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VOLUME II

N12425

NLI 001543

Report on Havre de Grace Bridge Paint Tests

Reprinted from the
**Report of Committee D-1 on
Preservative Coatings for Structural Materials.**

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PHILADELPHIA, PENNA.
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NLI 001544

REPORT OF COMMITTEE D-1
ON
PRESERVATIVE COATINGS FOR STRUCTURAL
MATERIALS.

Committee D-1, which now has 81 members, has held two meetings during the past year. At the meeting held November 23, 1914, 26 members were present and at the meeting held April 17, 1915, 28 members were present.

Sub-Committee II on Inspection of the Havre de Grace Bridge and Sub-Committee IV on Inspection of Steel Plates at Atlantic City have been discharged, as both tests have been completed and the sub-committees have presented final reports. A special sub-committee has carefully considered the whole history of the Havre de Grace bridge test and presents a report which is believed to give in concise and intelligible form the composition of the paints used and maximum information available from this test.

Another special sub-committee has considered the recommendations made by the Sub-Committee IV on Inspection of Steel Plates at Atlantic City, and as a result of its report, a new sub-committee on Accelerated Tests and the Influence of Paint Materials on Corrosion will be organized.

The committee recommends for submission to letter ballot of the Society for adoption:

1. Proposed Revisions of the Standard Specifications for Purity of Raw Linseed Oil from North American Seed (see Report of Sub-Committee V);
2. Proposed Standard Specifications for Purity of Raw Chinese Wood Oil (see Report of Sub-Committee III);
3. Proposed Standard Specifications for Purity of Boiled Linseed Oil from North American Seed (see Report of Sub-Committee V);
4. Proposed Standard Definitions of Terms Used in Paint Specifications (see Report of Sub-Committee VI);

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001545

REPORT OF COMMITTEE D-1

5. Proposed Standard Specifications for Turpentine (see Report of Sub-Committee XII).

The committee further recommends that the following proposed tentative methods and tests be printed in the Year-Book among the "Tentative Standards" of the Society for one year, with a view of eliciting critical discussion:

1. Proposed Tentative Methods for Routine Analysis of White Pigments (see Report of Sub-Committee VIII);
2. Proposed Tentative Test for Distillation of Paint Thinners other than Turpentine (see Report of Sub-Committee XI);
3. Proposed Tentative Test for Moisture in Bleached Shellac (see Report of Sub-Committee XIII).

Detail reports are appended from the following sub-committees:

Sub-Committee II on Inspection of Havre de Grace Bridge; Special Sub-Committee on Paints used in Havre de Grace Bridge Tests;

Sub-Committee III on Testing of Paint Vehicles;

Sub-Committee IV on Inspection of Steel Plates at Atlantic City;

Sub-Committee V on Linseed Oil;

Sub-Committee VI on Definitions of Terms used in Paint Specifications;

Sub-Committee VIII on Methods of Analysis of Paint Materials;

Sub-Committee X on Inspection of White Paint Test Fence at Washington, D. C.;

Sub-Committee XI on Paint Thinners other than Turpentine;

Sub-Committee XII on Turpentine;

Sub-Committee XIII on Shellac;

Special Sub-Committee on Specifications for Sampling of Liquids.

A report of progress has been made by Sub-Committee IX on Varnish.

ON PRESERVATIVE COATINGS FOR STRUCTURAL MATERIALS

This report has been submitted to letter ballot of the committee, which consists of 81 members; 48 ballots were cast, 33 not voting. The vote was taken on each section of the report. Following is the result of the ballot:

General report	35 affirmative	com.
Report of Sub-Committee II	46	
Special Sub-Committee on		
Havre de Grace Bridge		
Tests	40	
Sub-Committee III	42	
Sub-Committee IV	43	
Sub-Committee V	43	
Sub-Committee VI	42	
Sub-Committee VII	49	
Sub-Committee VIII	43	
Sub-Committee IX	41	
Sub-Committee X	41	
Sub-Committee XI	42	
Sub-Committee XII	42	
Sub-Committee XIII	49	
Special Sub-Committee on	49	
Sampling of Liquids	49	

* The vote on this item was taken after the preliminary ballot, and is not included in the tallying of affirmative votes.

Respectfully submitted on behalf of the committee

G. W. THOMPSON,
Secretary.

P. H. WARE,
Chairman.

EDITOR'S NOTE. In presenting this report at the annual meeting, Committee D-1 recommended certain amendments which are given on pages 122-124 (not shown in this reprint).

The proposed amendments in the Standard and the proposed Standards referred to in the report as amended at the annual meeting, were adopted by letter ballot of the Society on August 21, 1913. The Standards as thus amended appear among the Standards in the 1913 Year Book.

The proposed Tentative Standards referred to in the report as amended at the annual meeting, appear among the Tentative Standards in the 1913 Year Book.

For Discussion on the report, see page 122 (not shown in this reprint).

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REPORT OF SUBCOMMITTEE II ON INSPECTION OF
HAVRE DE GRACE BRIDGE.

In accordance with a resolution of Committee D-1, upon recommendation of Sub-Committee II in its last report, to discontinue the inspection of the Havre de Grace bridge, and to discharge this sub-committee upon the proper disposition of the test plate panels, on December 4, 1914, following action of the Advisory Committee of Committee D-1 authorizing such disposition, one complete set of these plate panels, 57 in all, three for each of the 19 paints, one each at the several spreading rates of 600 sq. ft., 900 sq. ft. and 1200 sq. ft. per gallon of paint were removed from the bridge site and delivered to the U. S. Bureau of Standards and one complete set to the Institute of Industrial Research at Washington, D. C. The remaining panel plates, 38 in all, 2 for each of the 19 paints, one each at the two spreading rates of 600 sq. ft. and 1200 sq. ft. per gallon of paint, were delivered to the laboratory of the National Lead Co., 129 York St., Brooklyn, N. Y., in care of Mr. G. W. Thompson, Secretary of Committee D-1, 19 plates, one for each of the paints at the spreading rate of 900 sq. ft. per gallon of paint having been utilized by the committee several years ago, as reported at the time, in an investigation of the condition of the metal after removal of the paints on these particular plates. These plates are in storage and cared for at the laboratory of the National Lead Co.

On December 18, 1914, Mr. H. R. Leonard, Engineer of Bridges of the Pennsylvania Railroad Co., Philadelphia, was officially notified and such notification acknowledged by him of the conclusion of the test by Committee D-1, and that the structure had been turned over to the railroad company from that date with the thanks of the committee.

Respectfully submitted on behalf of the sub-committee,

W. A. Aiken,
Chairman

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REPORT OF SPECIAL SUBCOMMITTEE ON
PAINTS USED IN HAVRE DE GRACE BRIDGE II

The special sub-committee, to which was referred the motion made at the last annual meeting of the Society changing Committee D-1 to renew its efforts to obtain such additional information as would enable the committee to describe the composition of the several paints of the Havre de Grace bridge tests more satisfactorily to the engineering profession, than could be interpreted from the committee's published work, and also to compile a brief résumé of the methods and conditions of the test, reports as follows:

Under date of November 20, 1914, a circular letter was sent to each of the manufacturers who furnished paint for the Havre de Grace bridge tests. This letter referred to their continued demand for fuller information as to the composition of the paints, and for an identification of the manufacturers, in connection with the paints tested. Two inquiries were made of each manufacturer, namely: (1) "Would you object to Committee D-1 reporting to the Society that panels and section Nos. 1 to 19 painted with paint furnished by you?" and (2) "It is our intention to publish a brief description of your paint, such description to be based either upon the analysis which we have made, or upon information received from you. Would the following description of your paint be satisfactory?"

The letter also requested "that if the enclosed description is not satisfactory, please send one that is," adding that information of value to engineers was desired. Furthermore, the letter was enclosed to each manufacturer a blue-print "log" giving the record of the particular paint as applied, with a statement that a copy of this had been sent originally upon completion of the painting of the bridge, and that such record was to be kept by Committee D-1.

The receipt of this letter was acknowledged by all but two of the contributing manufacturers. Of those who acknowledged

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6. REPORT OF SUB-COMMITTEE OF COMMITTEE D-1

the receipt of the letter, the manufacturers of nine paints were willing to have their names published in connection with the points. The manufacturers of six paints were unwilling, and the manufacturers of two paints did not reply to this specific inquiry. The manufacturers of seven paints accepted the sub-committee's description without suggesting modifications. Ten suggested modifications.

Appended to this report are the sub-committee's descriptions of the paints, and such descriptions as have been suggested by manufacturers; also, the "log" sheets referred to in Plate III to XXI, inclusive.

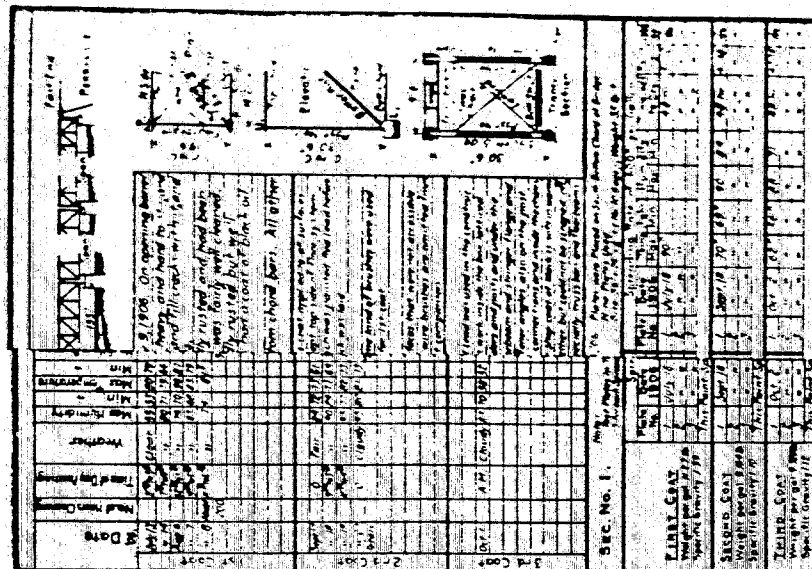
The objections of the manufacturers of six paints to the publication of their names in connection with the paints make it impossible for the sub-committee in good faith to publish any information relating thereto.

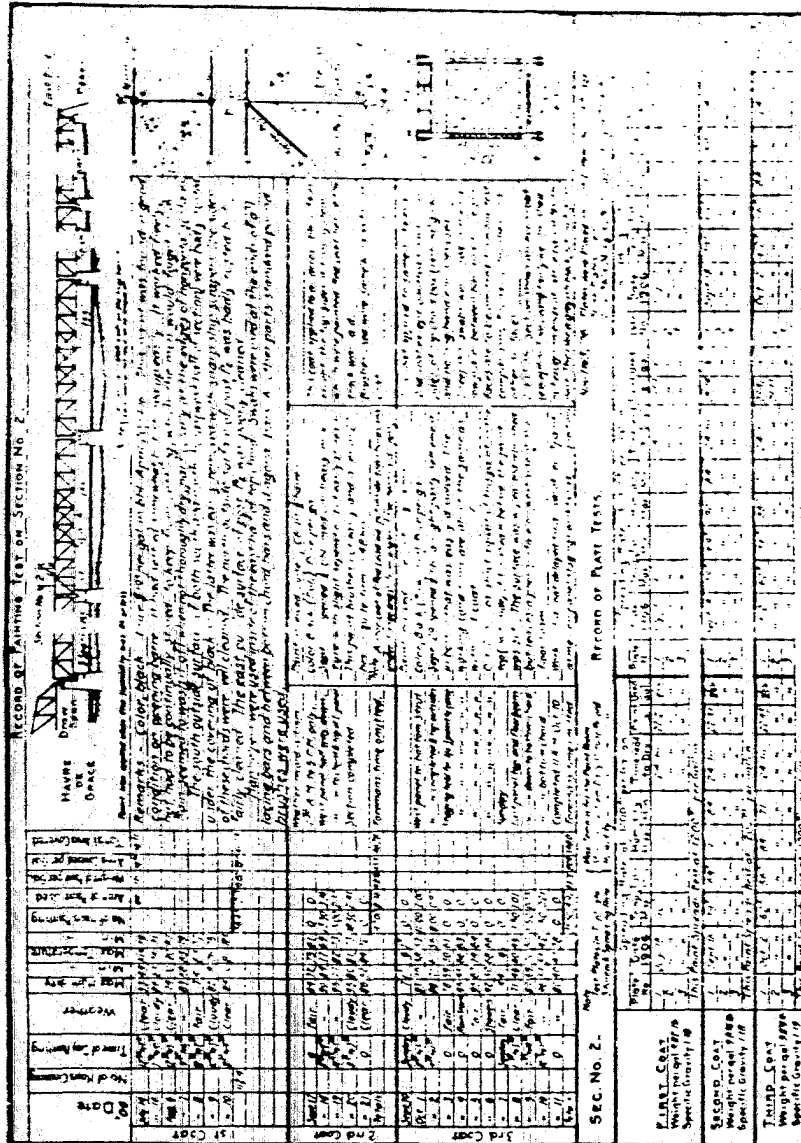
BRIEF RESUME OF THE METHODS AND CONDITIONS OF THE TESTS

The report of Committee D-1 for 1906 gives the information as to its previous preliminary work leading up to the inception of the Havre de Grace bridge tests through report and recommendation of a Sub-Committee on Field and Service Tests, and makes note of the courtesy of the Pennsylvania Railroad Co. in placing at the committee's disposal such parts of the new bridge over the Susquehanna river as would be required. The report gives the copy of the committee's circular letter to the paint manufacturers of the country, in which their cooperation is invited in the proposed exposure test under practical field conditions, together with a statement of the probable probable cost under different areas painted and varying numbers participating in the test, with the statement that "the Society has no funds available for the trial and it will be necessary for the manufacturers to make a deposit sufficient to cover their share of the expenses." A general statement of the conflict under which the tests are to be developed is given with the further information that the details of conducting the tests are to be determined by the committee and framed to be "eminently fair to each competitor and to the paints themselves."

Satisfactory replies to the original circular letter having

PLATE III
PROG. AIR TEST MARE
VOL. XV, PART I.
REPORT OF COMMITTEE D-1:
HAVRE DE GRACE BRIDGE TESTS.





N L P001549

PLATE VI.
PRINC. AM. BND. TEST, MATH.
VOL. XV, PART I
REPORT OF COMMITTEE D-1
MAJOR DE GRACE BRIDGES, T. C. C.

[illegible]

[illegible]

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RECORD OF PAINTING TEST ON SECTION No 7.

RECORD OF PAINTING TEST ON SECTION No. 7.									
NAME OF PAINTER		DATE		TIME		TEMPERATURE		WIND	
NAME	DATE	TIME	TEMPERATURE	WIND	NAME	DATE	TIME	TEMPERATURE	WIND
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

PLATE 1
 1. All the ...
 2. ...
 3. ...
 4. ...

RECORD OF PAINTING, TEST ON SECTION No. 8

HAVER
 DE
 GRACE

Remarks: Color of paint ...
 The bottom of upper ...
 The ...

SEC No. R.	Notes on Painting	Color of Paint	Amount of Paint	Remarks
1	...	...	...	...
2	...	...	...	...
3	...	...	...	...
4	...	...	...	...
5	...	...	...	...
6	...	...	...	...
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98	...	...	...	...
99	...	...	...	...
100	...	...	...	...

NLI 001555

Record of Fall Term

DATE: 11/11/54
 FROM: AM. SEC. TEL. M.
 TO: NY. BUREAU
 RE: [illegible]
 MAYNE: [illegible]

[illegible]

NLI 001558

RECORD OF HUNTING TEST ON SPECIES NO. 13.

[illegible]

[illegible]

[illegible]

NLI 001563

PLATE XX.
PROC AM SOC TEST MATH
Vol. XV, Part I.
REPORT OF COMMITTEE D-1
MADE BY GARY BRIDON TEST

RECORD OF PAINTING TEST ON SECTION No 18.

HAVER DE GRACE	DATE	TIME	TEMPERATURE	WIND	MOON	STATE OF SKY	STATE OF SURFACE	REMARKS	RECORD OF PAINT TESTS
Haver de Grace	1905	10:00	60	W	1/2	B	Wet	First coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	First Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Second coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Second Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Third coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Third Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Fourth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Fourth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Fifth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Fifth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Sixth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Sixth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Seventh coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Seventh Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Eighth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Eighth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Ninth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Ninth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20
	1905	10:00	60	W	1/2	B	Wet	Tenth coat of paint applied. The paint was applied in a uniform layer of about 1/16 inch. The surface was then allowed to dry for 24 hours.	Tenth Coat Weight of paint applied per square foot 1.00 Weight of paint remaining on surface after 24 hours 0.80 Loss of paint by absorption 0.20

NLI 001565

RECORD OF ANY TEST ON SECTION NO 15

NLI 001566

been received from a sufficient number of manufacturers to warrant the inauguration of the test, costs were figured on an area basis and a second circular letter sent to those who had agreed to enter the competition, the most important point involved being the following questions propounded, covering the composition and proportioning of the materials of each paint:

- Pigment:
A. Soluble thinner;
Vehicle or liquid non-volatile matter, particular information being asked in accordance to the following:
1. Solvent: oils, that is, linseed, etc.;
2. Resinous matter: that is, resins and gums;
3. Bituminous matter: that is, asphaltum, pitch, etc.;
Miscellaneous matter: such as lead, manganese, zinc, etc., other than that for a pigment as pigment.

Unfortunately these questions were regarded as too search ing by many paint manufacturers on the ground that if answered they would disclose trade secrets and methods of manufacture, since the committee had stated that in formulating the above list of questions the information sought was not intended to include trade secrets or particular methods of treatment or manufacture of the constituents of the paints.

In view of the attitude of the manufacturers, and to avoid the complete jeopardizing of the proposed tests, the above questions were specifically withdrawn and only such information as the manufacturers were willing to submit was asked for. This, coupled with that to be derived from the duplicate analyses of each paint by the committee, comprised all the data accumulated whereon to base descriptions of the paints such as are desired by the large engineering membership of the Society.

It must be understood that the committee fully recognized, as soon as the manufacturers refused the fullest information regarding their paint products, that a considerable part of the anticipated value of these tests would not be realized. Anticipating as time went on during the annual inspections, that the action of certain paints might be more intelligently interpreted with fuller detailed information not in the possession of the com

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8 REPORT OF SUB-COMMITTEE OF COMMITTEE D. I.

mitter and not to be derived from a study of the most complete analyses but probably within the knowledge of the manufacturers, the unsatisfactory conditions imposed through the manufacturers' refusal to answer the original questions became so apparent that informal attempts were made from time to time to sound the manufacturers regarding the possibility of their meeting the committee's wishes. But with the development of the tests, it became more and more apparent that such information as desired by the committee could only have been obtained as originally proposed at the time of inauguration of the tests.

The test logs of the several paints published herewith give detailed information regarding the conduct of the tests which as originally stated, was aimed to be "eminently fair to each competitor and to the paints themselves." The annual inspections were carefully carried out, all ratings being with the same scale, and detailed examination of yearly reports will demonstrate the surprising concordance of these with conditions likely to exist. Tables I and II are compilations of the annual ratings assembled somewhat differently than heretofore. These show the life length of each paint in each class, and more positively rate each paint individually than has been possible until the completion of the test. The real value of the method of marking and the conscientious work of the inspections are indicated; also shown by the higher values of the ratings generally appearing when the period covered is shorter for any one class. The latter of course is influenced by the subsequent lower class ratings of each paint.

No attempt has been made in the reports on the Hayre de Grace bridge tests to give full information as to the prices of the paints used, although it is recognized that engineers must consider price in figuring the cost of protection against rust. The log sheets published in Plates III to XXI, inclusive, give some information on this subject.

Respectfully submitted on behalf of the sub-committee.

W. A. AIKEN,
Chairman.

APPENDIX

DESCRIPTIONS OF PAINTS BY SUBCOMMITTEE BASED ON ANALYSES AND THOSE SUGGESTED BY MANUFACTURERS

PAINT No. 1

Committee Description.—This paint, applied to test, is a red lead in a vehicle of long-oil varnish thinned with turpentine. The coat similar to the first coat except that carbonaceous matter is added.

Description Suggested by Manufacturer.—No reply received from manufacturer.

PAINT No. 2

Committee Description.—Same for all three coats. The pigment is silicate paint, ground in linseed oil and thinned with turpentine, containing a little turpentine.

Description Suggested by Manufacturer.—Reply received but no suggestion.

PAINT No. 3

Committee Description.—First coat is a carbonaceous paint ground in oil and thinned with turpentine. In the second coat the pigment is of zinc oxide, lead sulfate of lead, barium carbonate of lead, and a mixture of siliceous matter and carbonaceous matter ground in oil and thinned with a mixture of turpentine and light mineral oil. The third coat is a mixture of calcium sulfate and oxide of iron with a small amount of carbonaceous matter ground in linseed oil. Three coats applied.

Description Suggested by Manufacturer.—Reply received but no suggestion.

PAINT No. 4

Committee Description.—Paint the same for all three coats. The pigment is carbonaceous paint containing a small amount of red lead, ground in linseed oil and thinned with turpentine.

Description Suggested by Manufacturer.—Reply received but no suggestion.

PAINT No. 5

Committee Description.—Same for all three coats. The pigment is a carbonaceous matter with considerable red lead, ground in linseed oil and thinned with a mixture of turpentine and light mineral oil.

Description Suggested by Manufacturer.—Reply received suggesting the following description:

Charcoal	19 per cent
Red lead	9 "
Linseed oil	61 "
Drier	18 "

Composition the same for all three coats.

PAINT NO. 6

Committee Description.—The first coat is red lead with some magnesium silicate in a vehicle of linseed oil. The second coat is similar to the first except that it contains 15 to 20 per cent carbon pigment. The third coat is a carbon pigment containing a small amount of red lead and silicate, ground in linseed oil thinned with turpentine containing a little light mineral oil. Three coats applied.

Description Suggested by Manufacturer.—Reply received suggesting the following description: The first coat is red lead with some magnesium silicate in a vehicle of prepared linseed oil. The third coat is a carbon pigment paint containing a small amount of red lead and silicate, ground in prepared linseed oil containing a little mineral naphtha. The second coat is a mixture of the first and third coats.

PAINT NO. 7

Committee Description.—Same for all three coats. The paint consists of carbonaceous matter, probably graphite, silicate, and lithopone, ground in linseed oil, thinned with light mineral oil containing some turpentine and oil of camphor.

Description Suggested by Manufacturer.—Reply received but no description suggested.

PAINT NO. 8

Committee Description.—Same for all three coats. The paint consists of graphite containing over 90 per cent graphite carbon in a vehicle of linseed oil thinned with turpentine and some light mineral oil.

Description Suggested by Manufacturer.—Reply received suggesting the following description:

Carbon graphite	91 per cent
Linseed oil	51 "
Turpentine	1 "
Drier	8 "

Composition same for all three coats.

PAINT NO. 9

Committee Description.—All three coats very similar. This paint consists of siliceous material, oxide of iron, and carbon pigments, probably graphite, in a vehicle of linseed oil thinned with a small amount of light mineral oil with perhaps some turpentine. The percentage of carbon per-

centage is higher in the second coat than in the first, and higher in the third coat than in the second.

Description Suggested by Manufacturer.—Reply received. Manufacturer states that this was an experimental paint and has never been manufactured commercially.

PAINT NO. 10

Committee Description.—First and second coats red lead and linseed oil. Third coat red lead and small amount of carbon pigment in linseed oil. The red lead used showed on analysis 88.5 per cent true red lead (PbO₂). Three coats applied.

Description Suggested by Manufacturer.—Reply received but no description suggested except that manufacturer requests that complete analysis of the product be given; this was published in the report of Committee D-1, October 1917.

PAINT NO. 11

Committee Description.—The first and second coats red lead in linseed oil. The third coat red lead and a very small amount of carbon pigment in linseed oil. The red lead used showed on analysis 95.9 per cent true red lead (PbO₂). Three coats applied.

Description Suggested by Manufacturer.—Reply received but no description suggested.

PAINT NO. 12

Committee Description.—The paint used on the first coat was a mixture of calcium silicate, zinc oxide, and sulfoned blue lead in linseed oil. The second and third coats are carbon paints containing some red lead and silicate, ground in linseed oil and thinned with turpentine. Three coats applied.

Description Suggested by Manufacturer.—Reply received suggesting the following description: The paint used for the first coat was a mixture of calcium tri-silicate, zinc oxide, and sulfoned lead in a vehicle of linseed oil. The second coat was a carbon pigment containing zinc oxide and silicate of alumina ground in linseed oil prepared with a new thinned with a small percentage of turpentine.

The analysis of the pigment of the first coat is as follows:	
Basic lead sulfate and zinc oxide	50.1 per cent
Calcium tri-silicate	49.9 "
Total	100

PAINT NO. 13

Committee Description.—Same for all three coats. The paint consists of graphite paint ground in linseed oil and thinned with turpentine containing a very small percentage of light mineral oil.

Description Suggested by Manufacturer.—Reply received but no description suggested, except that manufacturer states that no mineral oil was used in the preparation of this paint.

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12 REPORT OF SUB-COMMITTEE OF COMMITTEE D-1

PAINT No. 13.

Committee Description.—The paint used for the first coat is a mixture of red lead and silicious material ground in linseed oil. The paint for the second and third coats was a carbon pigment with possibly a very small amount of red lead in linseed oil. Three coats applied.

Description Suggested by Manufacturer. Reply received but no change suggested.

PAINT No. 15.

Committee Description. Same for all three coats. The paint was a bituminous material thinned with light mineral oil.

Description Suggested by Manufacturer. No reply received from manufacturer.

PAINT No. 16.

Committee Description. Same for all three coats. Silicate-granulate paint with linseed oil, thinned with light mineral oil and turpentine.

Description Suggested by Manufacturer. Reply received suggesting the following description:

Carbon (granulate)	20.00 per cent
Silica and silicates	26.50 "
Linseed oil	27.75 "
Varnish	4.25 "
Turpentine	1.25 "
Others	17.25 "

Composition the same for all three coats.

PAINT No. 17.

Committee Description. Same for all three coats. The paint was a mixture of oxide of iron, barium sulfate, and silicious material with a small amount of carbon pigment, ground in linseed oil and thinned with turpentine.

Description Suggested by Manufacturer. Reply received suggesting the following description: The paint is an oxide of iron and carbon paint in a straight linseed-oil vehicle with turpentine thinner, and has the following composition:

Pigment	<table> <tr> <td>Peric oxide</td><td>18.6 per cent</td></tr> <tr> <td>Carbon</td><td>8.8 "</td></tr> <tr> <td>Barium sulfate</td><td>40.0 "</td></tr> <tr> <td>Silica</td><td>2.6 "</td></tr> </table>	Peric oxide	18.6 per cent	Carbon	8.8 "	Barium sulfate	40.0 "	Silica	2.6 "
Peric oxide	18.6 per cent								
Carbon	8.8 "								
Barium sulfate	40.0 "								
Silica	2.6 "								
Vehicle	<table> <tr> <td>Linseed oil</td><td>89.2 per cent</td></tr> <tr> <td>Turpentine-thinner</td><td>10.8 "</td></tr> </table>	Linseed oil	89.2 per cent	Turpentine-thinner	10.8 "				
Linseed oil	89.2 per cent								
Turpentine-thinner	10.8 "								

PAINT No. 18.

Committee Description. Same for all three coats. The paint was chiefly a carbon pigment with some lead sulfate and a small amount of silicious material, ground in linseed oil and thinned with a mixture of light mineral oil and turpentine.

ON HAIRE DE GRACE BRIDGE TESTS.

Description Suggested by Manufacturer. Reply received suggesting the following description:

Same for all three coats. The pigment portion of the paint consisted of carbon black and sulfurous white lead, the vehicle portion, of a specially treated linseed oil and Japan drier.

PAINT No. 19.

Committee Description. Same for all three coats. Paint was a carbon pigment with a small amount of red lead, in a vehicle of linseed oil thinned with turpentine.

Description Suggested by Manufacturer. Reply received but no change suggested.

TABLE I.—CLASSIFICATION BY PANEL RESULTS BASED ON AVERAGE CONDITIONS

Paint No.	Class I. Good 1 year	Class II. Fair 1 year	Class III. Poor 1 year	Class IV. Total 1 year	Class V. Total 1 year
	Average Time in field, years	Average Time in field, years	Average Time in field, years	Average Time in field, years	Average Time in field, years
11	4.7	2.1			
10	8.8	3.1	6.0	2	
9	9.0	4.1	7.6	3	
12	9.0	4.1	6.7	3	
14	8.7	4.1	6.4	3	
5	8.5	4.1	6.0	3	
18	8.9	4.1	7.5	1	4.5
16	8.8	4.1	6.5	1	4.1
8	8.8	4.1	6.7	1	5.1
6	8.8	4.1	7.6	1	5.0
7	9.7	3.1	7.0	1	5.1
10	8.8	3.1	7.5	1	5.0
13	8.1	3.1	7.5	1	4.6
9	8.6	3.1	7.0	1	5.5
3			7.1	4.1	4.5
17			7.2	4.1	4.1
1			6.0	4.1	5.3
2				4.1	4.1
11				3.0	4.1

Note.—To illustrate this table, paint No. 10 was in Class I for 10 years, in Class II for 1 year, in Class III for 1 year, and in Class IV for 3 years, based on average inspection rates (see Table II).

001570

14 REPORT OF SUB-COMMITTEE OF COMMITTEE D-1

TABLE II.—CLASSIFICATION BY PAINT RESULTS BASED ON AVERAGE CONDITIONS, WITH DESCRIPTION OF PAINT COMPOSITIONS

PAINT No. 11	Rated in Class I	Excellent from date of application to end of test, 21 years.
Priming and Body Coats (1st and 2d)		
Finishing Coat (3d)		Red lead (88.9%, Pb ₃ O ₄) in linseed oil. Some red lead with small amount of carbon pigment in linseed oil.
PAINT No. 10	Rated in Class I	Excellent from date of application for 41 years.
Priming and Body Coats (1st and 2d)		
Finishing Coat (3d)		Good thereafter to end of test, 2 years. Red lead (88.9%, Pb ₃ O ₄) in linseed oil. Some red lead with small amount of carbon pigment in linseed oil.
PAINT No. 6	Rated in Class I	Excellent from date of application for 41 years.
Priming Coat (1st)		Good thereafter to end of test, 3 years. Red lead with some magnesium silicate in linseed oil.
Body Coat (2d)		Red lead with some magnesium silicate and 15 to 30% carbon pigment in linseed oil.
Finishing Coat (3d)		Carbon pigment with small amount of red lead and silicate in linseed oil thinned with turpentine containing a little light mineral oil.
PAINT No. 12	Rated in Class I	Excellent from date of application for 41 years.
Priming Coat (1st)		Good thereafter to end of test, 3 years. Mixture of calcium silicate, zinc oxide and soda-ash (blue lead) in linseed oil.
Body and Finishing Coats (2d and 3d)		Carbon paint containing some red lead and silicate in linseed oil thinned with turpentine.
PAINT No. 14	Rated in Class I	Excellent from date of application for 41 years.
Priming Coat (1st)		Good thereafter to end of test, 3 years. Red lead and silicate material in linseed oil.
Body and Finishing Coats (2d and 3d)		Carbon pigment with possibly small amount of red lead in linseed oil.

ON HART DE GRUY BRIDGE TIES

TABLE II. continued

PAINT No. 5	Rated in Class I	Excellent from date of application for 41 years.
Priming, Body and Finishing Coats (1st, 2d and 3d)		Good thereafter to end of test, 3 years. Red lead with small amount of carbon pigment in linseed oil.
PAINT No. 18	Rated in Class I	Excellent from date of application for 41 years.
Priming, Body and Finishing Coats (1st, 2d and 3d)		Good thereafter to end of test, 3 years. Red lead with small amount of carbon pigment in linseed oil.
PAINT No. 16	Rated in Class I	Excellent from date of application for 41 years.
Priming, Body and Finishing Coats (1st, 2d and 3d)		Good thereafter to end of test, 2 years. Fair thereafter to end of test, 2 years. Red lead with small amount of carbon pigment in linseed oil thinned with mixture of turpentine and light mineral oil.
PAINT No. 8	Rated in Class I	Excellent from date of application for 41 years.
Priming, Body and Finishing Coats (1st, 2d and 3d)		Good thereafter to end of test, 2 years. Fair thereafter to end of test, 2 years. Red lead with small amount of carbon pigment in linseed oil thinned with mixture of turpentine and light mineral oil.
PAINT No. 4	Rated in Class I	Excellent from date of application for 41 years.
Priming, Body and Finishing Coats (1st, 2d and 3d)		Good thereafter to end of test, 2 years. Fair thereafter to end of test, 2 years. Red lead with small amount of carbon pigment in linseed oil thinned with mixture of turpentine and light mineral oil.

16 REPORT OF SUB-COMMITTEE OF COMMITTEE D-1

TABLE II.—Continued.

PAINT No. 4 (Continued).	
Rated in Class III....	Fair thereafter to end of test, 3 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Carbonaceous pigment with small amount of red lead in linseed oil thinned with turpentine.
PAINT No. 7.	Rated in Class I.... Excellent from date of application for 3½ years.
	Rated in Class II.... Good thereafter for 1 year.
	Rated in Class III.... Fair thereafter for 1 year.
	Rated in Class IV.... Poor thereafter to end of test, 2 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Carbonaceous pigment (probably graphite), silicic acid and lithopone in linseed oil, thinned with light mineral oil, some turpentine and oil of camphor.
PAINT No. 19.	Rated in Class I.... Excellent from date of application for 3½ years.
	Rated in Class II.... Good thereafter for 1 year.
	Rated in Class III.... Fair thereafter for 1 year.
	Rated in Class IV.... Poor thereafter to end of test, 2 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Carbon pigment with small amount of red lead in linseed oil thinned with turpentine.
PAINT No. 13.	Rated in Class I.... Excellent from date of application for 3½ years.
	Rated in Class II.... Good thereafter for 1 year.
	Rated in Class III.... Fair thereafter for 1 year.
	Rated in Class IV.... Poor thereafter to end of test, 2 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Natural graphite pigment in linseed oil, thinned with turpentine containing a very small percentage of light mineral oil.
PAINT No. 9.	Rated in Class I.... Excellent from date of application for 3½ years.
	Rated in Class II.... Good thereafter for 1 year.

ON HAVRE DE GRACE BRIDGE TESTS.

17

TABLE II.—Continued.

PAINT No. 9 (Continued).	
Rated in Class IV....	Poor thereafter for 1 year.
Rated in Class V....	Failed thereafter to end of test, 2 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Carbon pigment with small amount of red lead in linseed oil, thinned with turpentine.
	Save for increasing percentages of carbon.
	Silicic material, oxide of iron and carbon pigment in linseed oil thinned with small amount of light mineral oil and perhaps some turpentine.
PAINT No. 3.	Rated in Class II.... Good from date of application for 3½ years.
	Rated in Class III.... Fair thereafter to end of test, 2 years.
Priming Coat (1st).	Carbon pigment in linseed oil thinned with turpentine.
Body Coat (2d).	Zinc oxide, basic sulfate of lead, basic carbonate of lead and small amount of silicic acid and carbonaceous matter in linseed oil thinned with turpentine and light mineral oil.
Finishing Coat (3d).	Calcium sulfate and oxide of iron with small amount of carbonaceous matter in linseed oil.
PAINT No. 12.	Rated in Class II.... Good from date of application for 3½ years.
	Rated in Class III.... Fair thereafter to end of test, 2 years.
Priming, Body and Finishing Coats (1st, 2d and 3d) identical.	Oxide of iron, barium sulfate and silicic material with small amount of carbon pigment in linseed oil, thinned with turpentine.
PAINT No. 1.	Rated in Class II.... Good from date of application for 3½ years.
	Rated in Class III.... Fair thereafter to end of test, 2 years.
Priming Coat (1st).	Iron-oxide pigment with some red lead in a long-oil varnish thinned with turpentine.
Finishing Coat (2d).	Iron-oxide pigment with some red lead with carbon pigment added in a long-oil varnish thinned with turpentine.

NLI

001572

18 REPORT OF SUB-COMMITTEE OF COMMITTEE D.C.

TABLE II.—Continued.

PAINT No. 2.	Rated in Class III	Pair from date of application for 4) years.
	Rated in Class V	Failed thereafter to end of test, 4 years
	Priming, Body and	
	Finishing Coats (1st,	
	2d and 3d identical)	Graphitic silicate paint is lined oil
		thinned with light mineral oil and a
		little turpentine.
PAINT No. 18.	Rated in Class IV	Pair from date of application for 4) years.
	Rated in Class V	Failed thereafter to end of test, 4 years
	Priming, Body and	
	Finishing Coats (1st,	
	2d and 3d identical)	Bituminous material thinned with
		light mineral oil.

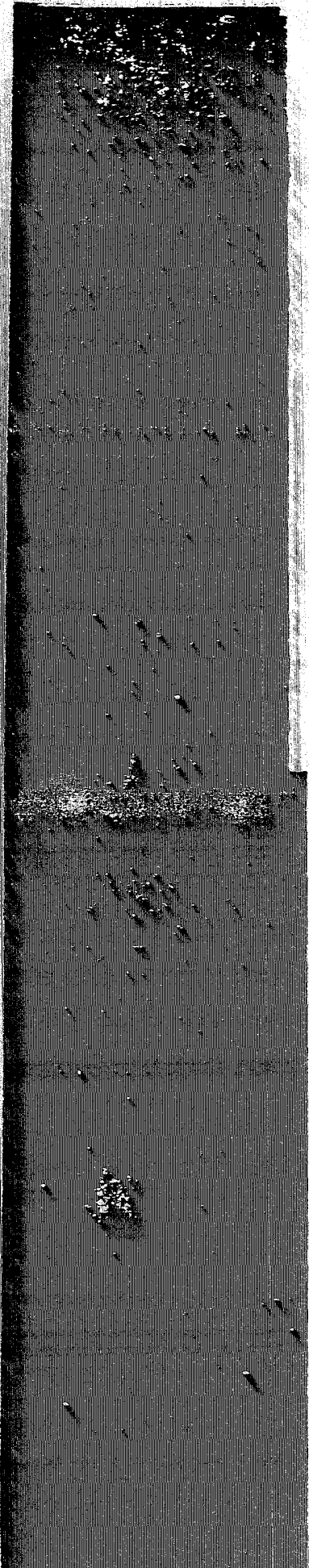
NLI 001573

So-Called White Leads

PARTICULARS

7-76-11

NLI 001574



White Leads That are
not White Leads

1891
THE NATIONAL LEAD AND OIL COMPANY OF
NEW YORK

NLI

001575

Every brand or label states or implies
the contents of the package is either
pure white lead or white lead and zinc.

Barium never appears on any package.

But the analyses show that a most very
small amount, from forty to ninety per cent
of it.

SOME OF THE CURRENT MISLEADING BRANDS

Arranged in alphabetical order. Name of
maker stated, if known. The materials
stated in common language. The total
adulteration stated. The chemist that
made the analysis named.

These brands and others are in the
market. The prices are less than for
white lead and the profits more. A
responsible dealer would rather sell
white lead than a counterfeit, but not
every buyer is wise enough to buy it.
[The trade in lead that is not lead is
very large and entirely responsible
when the truth is told about it]. The
trade in adulterated lead would be less
if it were properly branded.

Many of these brands have no name
of maker; some have fictitious names;
and some have real names.

To avoid barium or other adulter-
ant, buy some one of the brands in the
list of genuine white leads—page 3 of
the other primer.

N L I 001576

Analysis of Sample
 American Lead Works; made from
 Strictly Pure White Lead, St. Louis.
 Red Label on top, reading "Red Label
 Brand."

Materials	Proportions	Analyzed by
Barytes	52.36%	Dr. C. L. Jackson
White Lead	42.60%	St. Louis
Oxide of Zinc	5.10%	

Adulteration 55 per cent.

Analysis of Sample
 "American (Eagle) White Lead"
 ground in pure linseed oil.

Materials	Proportions	Analyzed by
Barytes	41.37%	John C. Jackson
Oxide of Zinc	1.06%	Chicago

No White Lead in it.

Analysis of Sample
 "American White Lead and
 Color Works, Crescent City pure
 white lead, guaranteed, N. O., La."
 There is also a paper label on the side
 of the keg with the following: "\$100.00
 guaranteed. We guarantee the con-

tents of this package to be strictly
 pure white lead and oxide of zinc, com-
 bined with pure refined linseed oil.
 American White Lead and Color
 Works, New Orleans, La."

Materials	Proportions	Analyzed by
Barytes	31.07%	John C. Jackson
Sulphate of Lead	1.27%	son, Chicago
White Lead	34.42%	
Oxide of Zinc	33.25%	

Adulteration 65 per cent.

Analysis of Sample
 "American White Lead and
 Color Works, New Orleans, La.
 Crescent City pure white lead, guar-
 anteed." On the side of the keg is a
 paper label bearing the following guar-
 antee: "\$100.00 guaranteed. We guar-
 antee the contents of this package to
 be strictly pure white lead and oxide of
 zinc, combined with refined linseed oil.
 American White Lead and Color
 Works, New Orleans, La."

Materials	Proportions	Analyzed by
Barytes	30.34%	Regis Chauvenet
Oxide of Zinc	34.00%	& Bro.
White Lead	35.66%	St. Louis

Adulteration 64 per cent.

N L I 001577

Marketing Brand

"American White Lead and Color Works, N. O., La. Crescent City pure white lead, guaranteed." There is also a paper label on the side of the keg, with the following: "\$100.00 guarantee. We guarantee the contents of this package to be strictly pure white lead and oxide of zinc, combined with pure refined linseed oil, American White Lead and Color Works, New Orleans, La."

Materials	Proportions	Analyzed by
Barytes	33.98%	William B. Potter,
White Lead	32.26%	St. Louis, Mo.
Oxide of Zinc	33.68%	

Adulteration nearly 68 per cent.

Marketing Brand

"Beckman White Lead. Has no superior. Binney, Delmar & Co., 284 & 286 Pearl Street, Bank building, N.Y., sole agents. Strictly pure."

Materials	Proportions	Analyzed by
White Lead	9.77%	Ledoux & Co.,
Sulphate of Lead	84.83%	New York.
Oxide of Zinc	5.44%	

Adulteration 90 per cent.

6

Marketing Brand

"Beckman White Lead. Has no superior. Binney, Delmar & Co., 284 & 286 Pearl Street, Bank building, New York. Strictly pure."

Materials	Proportions	Analyzed by
Sulphate of Lead	82.88%	Henry Leff-
Oxide of Zinc	6.60%	mann, Phila-
White Lead	11.82%	delphia.

Adulteration 88 per cent.

Marketing Brand

"Bristol Pure White Lead.

Guaranteed." Also paper label: "Bristol (lion-unicorn design) Lead." There is also a paper label on the side of the keg, with the following: "The white lead in this package is guaranteed strictly pure, ground in bleached oil, and for purity, whiteness and durability is not excelled by any lead manufactured."

Made by Cory, Ogden & Parker, Chicago.

Materials	Proportions	Analyzed by
Barytes	71.63%	John C. Jack-
Sulphate of Lead	5.23%	son, Chicago.
White Lead	6.66%	
Oxide of Zinc	15.67%	

Adulteration 93 per cent.

7

N L I 001578

Manufacturing Brand

"Bell's English Improved White Lead Wm. W. Marmon, Druggist, Bloomington, Ill." In the center of the label is a trade-mark of a lion and flag, in gilt.

Materials	Proportions	Analyzed by
Barytes	36.20%	Regis Chauvenet & Bro., St. Louis
Oxide of Zinc	40.30%	
Sulphate of Lead	2.65%	
Undetermined	.85%	

No White Lead in it.

Manufacturing Brand

"Benton Lead and Oil Co. Strictly pure white lead, St. Louis." Made by The Morrison, Adams & Allen Co., Chicago.

Materials	Proportions	Analyzed by
Barytes	45.34%	John C. Jackson, Chicago.
White Lead	41.82%	
Oxide of Zinc	13.06%	

Adulteration 58 per cent.
8

Manufacturing Brand

"Crescent Color Co. Gold seal. Strictly pure white lead and zinc in pure linseed oil. St. Louis, Mo."

Materials	Proportions	Analyzed by
Barytes	55.14%	Regis Chauvenet & Bro., St. Louis
Oxide of Zinc	27.46%	
White Lead	37.40%	

Adulteration 62 per cent.

Manufacturing Brand

"Crown White Lead, pure, manufactured by Victoria White Lead Works."

Materials	Proportions	Analyzed by
Barytes	20.80%	Dr. C. Luedeking, St. Louis.
White Lead	54.60%	
Calcium Carbonate	24.30%	

Oxide of Zinc 20.30%
Adulteration 65 per cent.

Manufacturing Brand

"Currey Manufacturing Co. Superior (Red Star design) white lead. Chicago"

Materials	Proportions	Analyzed by
Insoluble	2.47%	John C. Jackson, Chicago.
Sulphate of Lead	54.25%	
White Lead	53.05%	
Carbonate of Lime (Whiting)	2.46%	

Oxide of Zinc 6.81%
Adulteration 67 per cent.
9

NLI

001579

"Diamond Pure White Lead
in oil, St. Louis."

Materials	Proportions	Analyzed by
Barytes	72.60%	Dr. C. Luedeking,
White Lead	8.30%	St. Louis.
Oxide of Zinc	18.70%	

Adulteration 92 per cent.

"Diamond White Lead Co.
Cincinnati, O. Warranted superfine
white lead in oil. Strictly pure.
There is also a paper label on the side
of the keg with the following: "Guar-
antee. We guarantee the white lead
in this package to be strictly pure,
ground in pure linseed oil, and will pay
\$1,000 in gold if found otherwise.
Diamond White Lead Co."

Made by Walker Paint Co., Cincinnati.

Materials	Proportions	Analyzed by
Sulphate Lead	73.24%	Karl Langenbeck,
Oxide of Lead	4.16%	Cincinnati.
Barytes	16.39%	
Oxide of Zinc	6.17%	

No White Lead in it.

10

"Diamond White Lead, war-
ranted superfine White Lead in oil.
Strictly pure. Cincinnati, Ohio, Dia-
mond White Lead Co."

Materials	Proportions	Analyzed by
Barytes	72.40%	John W. Lang-
Oxide of Zinc	3.60%	ley, Pittsburgh.
White Lead	23.40%	

Adulteration almost 77 per cent.

"Dolson Pure White Lead, ground
in strictly pure bleached linseed oil."

Made by Dolson, H. & Co., Boston.

Materials	Proportions	Analyzed by
Oxide of Zinc	42.70%	Ledoux & Co.,
Barytes	57.30%	New York.

No White Lead in it.

"Dubuque White Lead Co.,
Dubuque, Ia."

Materials	Proportions	Analyzed by
Oxide of Zinc	43.71%	Ledoux & Co.,
Sulphate of Lead	88%	New York.
Barytes	55.27%	

No White Lead in it.

11

NLI 001580

Blanching Brand

"English. The Royal Manufacturing Co. Ground fine in linseed oil. Any person or persons found imitating this lead or label will be subject to a fine of £50 for each offence. White Lead."

Made by The Sherwin-Williams Co. Cleveland, Chicago and New York.

Materials	Proportions	Analyzed by
Barytes	40.217	Ledoux & Co., New York.
Oxide of Zinc	55.114	
White Lead	1.364	

Adulteration nearly 99 per cent.

Blanching Brand

"English. The Royal Manufacturing Company. Ground fine in linseed oil. Any person or persons found imitating this lead or label will be subject to a fine of £50 for each offence. White Lead."

Made by The Sherwin-Williams Co. Cleveland, Chicago and New York.

Materials	Proportions	Analyzed by
Barytes	39.007	S. P. Sharples, Boston.
Oxide of Zinc	61.004	

No White Lead in it.

12

Blanching Brand

"English. The Royal Manufacturing Co. Ground fine in linseed oil. Any person or persons found imitating this lead or label will be subject to a fine of £50 for each offence. White Lead."

Made by The Sherwin-Williams Co. Cleveland, Chicago and New York.

Materials	Proportions	Analyzed by
Barytes	40.107	Stillwell & Gladding, New York.
Oxide of Zinc	59.905	

No White Lead in it.

Blanching Brand

"Excelsior Lead Co., St. Louis, Mo. Strictly Pure White Lead." On the side is the brand "S" and a paper label with the following: "The White Lead Contained in this package is guaranteed to be perfectly pure Carbonate of Lead, manufactured with great care and ground in bleached Linseed Oil."

Materials	Proportions	Analyzed by
Barytes	51.847	William B. Potter, St. Louis.
White Lead	23.547	
Oxide of Zinc	24.624	

Adulteration 76 per cent.

13

NL I001581

Manufacture Brand

"Eureka." Top of keg, red painted, marked "Eureka. Strictly Pure White Lead, Pittsburg." Yellow Side Label, as follows: "\$100 Reward. The White Lead contained in this package is guaranteed perfectly pure, and in fineness, whiteness and durability it is unsurpassed by any White Lead in the market. Eureka White Lead Works."

Materials	Proportions	Analyzed by
Moisture	.23%	John C. Jackson, Chicago.
Barytes	70.92%	
Sulphate of Lead	16.45%	
Oxide of Zinc	7.41%	
White Lead	3.94%	

Adulteration 96 per cent.

Manufacture Brand

"The Forest City Paint and Varnish Co. Forest City. White Lead. Cleveland, O."

Materials	Proportions	Analyzed by
Barytes	43.97%	John C. Jackson, Chicago.
White Lead	31.15%	
Oxide of Zinc	24.48%	

Adulteration 68 per cent.

14

Manufacture Brand

"Gold Medal White Lead."

Materials	Proportions	Analyzed by
White Lead	1.24%	Ledoux & Co., New York.
Oxide of Zinc	29.38%	
Calcium Carbonate	5.53%	
Barytes	63.75%	
Undetermined	.10%	

Adulteration almost 99 per cent.

Manufacture Brand

"Golden Seal. Strictly pure. White lead. Chicago, Ill." There is also a brass label on the top of the keg with the following: "Guaranteed for fineness, whiteness and durability."

Made by Coffin, Devos & Co., Chicago.

Materials	Proportions	Analyzed by
Barytes	50.62%	John C. Jackson, Chicago.
Sulphate of Lead	16.04%	
White Lead	21.56%	
Oxide of Zinc	11.36%	

Adulteration 78 per cent.

15

NLI 001582

"Gold Seal White Lead." "This old and reliable brand of white lead is made by an entirely different process and will be found to possess more body, brilliancy and durability than any other brand hitherto offered to the public. Beware of spurious imitations. Manufactured only by Jacobs & McCafferty. Works: 445-455 West Street, office corner Bank and West Streets, New York." Blue label: head of Napoleon III., with inscription "Napoleon III., Empereur. Trade mark registered December 5, 1870."

Materials	Proportions	Analysed by
White Lead	7.73%	Ledoux & Co.,
Oxide of Zinc	41.37%	New York.
Sulphate of Lead	3.49%	
Barytes	47.51%	

Adulteration 92 per cent.
16

Manufacture Central

"Hammar Paint Co. Pure white lead. Guaranteed. St. Louis, Mo." On the head of the keg was also stenciled a hammer in red.

Made by F. Hammar Paint Co., St. Louis.

Materials	Proportions	Analysed by
Barytes	53.32%	Regis Chauvenet & Bro.,
Oxide of Zinc	15.06%	St. Louis.
White Lead	31.62%	

Adulteration 68 per cent.

M. Fading Price

"F. Hammar Paint Co. Pure painter's lead in oil. St. Louis." In sign of a hammer.

Made by F. Hammar Paint Co., St. Louis.

Materials	Proportions	Analysed by
Barytes	31.90%	John C. Jackson, Chicago.
Sulphate of Lead	3.12%	
White Lead	21.57%	
Carbonate of Lime	9.97%	
Oxide of Zinc	32.58%	

Adulteration 78 per cent.

17

NLI

001583

Blending Brand

"F. Hammar Paint Co. St. Louis. Pure painter's lead in oil."
Made by F. Hammar Paint Co., St. Louis.

Materials	Proportions	Analyzed by
Barytes	33.44%	Regis Chauvenet & Bro., St. Louis.
Oxide of Zinc	33.46%	
Carbonate of Lime	8.57%	
White Lead	22.53%	

Adulteration 77 per cent.

Blending Brand

"Imperial White Lead." A crown branded on the head of keg.
Made by the New York Enamel Paint Co., Brooklyn, N. Y.

Materials	Proportions	Analyzed by
Sulphate of Lead	1.31%	Ledoux & Co., New York.
White Lead	15.63%	
Oxide of Zinc	29.11%	
Barytes	53.74%	

Adulteration 84 per cent.
18

Blending Brand

"Ironside's Fine White Lead. Chicago."
Made by Chicago White Lead & Oil Co., Chicago.

Materials	Proportions	Analyzed by
Barytes	47.97%	John C. Jackson, Chicago.
Sulphate of Lead	1.30%	
White Lead	24.21%	
Oxide of Zinc	25.59%	

Adulteration nearly 76 per cent.

Blending Brand

"Island Park Pure White Lead. Detroit, Mich." Red side label as follows: "\$100 in gold. One hundred dollars in gold will be paid if the contents of this package is not strictly pure. For whiteness, fineness and covering properties it is unsurpassed by any white lead in the market."

Materials	Proportions	Analyzed by
Barytes	50.46%	John C. Jackson, Chicago.
Oxide of Zinc	48.67%	
No White Lead in it.		

19

NLI 001584

Manufacturing Brand

"Lawson Lead Co. Strictly pure
white lead. Chicago."
Made by Colt & Co., Chicago.

Materials	Proportions	Analyzed by
Barytes	45.00%	John C. Jackson, Chicago.
Sulphate of Lead	47.77%	
White Lead	25.55%	
Oxide of Zinc	27.12%	

Adulteration 74 per cent.

Manufacturing Brand

"C. F. Lawson & Co. Strictly
Pure White Lead. Red label with
brush, on which is printed, "Guaran-
teed to be strictly pure. Forfeited if
adulterated."

Made by Jas. E. Patton & Co., Milwaukee.

Materials	Proportions	Analyzed by
Barytes	58.10%	J. Fiebing, Milwaukee
Oxide of Zinc	24.90%	
White Lead	13.60%	
Calcium Car- bonate	3.20%	

Adulteration 86 per cent.

20

Manufacturing Brand

"C. F. Lawson & Co. Strictly
pure white lead. St. Louis, Can."
There is also a paper label on the head
of the keg with the following: "Guar-
anteed to be strictly pure, forfeited if
adulterated." Design of paint brush
marked "Peerless."

Made by Jas. E. Patton & Co., Milwaukee.

Materials	Proportions	Analyzed by
Barytes	55.5%	John C. Jackson, Chicago
Sulphate of Lead	48.7%	
White Lead	45.00%	
Oxide of Zinc	25.11%	

Adulteration 85 per cent.

Manufacturing Brand

"Le Clode White Lead Co.
Strictly pure white lead guaranteed."
There is also a paper label on the side
of the keg with the following: "The
21

NL I001585

white lead in this package is guaranteed strictly pure, ground in bleached oil, and for purity, whiteness and durability is not excelled by any lead manufactured."

Materials	Proportions	Analyzed by
Barytes	60.77%	John C. Jackson, Chicago.
Sulphate of Lead	20.90%	
Oxide of Zinc	18.21%	
No White Lead in it.		

Magnolia Brand

"Magnolia White Lead, Strictly pure. Trade-mark (a magnolia flower). Manufactured by Western Paint Co., Cincinnati, O."

Materials	Proportions	Analyzed by
Sulphate of Lead	29.9%	W. Dickorf.
White Lead	27.1%	A. M., Ph. D., Cincinnati.
Barytes	39.7%	
Oxide of Zinc	3.6%	
Adulteration 73 per cent.		

23

Masury's Brand

Masury's Railroad White Lead."

White label, marked "Railroad White Lead, 25, pure; John W. Masury & Son, New York and Chicago, warranted superior."

Made by John W. Masury & Son, New York and Chicago.

Materials	Proportions	Analyzed by
Oxide of Zinc	59.50%	M. Delafontaine, Chicago.
Barytes	40.50%	
No White Lead in it.		

Masury's Brand

Masury's Railroad White Lead."

White label, marked "Railroad White Lead, 25, pure; John W. Masury & Son, New York and Chicago, warranted superior."

Made by John W. Masury & Son, New York and Chicago.

Materials	Proportions	Analyzed by
Oxide of Zinc	55.70%	Ledoux & Co., New York.
Barytes	44.30%	
No White Lead in it.		

Note.—Barytes is sold at from \$20 to \$25 per ton.

23

NLI001586

MISSOURI BRAND

"Metropolitan. Strictly pure white lead, St. Paul, Minn."

Materials	Proportions	ANALYSED BY
Barytes	37.156	John C. Jackson,
White Lead	53.564	Chicago.
Oxide of Zinc	9.338	
Adulteration 46 per cent.		

MISSOURI BRAND

"Midland. Strictly pure white lead. Guaranteed."

Materials	Proportions	ANALYSED BY
Barytes	36.504	Regis Chauvenet
Oxide of Zinc	17.384	& B...
White Lead	46.124	St. Louis.
Adulteration 54 per cent.		

MISSOURI BRAND

"Mississippi Lead Co. Strictly pure white lead warranted."

Materials	Proportions	ANALYSED BY
Barytes	39.918	John C. Jackson,
Sulphate of Lead	10.274	Chicago.
Oxide of Zinc	36.284	
White Lead	12.704	
Adulteration 87 per cent.		

24

"Missouri White Lead. Established 1859. Wm. Waterfall & Co., N. W. Cor. 4th & Race streets, Philadelphia."

Made by Wm. Waterfall & Co., Philadelphia.

Materials	Proportions	ANALYSED BY
Barytes	37.427	Ledoux &
White Lead	58.258	Co., New York.
Sulphate of Lime	13.226	
Oxide of Zinc	37.264	
Water combined	3.974	
Adulteration 62 per cent.		

MISSOURI BRAND

"Missouri White Lead. Established 1859. Wm. Waterfall & Co., N. W. Cor. 4th & Race streets, Philadelphia."

Made by Wm. Waterfall & Co., Philadelphia.

Materials	Proportions	ANALYSED BY
Barytes	37.457	S. P. Sharples,
White Lead	7.124	New York.
Sulphate of Lime	13.398	
Oxide of Zinc	36.455	
Moisture	3.398	
Adulteration 93 per cent.		

The above brand should not be confounded with the Missouri Company, St. Louis, brand, which is strictly Pure White Lead.

25

NLI 001587

A. M. Nelson Paint Co.
Strictly pure lead in oil.

Materials	Proportions	Analyzed by
Barytes	51.48%	Regis Chauvenet & Bro., St. Louis.
Oxide of Zinc	30.30%	
White Lead	18.22%	

Adulteration nearly 82 per cent.

Extending Brand

"New York. Ground in pure linseed oil. Pure lead."

Materials	Proportions	Analyzed by
Moisture	.76%	John C. Jackson, Chicago.
Barytes	80.23%	
Oxide of Zinc	15.91%	

No White Lead in it.

Extending Brand

"Niagara Lead and Color Works. Niagara white lead. Buffalo, New York."

Materials	Proportions	Analyzed by
White Lead	18.31%	Ledoux & Co., New York.
Sulphate of Lead	26.30%	
Oxide of Zinc	14.64%	
Barytes	39.82%	

Adulteration 81 per cent.

26

Extending Brand

"The Nassau White Lead Co. Ground in refined oil. Genuine Nassau White Lead & Color Works, New York. Pure white lead."
Made by *Hampden Paint Co., Springfield, Mass., and New York.*

Materials	Proportions	Analyzed by
Sulphate of Lead	14.87%	Ledoux & Co., New York.
Oxide of Zinc	39.01%	
White Lead	6.09%	
Barytes	38.76%	

Adulteration 93 per cent.

Extending Brand

"Octagon Brand. Best white lead. St. Louis, Mo." There is also a paper label on the top of the keg with the following: "Trade mark N. P. Co. monogram." "The contents of this package are guaranteed to be composed of strictly pure white lead, ground in pure linseed oil, with a small percentage of zinc, and equal to any lead made."

Made by *A. M. Nelson Paint Co., St. Louis.*

Materials	Proportions	Analyzed by
Barytes	41.56%	John C. Jackson, Chicago.
Sulphate of Lead	9.94%	
White Lead	41.47%	
Oxide of Zinc	15.87%	

Adulteration 58 per cent.

27

NLI 001588

Trademark Brand

"Octagon Brand. Best white lead. St. Louis, Mo." In the center of the head is a paper label, octagon in shape and red in color, bearing the following guarantee: "The contents of this package is guaranteed to be composed of strictly pure white lead ground in pure linseed oil with a small per cent of zinc and equal to any lead made." Monogram on white center—"N. P. Co."

Made by A. M. Nelson Paint Co., St. Louis.

Material	Proportions	Analyzed by
Barytes	35.40%	Regis Chauvenet & Bro., St. Louis.
Oxide of Zinc	8.34%	
White Lead	56.26%	

Adulteration nearly 44 per cent

Trademark Brand

"Pacific Warranted Pure [A] White Lead."

Material	Proportions	Analyzed by
Sulphate of Lead	4.18%	Ledoux & Co., New York.
Oxide of Zinc	45.04%	
Barytes	50.68%	

No white lead in it.

28

Trademark Brand

"Pearl White Lead." Branded "S. Harlett & Co. Limited, Washington, Pennsylvania Pearl White Lead."

Material	Proportions	Analyzed by
White Lead	31.40%	M. Delafontaine Chicago.
Oxide of Zinc	28.45%	
Barytes	40.15%	

Adulteration 68 per cent.

Trademark Brand

"Pittsburgh White Lead. Ground in refined linseed oil, best and purest."

Material	Proportions	Analyzed by
Oxide of Zinc	45.00%	Henry Ledmann Philadelphia.
Barytes	54.70%	

No White Lead in it.

Trademark Brand

"Pioneer Pure White Lead Pittsburgh, Pa."

Made by The T. H. Norton Co., Pittsburgh.

Material	Proportions	Analyzed by
White Lead	37.84%	Ledoux & Co., New York.
Barytes	32.08%	
Oxide of Zinc	29.79%	

Adulteration 62 per cent.

29

NLI 001589

Marketing Brand
"Pioneer Pure White Lead."
 Pittsburgh, Pa.
Made by T. H. Nevin & Co., Pitts-
burgh.

Materials	Proportions	Analyzed by
White Lead	40.00%	Hunt & Clapp
Barytes	2.33%	Pittsburgh.
Oxide of Zinc	25.42%	
Oxides of Iron		
and Alumina	3.25%	
Undetermined	2.99%	
Adulteration	59 per cent.	

Marketing Brand
"Pure White Lead" in refined
 St. Louis oil, Atlanta. In the centre
 of the head is a small, red hexagon.
 On the side of the keg is a paper
 label with the following: "We guar-
 antee this package to contain Strictly
 Pure Materials."

Materials	Proportions	Analyzed by
Barytes	50.16%	William B. Potter
White Lead	35.05%	St. Louis.
Oxide of Zinc	14.79%	
Adulteration	65 per cent.	

Marketing Brand
"Charles Richardson & Co.,
 Boston, Mass. Genuine English White
 Lead."

Materials	Proportions	Analyzed by
White Lead	20.43%	Jas. F. Babcock,
Oxide of Zinc	48.77%	Boston.
Silica	30.80%	
Adulteration	nearly 80 per cent.	

Marketing Brand
"Royal Crown White Lead."

Materials	Proportions	Analyzed by
Barytes	73.00%	M. Delafontaine,
Oxide of Zinc	27.00%	Chicago.
No White Lead in it.		

Marketing Brand
"Red Star. Pure white lead in
 bleached oil, St. Louis, Mo." On the
 head of the keg was also a red star.
Made by Mound City Paint and Color
Co., St. Louis.

Materials	Proportions	Analyzed by
Barytes	75.21%	Regis Chauvenet
Oxide of Zinc	9.44%	& Bro.,
White Lead	15.32%	St. Louis.
Adulteration	nearly 85 per cent.	

NL I 001590

Blindstamping Brand

"Royal Company, strictly pure white lead in bleached linseed oil, St. Louis."

Materials	Proportions	Analyzed by
White Lead	12.50%	Dr. C. Luedeking,
Barytes	60.00%	St. Louis.
Oxide of Zinc	27.50%	
Adulteration 87 per cent.		

Blindstamping Brand

"Seeley Bros. New York and Boston: Empire pure white lead."

Materials	Proportions	Analyzed by
White lead	12.45%	Ledoux & Co.,
Oxide of Zinc	41.74%	New York.
Barytes	45.66%	
Adulteration 87 per cent.		

Blindstamping Brand

"Seeley Brothers, New York and Boston (S) B Improved English Lead." On side, "Seeley Bros., Boston, Mass."

Materials	Proportions	Analyzed by
Barytes	40.17%	S. P. Sharples,
Oxide of Zinc	48.32%	Boston.
White Lead	11.51%	
Adulteration 88 per cent.		

32

Blindstamping Brand

"Seeley Brothers, New York and Boston: Empire Pure White Lead."

Materials	Proportions	Analyzed by
Barytes	44.10%	Henry Leffmann,
Oxide of Zinc	41.30%	Philadelphia.
White Lead	15.35%	
Adulteration 85 per cent.		

Blindstamping Brand

"Standard Lead Co. Strictly pure white lead, St. Louis."

Made by A. M. Nelson Paint Co., St. Louis

Materials	Proportions	Analyzed by
Barytes	59.36%	Regis Chauvenet
Oxide of Zinc	34.18%	& Bro.,
White Lead	6.46%	St. Louis.
Adulteration nearly 94 per cent.		

Blindstamping Brand

"Strictly Pure White Lead," with a spread eagle and S. R. & Co. monogram.

Materials	Proportions	Analyzed by
White Lead	25.03%	Ledoux & Co.
Oxide of Zinc	32.31%	New York.
Silica (free)	22.11%	
Carbonate of Lime	20.29%	
Adulteration 75 per cent.		

33

NLI 001591

Blending Brand

"Superior Lead Co. Strictly pure white lead. Chicago, Ill." There is a paper label on the side of the keg with the following: "The white lead contained in this package is guaranteed to be perfectly pure carbonate of lead, manufactured with great care and ground in bleached linseed oil."

Materials	Proportions	Analyzed by
Barytes	47.12%	John C. Jackson,
Sulphate of		Chicago.
Lead	1.73%	
Oxide of Zinc	23.90%	
White Lead	26.68%	

Adulteration 73 per cent.

Blending Brand

"Vane Calvert Paint Co. Manufacturers of strictly pure white lead and zinc. Ground in linseed oil. 615-619 N. Main Street, St. Louis."

Materials	Proportions	Analyzed by
Barytes	34.28%	Regis Chauvenet
Oxide of Zinc	18.10%	& Bro.,
White Lead	47.62%	St. Louis.

Adulteration 52 per cent.

34

Blending Brand

"The Walker Paint Co. Cincinnati, O. Warranted strictly pure." Trade-mark (star and crescent). There is also on the side a red paper label with the following "Guarantee": "We guarantee the contents of this package to be strictly pure white lead ground in pure linseed oil. The Walker Paint Co., James Walker, Pres."

Materials	Proportions	Analyzed by
Barytes	35.98%	William B. Fox-
White Lead	10.73%	ter, St. Louis.
Sulphate of Lead	47.82%	
Oxide of Zinc	5.47%	

Adulteration 89 per cent.

Blending Brand

"The Walker Paint Co. Cincinnati, O. Warranted strictly pure oxidized white lead." Trade-mark (maltese cross with star in centre). There is also a paper label on the side of the keg with the following: "Pure oxidized white lead. We guarantee the

35

NL 1 001592

contents of this package to be strictly pure oxidized white lead ground in pure linseed oil. The Walker Paint Co., James Walker, Prest."

Materials	Proportions	Analyzed by
Sulphate of Lead	60.00%	Karl Langenbeck, Cincinnati.
Oxide of Lead	10.95%	
Barytes	20.13%	
Oxide of Zinc	6.66%	
No White Lead in it.		

Resounding Brand

"The Walker Paint Co., Cincinnati, O. Warranted strictly pure oxidized white lead." Trade-mark (maltese cross, with star in centre). On side of keg, red label, with words: "We guarantee the contents of this package to be strictly pure oxidized white lead, ground in pure linseed oil. The Walker Paint Co., James Walker, Prest."

Materials	Proportions	Analyzed by
Sulphate of Lead	70.09%	Henry Lossmann, Philadelphia.
Oxide of Lead	4.42%	
Oxide of Zinc	9.10%	
Barytes	15.60%	
No White Lead in it.		

36

"The Walker Paint Co., Cincinnati, Ohio. Warranted strictly pure white lead." Trade-mark (maltese cross with star in centre). Also found on side of keg, which reads: "Pure oxidized white lead." We guarantee the contents of this package to be strictly pure oxidized white lead ground in pure linseed oil. The Walker Paint Co., James Walker, Prest."

Materials	Proportions	Analyzed by
Sulphate of Lead	55.00%	Leitch & Co., New York.
Oxide of Lead	15.00%	
Oxide of Zinc	5.00%	
No White Lead in it.		

"The Ullmann Paint Co., Cincinnati, Ohio. Warranted perfectly pure white lead." On the side of the keg: "We guarantee the contents of this package to be strictly pure, and for covering qualities, whiteness, and durability, not excelled by any white lead. The Ullmann Paint Co., Cincinnati, Ohio."

Materials	Proportions	Analyzed by
Barytes	49.19%	Wm. B. Potter, St. Louis.
White Lead	14.41%	
Oxide of Zinc	36.32%	
Adulteration 85 per cent.		

37

001593

Western Diamond. Strictly
 pure white lead ground in refined
 linseed oil. St. Louis Mo.
Made by H. H. Lantier & Co. St. Louis.

Barytes	16.00	And 100
Oxide of Zinc	24.00	Regis Chauvenet
White Lead	34.50	& Bro.
St. Louis		

Adulteration 2 per cent.

Western Lead Works, registered
 strictly pure White Lead.

Barytes	57.00	Regis Chauvenet
Oxide of Zinc	8.44	& Bro.
White Lead	34.50	St. Louis

Adulteration almost 60 per cent.

Western Lead Works. Registered
 strictly pure White Lead. There
 is also a paper label on the back of the
 keg with the words "The white
 lead in this package is pure white
 lead, and is not a mixture of
 barytes, oxide of zinc, or any other
 adulteration." The paper label is an ex-
 ceedingly good lead mark, and is
 Western Lead Works.

Made by C. C. C. Co. St. Louis, Mo.

Barytes	57.00	John C. Jack-
Sulphate of Lead	12.00	son, Chicago.
White Lead	16.00	
Oxide of Zinc	13.50	

Adulteration 83 per cent.

Wright, Bannard & Co. Strictly
 pure white lead. St. Louis. There
 is also a paper label on the back of the
 keg with the words "The white
 lead in this package is pure white
 lead, and is not a mixture of
 barytes, oxide of zinc, or any other
 adulteration." The paper label is an ex-
 ceedingly good lead mark, and is
 Western Lead Works.

Made by C. C. C. Co. St. Louis, Mo.

Barytes	57.00	John C. Jack-
Sulphate of Lead	12.00	son, Chicago.
White Lead	16.00	
Oxide of Zinc	13.50	

Adulteration 83 per cent.

NLI

001594

Wright, Baumel & Co. Strictly
pure white lead. St. Louis. Red
maltese cross on which is printed.
"Warranted strictly pure white lead
in linseed oil."

Sold by Northwestern Co., Milwaukee.

Materials	Proportion	Analysed by
Barytes	55.60%	J. Fiebing.
Oxide of Zinc	29.30%	Milwaukee, Wis.
White Lead	14.40%	

Adulteration 85 per cent.

Blanchard Brand

"Wieder Paint Co. White lead in
oil grinders. Strictly pure white lead
and zinc, St. Louis, Mo."

Materials	Proportion	Analysed by
Barytes	30.82%	Regis, Chauvenet
Oxide of Zinc	18.36%	& Bro.,
White Lead	30.82%	St. Louis.

Adulteration 64 per cent.

WILLIAM C. HOFF, ANALYST, 201 N. 2ND STREET, NEW YORK.

NLI

001595

TO CONSUMERS OF WHITE LEAD.

Our purpose in publishing this book is to show Dealers, Painters, and Consumers of Lead that many of the brands of the so-called White Lead, are composed of.

While reading the following certificate which have been made by well-known chemists, please bear in mind that many of the Paste Paints, Ready Mixed Paints and so called Colored Leads, Tinted Leads, etc., etc., are similar mixtures to many of these brands analyzed, with sufficient coloring matter in them to produce their shades.

The manufacturers of this class of Paints base their claims to superiority for their products upon their alleged (1) use of Pure Carbonate of Lead and (2) use of Zinc in making them. They do not mention Barites except to deny using it.

Unsatisfactory painting can usually be traced to the use of adulterated Lead, Paints, Oil and cheap Dryers. Unskillful application must also bear a portion of the blame. We believe time and experience have proved that Pure White Lead is the best and most economical pigment known for general painting purposes.

What is White Lead? There is but one article entitled to the commercial name of White Lead, and that is the carbonate of lead of a peculiar chemical formula, which is manufactured only from metallic lead by processes called corrosion.

What is Barites? In reply we quote from a publication entitled, "Big Points on Paint," "Barites is

NLI 001596

by one of the largest manufacturers of the article in the world, in justice to whom it should be said that they claim superiority for their product upon the ground of improved process of manufacture. "Barytes has no body. All kinds are gritty and without uniformity of flow, no two lots running alike. It is not in the power of man to make two successive lots uniform in fineness or purity. It invariably injures paint and for that reason is always an unprofitable and dangerous paint material. Next after Lead, Gold and Platinum, it is the fourth heaviest substance known to man; for this reason in any soft mixture it settles in stratified layers, the coarsest grit at the bottom, where it quickly hardens into cake and the next coarser particles in a higher layer and so on to the top layer of muddy sediment."

Sulphate of Baryta (Barium Sulphate) the principal adulterant in these mixtures is nearly worthless as a paint. It has little or no covering capacity (called in the trade body) or adhering or staying qualities, and in its mixture with White Lead is used only as an adulterant and to make weight. It injures White Lead to the extent it is added to it, in fact to a far greater extent, because labor, time, oil, &c., are wasted in putting it on. Its cost is from 4 to 14c. per pound. It can thus be seen that Dealers and Consumers who buy mixtures containing Barytes pay the price for it, which they pay for the mixtures, viz.: from 4 to 7c. per pound.

If consumers desire to buy Barytes, knowing it to be such, and put it on their property as a paint, it is no concern of ours; but when it is mixed or ground in different proportions with White Lead, and is sold under the name of "White Lead," "White Lead and Zinc," "Colored Lead" or "Tinted Lead," or when it is a constituent in any paint which is sold to take the place of White Lead, it does concern us, and we propose hereafter to show consumers and the public generally, by all legitimate ways, the composition of such mixtures.

N L I 001597

Without claiming that the following list is a small
 brands of Strictly Pure White Lead manufacturer & or ground
 in the United States, we wish say that all packages legimately
 bearing the names on the list contain genuine Strictly Pure
 White Lead.

ANCHOR WHITE LEAD WORKS
 Goshen, N. Y. - Pure,
 CINCINNATI, O.

ARMSTRONG & McKELVY
 Strictly Pure White Lead
 PITTSBURGH, PA.

ATLANTIC WHITE LEAD
 Pure White Lead
 BOSTON, MASS. & CO.

BETHLEHEM-BAITMAN CO.
 Strictly Pure
 PITTSBURGH, PA.

THE BRANLEY WHITE LEAD
 Co.,
 Waterbury Pure White Lead,
 NEW YORK.

BROOKLYN WHITE LEAD CO.,
 Pure White Lead
 Waterbury Pure.

CHALICE COMPANY
 Strictly Pure White Lead in
 Oil
 ST. LOUIS.

E. C. CORNELL & SON
 Waterbury Pure White Lead
 PITTSBURGH, PA.

DAVID-CHAMBERLAIN LEAD CO.
 Strictly Pure White Lead
 PITTSBURGH, PA.

ECHESTER WHITE LEAD CO.
 Pure White Lead
 CINCINNATI, O.

FARMINGTON, HANLEY &
 ALBANY,
 Strictly Pure White Lead,
 PITTSBURGH, PA.

(Manufactured by FARMINGTON
 WHITE LEAD CO.)

FARMINGTON WHITE LEAD CO.
 Strictly Pure White Lead,
 PITTSBURGH, PA.

JENNY & SON
 Strictly Pure White Lead,
 PITTSBURGH, PA.

JOINT COMPANY
 Waterbury Pure White Lead,
 PITTSBURGH, PA.

JAC T. LEWIS & SON,
 Waterbury Pure White Lead,
 PHILADELPHIA.

MARYLAND LEAD CO.,
 Waterbury Pure White Lead,
 BALTIMORE.

McKENNEY & JOHNSON CO.,
 Strictly Pure White Lead,
 CHICAGO.

(Mfg. by Southern White
 Lead Co.)

J. H. MORLEY & Co.,
 Strictly Pure White Lead,
 CLEVELAND.

SALIS LEAD CO.,
 Waterbury Pure,
 SALIS, MASS.

D. B. SHIPMAN,
 Waterbury Pure White Lead,
 CHICAGO.

SOUTHERN COMPANY,
 Waterbury Pure White Lead,
 ST. LOUIS AND CHICAGO.

ST. LOUIS LEAD & CO.,
 Strictly Pure White Lead,
 Red Box Brand,
 ST. LOUIS, MO.

THE UNITED LEAD COMPANY,
 WATERBURY, N. Y.
 Perfectly Pure White Lead,
 100 FRONT STREET, NEW YORK.

THE UNION WHITE LEAD
 MANUFACTURING COMPANY,
 Pure,
 NEW YORK.

WHEELER & BROTHER,
 Pure White Lead,
 PHILADELPHIA.

WHEELER WHITE LEAD CO.,
 Strictly Pure White Lead,
 Waterbury Pure,
 PHILADELPHIA.

NLI 001598

The following selections are from the whole number of mixture analyzed. They show only cost of dry material which is proper for comparison with cost of Dry White Lead (\$3.60), as the addition of oil, labor, packages, etc., is nearly the same in both cases.

The price of the dry material in a 1 lb. can of a mixture analyzed and labeled "American White Lead" is:

Baryta	88.84 lbs. at \$1.25	1.11
Oxide Zinc	12.60	1.57
	100 lbs. cost	\$2.68
	Or 100	1.00

Were the mixture Pure White Lead, as it purports to be, it would cost:

100 lbs. \$3.60

Difference in price \$3.92 per 100, or 944 per cent.

The price of the dry material in a 12½ lb. keg of a mixture analyzed and branded "Bristol White Lead" is:

Mossburn	52 lbs. at \$1.20	.62
Baryta	40.29	1.27
Sulphur Lead	5.19	1.50
Oxide Zinc	2.41	1.00
	100 lbs. cost	\$2.14
	Or 100	2.14

Were the mixture Pure White Lead, as it purports to be, it would cost:

100 lbs. \$3.60

Difference in price, \$3.45 per 100, or 161 per cent.

The price of the dry material in a 12½ lb. keg of a mixture analyzed and branded "Standard White Lead" is:

Baryta	47.74 lbs. at \$1.25	1.14
Oxide Zinc	1.56	1.25
White Lead	2.70	1.00
	100 lbs. cost	\$1.81

Were the mixture Pure White Lead, as it purports to be, it would cost:

100 lbs. \$3.60

Difference in price, \$3.60 per 100, or 11

NL 001599

AMERICAN.

St. Louis, February 16, 1909.

Mr.

Dear Sir: Received on February 14, '09, accompanying a letter from you, forwarded by American Express Co., a 124 lb. keg from Milwaukee, Wis., marked on top of keg "American Lead Works, made from Strictly Pure White Lead, St. Louis," and having red label on top, reading "Red Label Brand," for quantitative analysis of base of the paint mixed in oil. I beg herewith to report that the sample named contains:

Barium Sulphate	36.30 per cent
White Lead	42.61 "
Zinc White	2.10 "
	81.01 per cent.

Determinations were made in duplicate.

Respectfully,

DR. C. L. CEDERBERG.

AMERICAN EAGLE

(1225)

CHICAGO, February 23, 1909.

Mr.

Dear Sir:

I have analyzed the sample of 1 lb. can White Lead received from you, and find it to contain as follows:

American (Eagle) White Lead, Ground in Pure Linseed Oil.

ANALYSIS OF PAINT FREED FROM OIL.

Sulphate of Barium	94.57 per cent.
Zinc Oxide	13.98 "
	108.55 per cent

Received by U. S. Express from Fort Dodge, Iowa, February 12.

Very respectfully,

JOHN C. JACKSON.

NLI 001600

BRISTOL

(1192)

CHICAGO, February 6, 1906.

Mr.

Dear Sir—I have analyzed the sample of 12½ lb. Tin of White Lead received from you, and find it to contain as follows:

Bristol Pure. Red Label. White Lead Guaranteed.

ANALYSIS OF SUBSTANCE FREED FROM OIL.

Moisture	62 percent
Sulphate of Baryta	71.86 "
Sulphate of Lead	9.58 "
Zinc Oxide	13.95 "

96.2 percent.

The White Lead in this package is guaranteed strictly pure, ground in bleached oil, and for purity, whiteness, and durability, is not excelled by any lead manufactured.

Received by E. & O. Express, New Orleans, January 26.

Very respectfully,

JOHN C. JACKSON.

BUCKEYE.

(1348)

CHICAGO, March 9, 1906.

Mr.

Dear Sir—I have analyzed the sample of 12½ lb. keg of White Lead received from you, and find it to contain as follows:

Buckeye 12½ lbs. Pure White Lead, Warren Paint Company, Warren, O.

ANALYSIS OF PAINT FREED FROM OIL.

Sulphate of Baryta	44.28 percent
White Lead	44.17 "
Zinc Oxide	9.81 "

98.26 percent.

We guarantee the contents of this package to be perfectly pure White Lead, unsurpassed in whiteness, body and durability, and ground in pure Linseed Oil. The Warren Paint Co., Warren, Ohio.

Received by Wells-Fargo Exp. from Olean, N. Y. March 2.

Very respectfully,

JOHN C. JACKSON.

NLI 001601

BUCK.

PHILADELPHIA, Oct. 17, 1899.

My dear Sir:

The keg of "Pure Buck Lead" you brought us on the 14th inst. had one large black label printed in gold upon and covering one end of it. On the outside edge of the label were the words "French, Richards & Co., Philadelphia" in the centre a "Buck's Head with Horns," with the words "Trade Mark" over it, under the head "Pure Buck Lead," "Office and Warehouse, Tenth and Market streets," on left of head "Entered according to Act of Congress in the year 1866 by French, Richards & Co." and on right of head "In the Clerk's Office of the District Court of the U. S. for the Eastern District of Pennsylvania."

We have analyzed the contents and find it to be as follows:

Hydro-Carbonate of Lead (primary WHITE LEAD)	20.77 per cent.
Sulphate of Barite	2.01 "
Oxide of Zinc (Zinc White)	2.10 "
Yours respectfully,	36.88

EDWIN GARKLET & BLAIR.

CROWN.

ST. LOUIS, January 25, 1899.

My dear Sir:

Received on January 24, 1899, accompanying a letter from you forwarded by American Express Co., a 12½ lb. keg from Kansas City, Mo., marked by tag pasted on top of keg, and having painted another label on top reading, "Crown White Lead, pure, manufactured by Victoria White Lead Works," for quantitative analysis of base of the paint mixed in oil. I beg herewith to report that the sample named contains:

Barium Sulphate	2.46 per cent.
White Lead	24.62 "
Calcium Carbonate	22.28 "
Zinc White	20.28 "

Analyses were made in duplicate.

Respectfully, DA. C. ARMSTRONG.

NLI 001602

DIAMOND.

St. Louis, January 30, 1886.

Mr.

Dear Sir:

Received on January 28, 1886, accompanying a letter from you, forwarded by Pacific Express Co., a 12½ lb. keg from New Orleans, La., marked on top, "Diamond Pure White Lead in Oil, St. Louis," and marked "....." on bottom, for quantitative analysis of base of the paint mixed in oil. I beg herewith to report that the sample named contains

Barium Sulphate	72.80 per cent.
White Lead	8.30 "
Zinc White	18.70 "
	99.80

Determinations were made in duplicate.

Respectfully,

DR. C. LYDEMEYER.

DOLSON.

Boston, Mass., Jan. 2, 1886.

Mr.

Dear Sir:

The sample of paint received in an unopened 25 lb. keg and marked "Pure Dolson White Lead, Ground in Strictly Pure Bleached Linseed Oil," contains:

Barytes	82.80
Zinc Oxide	8.74
Lead White	1.50
	93.04

Respectfully, S. P.

NLI 001603

DOLSON.

Boston, December 30, 1889.

Mr

Sir

The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "Pure Dolson White Lead, Ground in strictly pure, bleached Linseed Oil." A paper tag attached to this package was marked, Briggs, Hoffman & Co., Tremont Paint Works, Boston. Package, an oak tag lettered in black stencil.

Carbonate of Lead	a trace
Oxide of Zinc	20.80 per cent.
Barium and Insoluble Matter	60.50 "

100.00

Very respectfully,

JAS. F. BARCOCK.

DOLSON.

No. 15139

New York, January 11, 1890.

Mr

Dear Sir:

The sample of white paint in a 25 lb. wooden pail, marked: "Pure Dolson White Lead, ground in strictly pure bleached Linseed Oil" and submitted to us for analysis, contains:

Oil

5.00 per cent.

After removing the oil the dry paint contains:

White Lead

None

Zinc White

62.77 per cent.

Barium

5.75 "

100.00 per cent.

Your obedient servants,

LEBOUX & Co.

NLI 001604

DUBUQUE.

PHILADELPHIA, December 25, 1886.

Sir: The following are the results of the examination of sample marked "Dubuque White Lead Co., Dubuque, Ia. Snow White Ground Lead." 12 1/2 lb. can. The figures given are for the paint free from oil.

Barium	43.9
Zinc White	43.4
White Lead	10.7

Yours,
HENRY LEONARD.

DUBUQUE.

No. 15161 NEW YORK, December 25, 1886.

Sir: The sample of White Lead, marked "Dubuque White Lead Co., Dubuque, Ia." and submitted to us for analysis contains:

Oil 6.2 per cent.
After removing the oil, the dry paint contains:

Zinc White	43.9 per cent.
Lead Oxide	43.4
Barium	10.7

NOTE—This sample contains no White Lead.
Your obedient servant,
LEONARD & CO.

ENGLISH.

Boston, Mass., Jan. 2, 1887.

Dear Sir: The sample of paint received in an unopened keg 25 lbs. marked as follows: On top "Grecks Brothers, New York and Boston." On side "Improved English Lead." On side "Grecks Bros., Boston, Mass." Contains:

Barium	40.17
Zinc Oxide	46.22
Lead White	13.61

Respectfully,
S. P.

NLI 001605

ENGLISH.

May 7, 1899.

Mr.

The following are the results of the analysis of the sample of White Lead sent by you. One small keg, marked "Beetley Brothers & Co. Improved English Lead, New York and Boston." Mark also on side of keg, but undecipherable.

COMPOSITION OF PIGMENT FREE FROM OIL.

Barytes	87.75
Zinc White	12.50
White Lead	11.75

100.00

Yours, HENRY LEIFMAN.

ENGLISH.

Boston, December 30, 1899.

Mr.

Sir:

The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "E. & F. King & Co.'s English White Lead." Package a 25 lb. tin with white paper label, printed in red, black and gold ink:

Carbonate of Lead	88.00 per cent.
Oxide of Zinc	11.50
Barytes and Earthy Matter	2.50

102.00 per cent.

Very respectfully,

JAS. F. BABCOCK.

ENGLISH.

Boston, Mass., Jan. 2, 1900.

Mr.

Dear Sir:

The sample of paint received in an unopened 25 lb. can, marked "E. & F. King & Co., English White Lead." With a monogram on top and side. Contains:

Barytes	82.5
Zinc Oxide	17.5
Lead White	0.0

Respectfully,

S. P. SHARPLES.

NLI

001606

ENGLISH.

No. 15185

NEW YORK, January 11, 1890.

Mr.

Dear Sir—The sample of white paint in a 25 lb. wooden pail (no label) marked "Genuine English White Lead, 25 lbs." Charles Richardson & Co., Boston, Mass., and submitted to us for analysis, contains:

Oil 8.96 per cent.

After removal of oil the dry paint contains:

White Lead 96.21 per cent.

Zinc White 29.40 "

Silicate of Alumina (Clay) 12.81 "

100.00 per cent.

Your obedient servant, LEIGON & Co.

ENGLISH.

BOSTON, Mass., Jan. 2, 1890.

Mr.

Dear Sir—The sample of paint received in an unopened 25 lb. keg, marked: "Charles Richardson & Co., Genuine English White Lead, Boston, Mass." Contains:

Silica 2.15

Zinc 29.50

Lead 68.75

100.00

Respectfully, S. F. SHARPLES.

ENGLISH.

BOSTON, December 30, 1889.

Mr.

Sir—The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "Charles Richardson & Co., Boston, Mass., Genuine English White Lead, 25 lbs." Package, 25 lb. oak keg. Top painted red and lettered with black pencil:

Carbonate of Lead 85.45 per cent.

Oxide of Zinc 14.77 "

Stearic and Insoluble Matter 9.78 "

100.00

Very respectfully, JAS. F. I.

NLI

001607

ENGLISH.

CHICAGO, March 8, 1899.

Mr.
 Gentlemen: Report on a sample of White Paint delivered to me February 21, 1899.

DESCRIPTION.

An unopened 25 lb. keg, labeled "English White Lead, Royal Mfg Co., Hull." Received February 21, 1899.

ANALYSIS:

Zinc White	62.50 per cent.
Sulphate of Barite	37.50 "
	100.00 per cent.

Shipped from Muscatine, Iowa, by

Respectfully submitted,

M. DELAFONTAINE.

EUREKA.

CHICAGO, January 31, 1899.

Mr.

Dear Sir:

I have analyzed the sample of 12½ lb keg White Lead received from you, and find it to contain as follows:

Red Painted Top, Eureka. Strictly Pure White Lead Pittsburgh. (Yellow Side Label)

ANALYSIS OF SUBSTANCE FREED FROM OIL:

Moisture	52 per cent.
Sulphate of Barite	70.82 "
Sulphate of Lead	14.42 "
White Lead	8.91 "
Zinc Oxide	7.41 "

92.55 per cent.

\$100 Reward.—The White Lead contained in this package is guaranteed perfectly pure, and in fineness, whiteness and durability, it is unsurpassed by any White Lead in the market. Eureka White Lead Works.

American Express.

Very respectfully,

JOHN C. JACKSON.

NLI 001608

EXCELSIOR.

St. Louis, Mo., March 11, 1899.

Mr.

Gentlemen:

I received on March 5, 1899, from the American Express Co., sent by from Odebolt, Iowa, one (1) 12½ lb. keg of White Lead branded on the head as follows: "Excelsior Lead Co., St. Louis, Mo., Strictly Pure White Lead." On the side is the brand "S" and a paper label with the following: "The White Lead contained in this package is guaranteed to be perfectly pure Carbonate of Lead, manufactured with great care and ground in bleached Linseed Oil." The analysis of the contents of said keg is as follows:

Barite	51.84 per cent.
White Lead	32.34 "
Oxide of Zinc	15.82 "

100.00 per cent.

Respectfully,

WILLIAM R. POTTER.

GOLD MEDAL.

(1297)

New York, March 1, 1899.

Mr.

Sir:

The sample of Paint from marked Gold Medal White Lead and submitted to us for analysis, contains:

Lead	1.16 per cent.	*Equivalent to	1.25 per cent.
Zinc	22.17	Zinc Oxide	22.25
Lime	2.10	Calcium Carbonate	5.13
Insoluble Residue			68.73
Moisture and undetermined			10.00

NOTE.—The Insoluble Residue consists principally of Barium Sulphate and contains no lead.

Your obedient servants,

LEBOUR & Co.

NLI 001609

GOLD SEAL.

PHILADELPHIA, December 30, 1899.

Mr.

Sir: The following are results of an examination of a sample marked: "Gold Seal White Lead." This old and reliable brand of White Lead is made by an entirely different process and will be found to possess more body, brilliancy and durability than any other brand hitherto offered to the public. Beware of spurious imitations. Manufactured only by Jacobs & McCafferty, Works, 445-455 West St., Office, corner Bank and West St., New York. \$5 lb. can, blue label, Head of Napoleon III., with inscription "Napoleon III., Empereur." Trade Mark registered Dec. 5, 1870.

Paint free from Oil	45.7
Barium	47.40
Zinc White	1.41
White Lead	34.71

Yours, HENRY LITTMANN.

GOLD SEAL.

No 15110 NEW YORK, December 12, 1899.

Mr.

Sir: The sample of paint from Mr. marked: "Gold Seal White Lead." This old and reliable brand of White Lead is made by an entirely different process and will be found to possess more body, brilliancy and durability than any other brand hitherto offered to the public. Beware of spurious imitations. Manufactured only by Jacobs & McCafferty, Works, 445-455 West St., Office, corner Bank and West St., New York. \$5 lb. can, Blue Label, head of Napoleon III., with inscription "Napoleon III., Empereur." Trade mark registered December 5, 1870.

Oil	8.29 per cent.
After oil is extracted, paint contains:	
White Lead	1.72 per cent.
Zinc White	41.8
Lead Sulphate	2.49
Barytes	48.01

100.00 per cent.

Respectfully, LITTMANN & Co.

NLI 001610

GREEN SEAL

(1197)

CHICAGO, February 13, 1899.

Mr.

Dear Sir:

I have analyzed the sample of 12½ lb bag White Lead received from you, and find it to contain as follows:

Strictly Pure Green Seal White Lead.

ANALYSIS OF PAINT FREE FROM OIL

Moisture.....	66.46 per cent.
Sulphate of Barite.....	41.61 "
Sulphate of Lead.....	18.82 "
White Lead.....	27.81 "
Zinc Oxide.....	11.81 "

88.30 per cent.

Green label on side.

"The White Lead in this package is guaranteed perfectly pure and unexcelled in fineness, whiteness and durability by any White Lead manufactured."

Received from Kendallville, Ind., by the U. S. Exp. January 31.

Very respectfully,

JOHN C. JACKSON.

IMPERIAL

BOSTON, December 30, 1899.

Mr.

SIR:

The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "New York Enamel Paint Co. Imperial White Lead," warranted, 76, 78, 90 lb; and 64 Ninth street, Brooklyn, N. Y. Package, a 95 lb. tin with yellow paper label, printed in black ink.

Carbonate of Lead.....	78.94 per cent.
Oxide of Zinc.....	20.96 "
Barytes and Barite Matter.....	8.10 "

108.00 per cent.

Very respectfully,

JAS. F. BARNICK.

NLI 001611

IMPERIAL.

PHILADELPHIA, December 26, 1889.

Mr.

Dear Sir:

The following are the results of analysis of a sample of white paint marked: "New York Enamel Paint Company. Imperial White Lead. Warranted. 76, 78, 80, 82 and 84 Ninth St., Brooklyn, N. Y. The Imperial White Lead is a superior article for painters' use, being ground in Pure Linseed Oil to an impalpable fineness. It has great covering capacity and durability."

Paint free from Oil	84.81
Barytes	26.75
Zinc White	12.13
White Lead	100.75

Yours, HENRY LEFFMANN.

ISLAND PARK.

(1213)

CHICAGO, February 23, 1889.

Mr.

Dear Sir:

I have analyzed the sample of 124 lb bag White Lead received from you, and find it to contain as follows:

Island Park Pure White Lead, Detroit, Mich. Red side label.

ANALYSIS OF PAINT FREED FROM OIL.

percentage of Barytes	80.8, per cent.
Zinc Oxide	12.13

100.13 per cent.

"\$100 in gold. One hundred dollars in gold will be paid if the contents of this package is not strictly pure. For whiteness, fineness and covering properties it is unsurpassed by any White Lead in the market."

Received from St. John, Mich., by American Ex., Feb. 18th, 1889.

Very respectfully, JOHN C. JACKSON.

NLI

001612

KEYSTONE.

(E) St. Louis, Mo., February 6, 1900.

Mr.

Gentlemen:

On February 5th, we received from
one 25 lb. keg of
 White Lead, forwarded by Southern Express Co., from
 Birmingham, Ala., and branded on the head as follows:
 "Keystone White Lead Co., St. Louis. Strictly
 pure White Lead, ground in refined Linseed Oil." On
 the bottom of the keg was the inscription "F. & C.,
 Birmingham, Ala." The Analysis is as follows:

Baryta	62.30 per cent.
Oxide of Zinc	36.02 "
White Lead	18.50 "

100.00 per cent.

Respectfully, REGIS CHATTENET & CO.

LAWSON.

(1250) CHICAGO, March 9, 1900.

Mr.

Dear Sir:

I have analyzed the sample of 18 1/2 lb. keg
 White Lead received from you, and find it to contain as
 follows:

Lawson Lead Co., Strictly Pure White Lead, Chi-
 cago. (Red Label)

ANALYSIS OF PAINT FREED FROM OIL.

Sulphate of Baryta	42.66 per cent.
Sulphate of Lead	35.34 "
White Lead	21.00 "
Lead Oxide	9.21 "

100.00 per cent.

The Red Label reads: "The White Lead in this
 package is guaranteed perfectly pure and unexcelled in
 fineness, whiteness and durability by any White Lead
 manufactured. Lawson Lead Co."

Received by Wells, Fargo Exp., from Oshkosh,
 Ill., March 4th. Very respectfully,

JOHN C. JACKSON.

NLI 001613

LAWSON.

ANN ARBOR, MICH., March 28, 1898.

Mr.

Dear Sir:

I have received from you, via Adams Express Co., from Louisville, Ky., one 25 lb. keg branded, "Lawson Lead Co. Strictly Pure White Leads Guaranteed. A red label says, "White Lead in this package guaranteed perfectly pure. X X X Lawson Lead Co."

This Paint contains:

Sulphate of Barium, (Barytes).....	65.29 per cent.
Lead Carbonate, (White Lead).....	33.18 "
Oxide of Zinc, (Zinc White).....	1.53 "
	100.00 per cent.

Respectfully yours, JOHN W. LANGLEY.

MASURY.

No. 15184

NEW YORK, January 11, 1898.

Mr.

Dear Sir:

The sample of white paint in a white labeled 25 lb. can submitted to us for analysis and marked as follows: "Railroad White Lead, 25; Pure; John W. Masury & Son, New York and Chicago, war. rated superior," contains:

Oil.....	8.13 per cent.
After removing the oil the dry paint contains:	
zinc White.....	33.79 per cent.
Barium.....	66.21 "
	100.00 per cent.

NOTE—No lead is present in the sample.

Your obedient servant,

J. MASURY & Co.

NLI 001614

MASURY.

CHICAGO, February 28, 1899.

Mr.

Gentlemen: Report on a sample of White Paint delivered to me February 7, 1899.

DESCRIPTION.

An unopened 25 lb. tin can, labeled: "Masury's Pure Railroad White Lead, Manufactured by John W. Masury & Son, Chicago and New York."

ANALYSIS.

The pigment gives on:

Zinc White	88.50 per cent.
Sulphate of Barium	11.50 "

100.0 per cent.

Sent February 5th from Independence, Iowa, by

Respectfully submitted,

M. DELAPONTAINE.

MASURY.

BOSTON, December 30, 1899.

Mr.

Sir,

The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "Railroad Pure White Lead," John W. Masury & Son, New York and Chicago. Package, a 25 lb. tin pail, with white paper label printed in black ink:

Carbonate of Lead	88.43 per cent.
Oxide of Zinc	11.57 "
Barytes and Earthy Matter	10.00 "

100.0 per cent.

Very respectfully,

JAS. F. BARCOCK.

NLI 001615

MAS URY.

Boston, Mass., Jan. 2, 1900.

Mr.

Dear Sir:

The sample of paint received in an unopened 25 lb. can, marked "Railroad White Lead, Pure, John W. Masury & Son, New York, Chicago," On side "Warranted Railroad Superior Pure White Lead," with a picture of a train of cars.

Baryta	28.99
Zinc Oxide	46.65
White Lead	1.26

100.00

Respectfully,

S. F. SHARPLES.

METROPOLITAN.

(1252)

CHICAGO, March 9, 1900.

Mr.

Dear Sir:

I have analyzed the sample of 12 1/2 lb. bag White Lead received from you, and find it to contain as follows:

Metropolitan. Strictly Pure White Lead. St. Paul,

Minn.

ANALYSIS OF PAINT FREED FROM OIL.

Sulphate of Baryta	27.15 per cent.
White Lead	52.16
Zinc Oxide	0.23

100.00 per cent.

Received by Adams Express from St. Paul, March

6th.

Very respectfully,

JOHN C. JACKSON.

NLI 001616

MISSOURI.

St. Louis, Mo., December 27, 1896

Mr.

Gentlemen:

We have received one 25 lb. keg of White Lead from of Charlotte, S. C., forwarded by the Southern Express Co., and branded on the head as follows: "Missouri Pure White Lead." The analysis is as follows:

Barium	41.46 per cent.
Grade of Zinc	25.14 "
White Lead	21.74 "
	100.00 per cent.

Respectfully,

KARL CHATFIELD & SONS.

NASSAU.

No. 15115 New York, December 21, 1896.

Mr.

Sir:—The sample of White Paint in pale blue labeled fancy varnished 25 lb. can, from marked: "Nassau White Lead and Color Co., N. Y., Ground in refined oil, Genuine Pure White Lead," and submitted to us for analysis, contains:

Oil	8.22 per cent.
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After the oil is extracted the dry paint contains:
Total Lead (Metallic) 21.41 per cent.
(This lead is combined partly as Carbonate and partly as Sulphate.)
Zinc 25.14 per cent.

The paint is therefore made up of:

Lead Carbonate	21.41 per cent.
Lead Sulphate	1.99 "
Zinc Oxide	25.14 "
Residue, chiefly Barium	53.46 "
	100.00 per cent.

Your obedient servant,
KARL CHATFIELD & SONS.

NLI 001617

NASSAU.

PHILADELPHIA, December 20, 1906.

Mr. _____

Sir:

The following are the results of an examination of a sample of Nassau White Lead, marked: "Manufactured by the Nassau White Lead and Color Co., New York. 25 lb. can, blue label on top bearing picture of works and inscription 'Nassau White Lead Co. Ground in Refined Oil. Genuine. Pure White Lead. Nassau White Lead and Color Works, New York.'"

Paint free from O.	
Barium	27.15
Zinc White	40.46
White Lead	14.74

100.35

Yours,

HENRY LEFFMANN.

NEW ENGLAND.

BOSTON, Mass., Jan. 2, 1907.

Mr. _____

Dear Sir:

The sample of paint received in an unopened 25 lb. keg and marked: "New England Lead Co., Boston. Pure Snow White Ground Lead. A. L. Cutler & Co., Agents." Contains:

Barium	56.85
Zinc Oxide	42.62
White Lead	2.73

102.20

Respectfully,

S. P. BRADLEY.

NLI 001618

NEW ENGLAND.

Boston, December 20, 1889.

Mr. _____

Sir:

The following is the result of my analysis of sample taken from "White Lead" ground in oil, marked as indicated: "New England Lead Co., Boston Pure Snow White Ground Lead, A. L. Cutler & Co., Agents." Package, 25 lb. oak keg lettered in black stencil:

Oxide of Zinc	99.99 per cent.
Barites and Earthy Matter	0.01 " "
	100.00 per cent.

Very respectfully,

JAN. F. BARBER.

NEW YORK.

(1194)

CHICAGO, February 8, 1890.

Mr. _____

Dear Sir:

I have analyzed the sample of 12 1/2 lb. keg White Lead received from you, and find it to contain as follows:

New York Ground in Pure Linseed Oil. Pure Lead

ANALYSIS OF SUBSTANCE FREED FROM OIL.

Moisture	.76 per cent.
Sulphur of Barite	0.23 " "
Zinc Oxide	99.91 " "

100.00 per cent.

This keg contains no lead at all.

Received by B. & O. Express, from New Orleans, January 26th.

Very respectfully,

JOHN C. JARVIS.

NLI 001619

PITTSBURGH.

PHILADELPHIA, July 25, 1889.

Mr.

Sirs:

The following are the results of the examination of a sample of paint marked, "Pittsburgh White Lead, ground in refined Linseed Oil, best and purest." Also marked:

Zinc White	44.00 per cent
Barytes	54.70 "
	98.70 per cent

Yours,
HENRY LEFFMANN.

PURE WHITE LEAD.

St. Louis, Mo., February 27, 1889.

Mr.

Gentlemen—I received on February 19th, 1889, from the Southern Express Co., sent by from Way Cross, Ga., one (1) 12½ lb keg of White Lead, branded on the head as follows: "Pure White Lead in refined St. Louis oil, Atlanta." Almost in the center of the head is a small red hexagon. On the side of the keg is a paper label with the following: "We guarantee this package to contain Strictly Pure Material." The rest of the label is illegible, being partly destroyed. The analysis of the contents of said keg is as follows:

Barytes	54.70 per cent
White Lead	44.00 "
Outside of Zinc	54.70 "
	100.00 per cent

Respectfully,

WILLIAM B. POTTER, Manager,
St. Louis Sampling & Testing Works.

NLI

001620

ROYAL

St. Louis, January 14, 1890.

Dear Sir:

Received on January 14, '89, accompanying a letter from you, forwarded by Adams Express Co., a 12 lb. keg from Eldorado, Ill., marked, "Royal Company, Strictly Pure White Lead in bleached Linseed Oil, St. Louis," on top of keg, and with the letter "R" on side, for quantitative analysis of base of the paint mixed in oil. I beg herewith to report that the sample named contains:

White Lead	92.50 per cent.
Barium Sulphate	7.50 "
Zinc White	0.00 "

100.00 per cent.

Determinations were made in duplicate.

Respectfully,

Dr. C. L. Lister

ROYAL CROWN.

CHICAGO, March 23, 1890.

Sir:

Report on a sample of paint delivered to me, March 11, 1890.

DESCRIPTION

An unopened 1 lb. tin can, labeled "Royal Crown White Lead. This paint is manufactured of the Purest and best Materials," etc.

ANALYSIS

I find in the pigment	
Salubrious of Barium	75.00 per cent.
Zinc White	25.00 "

100.00 per cent.

Received March 11, 1890, sent from Sampson, B. F.

by

Respectfully submitted,

Dr. C. L. Lister

NLI

001621

STANDARD.

CHICAGO, March 22, 1889.

Mr.

Sir: Report on a sample of paint delivered to me February 26, 1889.

DESCRIPTION.

An unopened 12½ lb. keg labeled "Standard White Lead Co., St. Louis. Strictly Pure White Lead."

ANALYSIS.

Lead in the Pigment:	100 per cent.
White Lead	100 per cent.
Sulphate of Barium	0.00
Free White	0.00

100.00 per cent.

Received February 26, 1889 Sent from Indianapolis

Ind., Ill.

Analysed twice

Respectfully submitted,

M. DELAFONTAINE.

STANDARD.

St. Louis, Mo., February 26, 1889.

Mr.

GENTLEMEN:

We received February 25, from one 12½ lb. keg of White Lead forwarded by the Southern Express Co. from Dalton, Ga., and branded upon the head as follows: "Standard Lead, St. Louis. Strictly Pure White Lead Ground in Refined Linseed Oil." The head was also marked with diamond in red. The analysis shows:

Barium	0.24 per cent.
Quartz of Lead	1.25
White Lead	98.70

100.00 per cent.

Respectfully,

Wm. C. Carpenter & Son.

NLI

001622

STANDARD.

CHICAGO, March 27, 1898.

Mr.
Sir:

Report on a sample of paint delivered to me February 25, 1898.

DESCRIPTION.

An unopened 12½ lb. keg labeled: "Currey Manufacturing Co., Standard White Lead, Chicago."

ANALYSIS.

Found in the pigment:

White Lead	88.50 per cent
Zinc White	11.50 "
Sulphate of Lead	21.50 "
Sulphate of Barium	25.14 "

100.00 per cent.

Respectfully submitted,

M. DELAPONTAINE.

NLI

001623

WESTERN LEAD WORKS.

St. Louis, Mo., April 1, 1898.

Mr. _____

Gentlemen:

We have received March 29th from _____
_____ 25 lb. keg of
White Lead forwarded by the Pacific Express Co.,
from Salt Lake City, Utah, and branded upon the head
as follows:

"Western Lead Works, Registered, Strictly Pure
White Lead."

THE ANALYSIS IS AS FOLLOWS:

Barium	5.00 per cent.
Oxide of Zinc	9.41 " "
White Lead	84.59 " "
	100.00 per cent.

Respectfully,

REGIS CHAUVENET & BRO.

(This brand should not be confounded with that of
the Western White Lead Co., Philadelphia, who manu-
facture "Strictly Pure White Lead.")

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CTS. BUILDERS
OF PAINTS

WHITE LEAD
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NLI 001624

TEST OF THE PURITY OF WHITE LEAD

WAKEFIELD.

CHICAGO, Feb. 12/12

Mr. ...

Dear Sir,

I have analyzed the keg of White Lead received from you containing the following:

25 lb. Wakefield Pure White Lead.

ANALYSIS OF PAINT FORBQF

Moisture ..	0.00
Sulphate of Baryta ..	0.00
Zinc Oxide ..	0.00

No Lead whatever.

Received by Adams Exp., from
February 9th. Very respectfully,

IMPORTANT TO PAINTERS, ARCHITECTS, BUILDERS.
DEALERS IN AND ALL CONSUMERS OF PAINTS.

The following is an illustration and simple description of the purity of White Lead.

Take a piece of firm, close-grained charcoal, and near one end of it scoop out a cavity about half an inch in diameter and a quarter of an inch in depth. Place in the cavity a sample of the Lead to be tested, about the size of a small pea, and apply to it continuously the *flame* or *heart* of part of the flame of the blow-pipe; if the sample be strictly pure it will, in a very short time, say in two minutes, be reduced to Metallic Lead, leaving no residue; but if it be adulterated, even to the extent of ten per cent. only, with oxide of zinc, sulphate of baryta, whiting or any other carbonate of lime (which substances are now the only adulterations used), or if it be composed entirely of these materials, as is sometimes the case with cheap Lead (so-called), it cannot be reduced, but will remain on the charcoal as infusible mass.

NLI 001625

Dry White Lead (carbonate of Lead) is composed of metallic lead, oxygen and carbonic acid, and when ground with linseed oil forms the White Lead of commerce. When it is subjected to the above treatment the oil is first burned off, and then at a certain degree of heat the oxygen and carbonic acid are set free, leaving only the metallic lead from which it was manufactured. If, however, there be present in the sample any of the above mentioned adulterations, they cannot of course be reduced to metallic lead, and cannot be reduced by any heat of the blow-pipe flame to their own metallic bases; and being intimately incorporated and ground with the carbonate of lead, they prevent it from being reduced.

A blow-pipe can be obtained from any jeweler at small cost. An alcohol lamp, tallow candle, or a hard oil lamp furnishes the best flame for use of the blow-pipe. This test is very simple and any one can very soon learn to make it with ease and skill.

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001626