may be delayed until the old paint has worn out very badly because this paint can usually be relied upon to leave a surface that needs little preparation for repainting. It is also recommended for painting the woods that do not hold paint well, such as southern yellow pine and Douglas-fir. To maintain whiteness under conditions of exposure to hydrogen sulfide, paint of Federal Specification TT-P-103, which is fume-resistant, should be chosen.

| Recommended procedure | For previously unpainted wood                                                                                                          | For repainting                                                                                                                         |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| For first coat -----  | Thin this paint with 1 pint of linseed oil to the gallon. Use 1 gallon of paint for each 530 square feet of surface.                   | Thin this paint with 1 pint of turpentine or mineral spirits to the gallon. Use 1 gallon of paint for each 575 square feet of surface. |
| For second coat ----- | Thin this paint with 1 pint of turpentine or mineral spirits to the gallon. Use 1 gallon of paint for each 700 square feet of surface. | Thin this paint with 1 pint of turpentine or mineral spirits to the gallon. Use 1 gallon of paint for each 670 square feet of surface. |
| For third coat -----  | Apply this paint as it comes from the container, without any thinning. Use 1 gallon of paint for each 625 square feet of surface.      |                                                                                                                                        |

5.3.3 *Shipping containers.*— Each fiber-board box shall be stencilled on one side with the following information:

CONTRACT OR ORDER NUMBER (as shown on contract or order)

STOCK NUMBER (as shown on contract or order)

NAME OF THE COMMODITY

QUANTITY OF THE COMMODITY CONTAINED

NAME OF THE MANUFACTURER

DATE OF MANUFACTURE

NAME OF CONTRACTOR

GROSS WEIGHT

## 6. NOTES

6.1 *Intended use.*—The intended use is described in the "Directions for use" specified in 5.3.2.

6.2 *Ordering data.*—If tinted paint is desired, the purchaser should specify the color by means of a small sample of paint or by a dried painted panel, should also specify size and type of container desired, and should exercise any desired options offered herein. (See 1.2.1, 3.2.4.3, 5.1, 5.3.1, 6.4, and 7.4.)

6.2.1 *Basis of purchase.*—The paint should be purchased by volume (231 cubic inches to the gallon at 15.5° C.).

## TT-P-104

**6.3 Sample formula for suitable paint.**—The requirements of this specification will be met by paint of the following composition, given both by volume and by weight:

| Ingredients                      | By<br>volume | By<br>weight |
|----------------------------------|--------------|--------------|
|                                  | Gallon       | Pounds       |
| Basic carbonate white lead       | 0.26         | 14.20        |
| Refined linseed oil—acid No. 6-8 | .21          | 1.63         |
| Raw linseed oil                  | .21          | 1.63         |
| Bodied linseed oil, body Z-2     | .10          | .81          |
| Total nonvolatile                | 0.78         | 18.27        |
| Mineral spirits and drier        | .22          | 1.43         |
| Total paint                      | 1.00         | 19.70        |

**6.4** 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.

**6.5** 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.

**Patent notice.**—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

## 7. DEPARTMENTAL REQUIREMENTS

**7.1** The following specifications and other publications, of the issues in effect on date of invitation for bids, and special requirements, form a part of this specification for purchases made under this specification by the respective departments.

**7.2 Army.**—U. S. Army Specification No. 100-2, Standard Specification for Marking Shipments by Contractors.

(Copies 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.)

### 7.3 Navy.

**7.3.1** *Applicable specifications and other publications.*

*Navy Department Specification:*

General Specifications for Inspection of Material.

*Bureau of Supplies and Accounts Publication:*

Navy Shipment Marking Handbook.

(Copies of Federal and Military 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 Commanding Officer, Naval Supply Depot, Scotia 2, N. Y. Both the title and identifying symbol or number should be stipulated when requesting copies of specifications.)

**7.3.2 Marking.**—In addition to any special marking required by the contract or order, marking shall be in accordance with the requirements of the Navy Shipment Marking Handbook.

NAVY INTEREST: MC S Y

**7.4 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 ~~94-40645~~, Marking; Exterior, Domestic and Export Shipments by Contractors.

(Copies of specifications required for Air Force purchases may be obtained from the Commanding General, Air Matériel Command, Wright-Patterson Air Force Base, Dayton 1, Ohio.)

*This specification is a part of Section IV, Part 5, of the Federal Standard Stock Catalog.*

★ U. S. GOVERNMENT PRINTING OFFICE: 1931

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For sale by the Superintendent of Documents, Washington 25, D. C. Price 5 cents.

**TT-W-251c**

14 MAY 1964

**SUPERSEDING**

Fed. Spec. TT-W-251b

30 May 1945

## **FEDERAL SPECIFICATION**

# **WHITE LEAD, BASIC-CARBONATE, DRY, PASTE-IN-OIL AND SEMIPASTE CONTAINING VOLATILE THINNER**

*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 basic-carbonate white lead for use in paints.

#### **1.2 Classification.**

**1.2.1 Types.**—The basic-carbonate white lead shall be of the following types, as specified (see 6.1):

Type A.—Dry pigment

Type B.—Paste-in-oil

Type C.—Semipaste containing volatile thinner

### **2. APPLICABLE SPECIFICATIONS AND STANDARDS**

**2.1** The following specifications and standard, of the issues in effect on date of invitation for bids, form a part of this specification:

#### *Federal Specifications:*

TT-P-141—Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling and Testing.

TT-P-143—Paint, Varnish, Lacquer, and Related Materials, General Specification for Packaging, Packing, and Marking.

#### *Military Standard:*

MIL-STD-129—Marking of Shipments.

(Activities outside the Federal Government may obtain copies of Federal Specifications and Standards 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 25, D. C.)

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the GSA Regional Offices in Boston, New York, Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, Seattle, and Washington, D. C.)

(Federal Government activities may obtain copies of Federal Specifications and Standards and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

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

**2.2** Specifications and standards applicable only to individual departments are listed in section 7.

### **3. REQUIREMENTS**

**3.1 Color.**—The color shall be as specified (see 6.1), and shall be as white or whiter than the standard agreed upon by the manufacturer and procuring agency (see 6.3).

## TT-W-251c

**3.1.1 Tinting strength.**—The tinting strength of the white lead shall be equal to or greater than that of the standard (see 6.3), when tested as specified in 4.2.1.

**3.2 Type A, dry pigment.**—The dry pigment shall be basic lead carbonate. (See 6.4.) It shall be free from adulterants, shall contain no more than the traces of impurities incident to well controlled manufacture of high grade basic-carbonate white lead, and shall conform to table I.

TABLE I.—*Dry pigment*

|                                                  | Minimum | Maximum |
|--------------------------------------------------|---------|---------|
|                                                  | Percent | Percent |
| Coarse particles retained on No. 325 sieve ..... | ---     | 1.0     |
| Lead carbonate .....                             | 62.0    | 75.0    |
| Moisture .....                                   | ---     | .7      |
| Impurities .....                                 | ---     | 1.0     |

**3.3 Type B, paste-in-oil.**—The paste-in-oil shall be made by thoroughly grinding the pigment specified in 3.2 with linseed oil to a paste consistency. The linseed oil fatty acids shall have an iodine number of not less than 175 and shall contain no unsaponifiable matter. The paste shall not be caked in the container and shall break up readily in oil to form a smooth paint of brushing consistency. The paste shall conform to table II.

TABLE II.—*Paste-in-oil*

|                                                                                                | Minimum | Maximum |
|------------------------------------------------------------------------------------------------|---------|---------|
|                                                                                                | Percent | Percent |
| Pigment .....                                                                                  | 89.0    | ---     |
| Linseed oil .....                                                                              | ---     | 11.0    |
| Moisture and other volatile matter .....                                                       | ---     | .7      |
| Coarse particles and "skins" (total residue retained on No. 325 sieve, based on pigment) ..... | ---     | 1.5     |

**3.3.1 Odor.**—The odor of the paste-in-oil, as taken from the container, while drying, or after drying, shall not be abnormally pungent or disagreeable.

**3.4 Type C, semipaste containing volatile thinner.**

**3.4.1** The semipaste containing volatile thinner shall be made by thoroughly grinding the pigment specified in 3.2 with linseed oil and a small amount of turpentine, volatile mineral spirits, or a mixture thereof to a semipaste consistency. The linseed oil fatty acids shall have an iodine number of not less than 175 and shall contain no unsaponifiable matter.

**3.4.2 Condition in container.**—The semipaste shall not be caked in the container and shall be readily stirred to a uniform mixture, which shall mix readily with oil, turpentine, or mineral spirits to form a smooth paint of brushing consistency.

**3.4.3 Odor.**—The odor of the semipaste, as taken from the container, while drying or after drying, shall be not abnormally pungent or disagreeable.

**3.4.4** The semipaste shall conform to table III.

TABLE III.—*Semipaste containing volatile thinner*

|                                                                                                | Minimum | Maximum |
|------------------------------------------------------------------------------------------------|---------|---------|
|                                                                                                | Percent | Percent |
| Pigment .....                                                                                  | 87.5    | ---     |
| Linseed oil .....                                                                              | ---     | 10.5    |
| Volatile matter and moisture .....                                                             | 1.5     | 3.0     |
| Moisture .....                                                                                 | ---     | .7      |
| Coarse particles and "skins" (total residue retained on No. 325 sieve, based on pigment) ..... | ---     | 1.5     |

#### 4. SAMPLING, INSPECTION AND TEST PROCEDURES

4.1 **Sampling.**—Sampling shall be in accordance with method 102.1 of Federal Specification TT-P-141, except for departmental requirements (see section 7).

4.2 **Testing.**—The material shall be tested in accordance with applicable methods of Federal Specification TT-P-141 and as specified herein.

4.2.1 The tests shown in table IV shall be conducted in accordance with Federal Specification TT-P-141:

TABLE IV.—*Test methods*

| Tests                                    | Method |                        |
|------------------------------------------|--------|------------------------|
|                                          | Type A | Types B and C          |
| Color .....                              | 421.1  | 421.1                  |
| Tinting strength .....                   | 422.2  | 422.2                  |
| Coarse particles .....                   | 410.1  | 409.1                  |
| Basic carbonate white lead .....         | 704.1  | 704.1                  |
| Water (type C only) .....                | ----   | 408.1                  |
| Condition in container .....             | ----   | 301.1                  |
| Fatty acids .....                        | ----   | 505.1                  |
| Iodine number of fatty acids .....       | ----   | 506.1                  |
| Pigment content .....                    | ----   | 402.1<br>(Reagent "A") |
| Moisture and other volatile matter ..... | 407.1  | 404.1                  |
| Unsapifiable (mineral oil) .....         | ----   | 504.1                  |
| Odor .....                               | ----   | 440.1                  |

<sup>1</sup> Use 2 grams of sample and 0.4 milliliter of linseed oil.

<sup>2</sup> Heat in an oven at 95° to 98° C. for 2 hours; use 7-gram sample for types B and C.

4.2.2 **Miscibility.**—One hundred grams of the paste shall be placed in a cup, 5 ml. of linseed oil shall be added, and the mixture shall be stirred vigorously with a spatula or paddle for 1 minute. Ten ml. and finally 15 ml. of oil shall be added, and the mixture shall be stirred for 1 minute after each

addition. After the 3 minutes of vigorous stirring, the paste shall break up to a mixture which is smooth and of good brushing consistency. In the case of the semipaste, the same procedure shall be followed except that the oil additions shall be 5, 8, and 10 ml.

#### 5. PREPARATION FOR DELIVERY

5.1 Type A white lead shall be delivered in 50 pound, multiwall paper shipping sacks. Type B white lead shall be delivered in 1- or 5-pound cans. Type C white lead shall be delivered in 1-quart, multiple-friction top cans, containing 5.0 pounds or in 25, 50, or 100 pound pails or drums. The size container required shall be as specified. (See 6.1). Preparation for delivery shall be in accordance with Federal Specification TT-P-143 except that marking for all activities of the Department of Defense shall conform to Military Standard MIL-STD-129.

#### 6. NOTES

6.1 **Ordering data.**—Procurement documents should specify the following:

- Title, number, and date of this specification.
- Type required (see 1.2).
- Color standard required (see 3.1).
- Size of container required (see 5.1).
- Whether domestic or overseas shipment is required.

6.2 **Basis of purchase.**—Basic-carbonate white lead should be purchased by net weight.

6.3 If color and tinting strength are to be considered in accepting or rejecting deliveries under this specification, it will be necessary for the procuring activity and the manufacturer to mutually agree upon a sample for comparison with deliveries for these and these properties only. When dry pigment is being purchased, the agreed-upon sample should be dry pigment; when paste-in-oil is being purchased, the agreed-upon

**7.2.2 Sampling, inspection, and test procedures.**

**7.2.2.1 Lot.**—For purposes of sampling, a lot shall consist of white-lead of one type, from one batch, offered for delivery at one time.

**7.2.2.2 Sampling for tests (at a Government laboratory).**

**7.2.2.2.1** From each inspection lot (see 7.2.2.1), the Government inspector shall take two containers at random. From each of the two containers, 1-quart specimens shall be taken and place in separate, clean, dry, metal or glass containers, and then sealed, marked, and forwarded to the testing laboratory designated by the activity concerned.

**7.2.2.2.2** When requested by the contractor, the Government inspector shall take sample specimens in accordance with 7.2.2.2.1 with the following exception: Three-quart specimens shall be taken instead of 1-quart specimens. Each 3-quart specimen shall be divided into three equal parts, one part to be delivered to the contractor, one part to the testing laboratory, and one part to be held by the inspector in case of dispute.

**7.2.2.3 Testing activity.**—Unless otherwise specified, the samples taken by the Government inspector as required for test purpose shall be forwarded to the Industrial Test Laboratory, Philadelphia Naval Shipyard, Philadelphia 12, Pa.; to Industrial Laboratory, Mare Island Naval Shipyard, Vallejo, Calif.; to the Chemical Laboratory, Norfolk Naval Shipyard, Portsmouth, Va.; or to the Material Laboratory, New York Naval Shipyard, Brooklyn 1, N. Y.

**7.2.2.4 Sampling for inspection of containers (at the contractor's plant).**—A random sample of filled containers shall be taken by the Government inspector in accordance with Military Standard MIL-STD-105 at Inspection Level I and Acceptable Quality Level = 2.5 percent defective to

verify compliance with this specification in regard to fill, closure, marking, and other requirements not involving tests.

**7.2.2.5 Inspection of containers (at the contractor's plant).**—Each sample filled container selected as specified in 7.2.2.4 shall be examined for defects of construction of the container and the closure, for evidence of leakage, and for unsatisfactory markings; each filled container shall also be weighed to determine the amount of contents. Any container in the sample having one or more defects, or under required fill, shall be rejected, and if the number of defective containers in any sample exceeds the acceptance number for the appropriate sampling plan of Military Standard MIL-STD-105, the lot represented by the sample shall be rejected. Rejected lots may be resubmitted for acceptance tests, provided the contractor has removed (or reworked) all nonconforming products.

**7.2.2.6 Lot acceptance tests.**—The samples taken in accordance with 7.2.2.2.1 shall be subjected to the tests specified in section 4. The laboratory may perform complete lot acceptance tests on only one sample from each lot provided sufficient tests are made on the second sample to verify that both are alike. Lots shall be accepted or rejected by the Government inspector on the basis of the laboratory test report on the transmitted samples. Rejected lots may be resubmitted for acceptance tests, provided the contractor has removed (or reworked) all nonconforming products.

**7.2.3 Standard samples.**—Comparison of color and tinting strength, as outlined in 3.1 and 3.1.1, shall be made with a standard sample. Portions of the standard sample, if required for Navy purchases, may be obtained upon application to the Test Laboratory Building 121, Philadelphia Naval Shipyard, Philadelphia 12, Pa., the Commandant, Norfolk Naval Shipyard, Portsmouth, Va., or the Commandant, Mare Island Naval Shipyard, Vallejo, California.

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## **TT-W-251c**

### **7.3 Air Force.**

#### **7.3.1 Applicable specification.**

##### ***Federal Specification:***

**TT-P-141—Paint, Varnish, Lacquer,  
and Related Materials; Methods of  
Inspection, Sampling and Testing.**

(Copies of specifications, standards, and drawings  
required by contractors in connection with specific  
procurement functions should be obtained from the

procuring agency or as directed by the contracting  
officer.)

**7.3.2 Inspection.**—Inspection shall be per-  
formed in accordance with method 101.1 and  
section 1000 of Federal Specification TT-  
P-141.

##### **MILITARY INTEREST:**

Army—E C M Q T  
Navy—Sh MC Or Y  
Air Force.