LEAD INDUSTRIES ASSOCIATION

420 LEXINGTON AVENUE

NEW YORK 17, N. Y.

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Subject to Revision

RED LEAD TECHNICAL COMMITTEE

New York, N. Y. July 21, 1944

A meeting of the members of the Red Lead Technical Committee of the Lead Industries Association was held in the Association's office on Friday, July 21, 1944. The following were present:

Committee	Representing
A. C. Goetz	Eagle-Picher Lead Co.
C. F. Shobe	Glidden Co.
A. J. Eickhoff representing G. Diehlman	National Lead Co.
J. C. Johnstone	Hammond Lead Products, Inc.

F. E. Wormser, Secretary
L. I. Carrick, Director of Red Lead Research
J. L. Benson

The meeting was called to order at 10:00 A.M. with Dr. Carrick presiding.

CONDENSED REPORT OF THE RED LEAD TECHNICAL COMMITTEE MEETING

Exposure Panels for Research Project No. 3 - Exposure panels for Research Project No. 3 dealing with the critical study of short oil L.I.A. Vehicle No. 13 are being placed on exposure. This project will develop the advisability of modifying short oil Vehicle No. 13 with soybean, castor oil and different gumar resins.

Report of Recent Trip to Washington - Two items stand out on my recent trip to Washington:

A. The Navy is seeking --
   1. A good deck paint
   2. A top coat for wooden ships

B. Mr. Hickson of the Bureau of Standards seems to think that there is a splendid market for a pigmentation composed of approximately 80% red lead, some zinc chromate, iron oxide and inerts. The special field to which he refers is primer paint for the Bureau of Yards and Docks.

Discussion of Mr. Ziegfeld's Recent Trip to Gulf Coast Shipyards - A tentative letter, Exhibit B, was formulated to send to the shipyards to call attention to the availability of red lead. This letter has been held up due to the adverse reaction of some of the staff of the Maritime Commission. They think its mailing might result in a further retrenchment of the use of red lead.

Mixed Pigment Formulation Release - The Committee decided not to release red lead mixed pigmentations (low-cost formulations) until they receive authorization from the manufacturers of red lead. The Committee does not wish to jeopardize the position held by 100% red lead.

Low-cost primers for the U.S.M.C. - Eleven low-cost primers ranging in raw material cost from $1.10 to $1.25 have been sent to Florida and placed on total immersion and tide-range exposure. Five of these low-cost formulations have been delivered to the U.S.M.C. for their personal tests.

Status of the Topcoat Requirements of the Navy - The topcoat recommended by the National Lead Company at the June 23 meeting of the Technical Committee and approved by the Committee for recommendation to the Navy has been recommended by the National Lead Company to the Navy for their consideration.

Discussion of Red Lead Primers Prepared by the Sherwin-Williams Co. - The Sherwin-Williams Company has prepared six red lead primers in two different red lead, zinc chromate, iron oxide, inert formulations with three short-oil vehicles which are being placed on exposure - (1) total-submersion, and (2) tide-range.

Report on the U.S.M.C. Request for Modification of L.I.A. Paints Nos. 4 and 6 - The showing of L.I.A. Paints Nos. 4 and 6 as tested by the U.S.M.C. were such that they requested certain vehicle modifications to see if they cannot be improved. These modifications were made by the National Lead Company and the paints have been delivered to the U.S.M.C. for their tests.

Research Project No. 4 - Research Project No. 4 is an endeavor by the Glidden Company to determine the exact amount of mica which should be incorporated in red lead mixed pigment formulations. This study includes 16 pigmentations and 2 vehicles comprising a group of 25 individual paint formulations. These are to be placed on test as follows: (1) total submersion; (2) tide-range; and (3) atmospheric exposure.

Discussion of Vehicles Submitted by the Bakelite Corporation - The Bakelite Corporation submitted a group of 16 vehicles for our consideration. These they consider suitable for red lead formulations. These vehicles are receiving further study.

Proposed Supplement to Industrial Code Rule No. 23 of N. Y. State - The advice of the Committee was asked in formulating a statement to present at the New York public hearing of the proposed Supplement to the Industrial Code Rule No. 23 of New York State.

Meaning of the Name Monobasic Lead Chromate - This question was introduced by Mr. Cook and it was suggested that it be left for Dr. Carrick to attempt to determine.

Preliminary Discussions and Tentative Formulations were developed for primers on the following: (1) Gasholders; (2) Oil Storage Tanks.

The Advisability of Developing a railway steel car paint was introduced and discussed. No decision was made.

A detailed report of the Red Lead Technical Committee Meeting Minutes follows:

DETAILED REPORT OF RED LEAD TECHNICAL COMMITTEE MEETING MINUTES

MINUTES OF PREVIOUS MEETING

Dr. Carrick opened the meeting by requesting comments or suggested corrections on the minutes of the previous meeting. Mr. Goetz suggested that on page 3, third paragraph, fifth line, the word "chromate" be inverted after the word zinc, and read "zinc chromate". Also on page 3, paragraph 7, substitute "because Dipentine is not available for paints either Navy or Maritime Commission, Dipentine should not be used in our paint formulation for use during the emergencies. Mineral spirits or other volatiles should be used instead. Dipentine should be used in formulations where desired, for a long time or after-war consideration." Dr. Carrick stated that the trade names "dialite" and "celite" were used in the formulas because they appeared in the originally submitted formulas. In the future, the name "diatomaceous silica" will be used instead. Mr. Goetz recommended that future reports be summarized as well as reported in detail for the benefit of other executives who may wish rapidly to review the proceedings of the committee. The minutes were approved as corrected.

EXPOSURE PANELS FOR RESEARCH PROJECT NO. 5

Dr. Carrick stated that all the paints which were to be exposed as a part of Research Project No. 5 have been received except those which were to be prepared by the National Lead Company which are expected to be available very soon. A revised Research Project No. 5 was sent out on June 20. It is expected that these paints will be placed on exposure some time during August, 1944.

REPORT ON RECENT TRIP TO WASHINGTON

Dr. Carrick submitted the information obtained on a recent visit to Washington that Mr. Pearson of the U.S. Maritime Commission was studying zinc chromate primers. He finds that the zinc chromate primers are subject to excessive blistering. He is told by the zinc chromate makers that there are two kinds of zinc chromate which statement he has been unable to confirm or disprove.

Mr. Johnstone said that he found that soluble salts occluded in pigment particles can be removed by grinding in water for a long time. Mr. Pearson is searching for a suitable vehicle without phthalic anhydride. He is also searching for a more satisfactory deck paint for ships in service. Dr. Carrick then submitted further information which he obtained during his trip to Washington. A complete report of which is attached as Exhibit A.

DISCUSSION OF MR. SIEGFELD'S RECENT TRIP TO GULF COAST SHIPYARDS

Dr. Carrick stated that Mr. Siegfeld had called on several shipyards and had found confusion in the minds of the proprietors as to the meaning of the recent directive allowing the optional use of zinc chromate or red lead primer. Dr. Carrick believes a letter should be sent to Maritime Regs clarifying this directive.

Dr. Carrick then read the draft of a letter which he proposed to send to the shipyards to clarify the directive before mentioned. Certain changes were recommended and it was agreed the letter should be sent out. Mr. Coots pointed out that zinc chromate paint contains more phthalic anhydride than red lead paint and also that zinc chromate is a critical material. Specification 52-MC-18 has no phthalic anhydride and contains red lead which is not a critical material. It was recommended that this be incorporated in the letter. A copy of the letter is attached as Exhibit B. On July 22, Mr. Coots requested that the letter should not be sent until the U.S. Maritime Commission had been contacted and their approval obtained.

MIXED PIGMENT FORMULATION RELEASE

Mr. Coots brought up the question of the proper time for the release of publicity on mixed pigment red lead paint in order to counteract the change toward zinc chromate without jeopardizing the position of pure red lead paint. Dr. Carrick said the L.I.A. should decide on a vehicle to be used with suggested pigmentations if they are to make recommendations of pigmentations which do not contain 100% red lead. Dr. Carrick said that Mr. Hickman of the Bureau of Standards thinks that now is the proper time to make such a suggestion.

Mr. Coots stated that the committee has formulated a good primer, the weakness of which is in the price. Should publicity be started on the present paint or should it wait until the lower cost paints have been tested? The answer to Mr. Coots's question was reserved until the executive officers of the manufacturers of red lead have decided upon a policy to pursue in regard to release of data pertaining to other than 100% pigmented red lead primers.

LOW-COST PRIMERS FOR U.S. MARITIME COMMISSION

Mr. Shobe stated that Mr. Sprague thinks that the L.I.A. should submit to the Maritime Commission recommendations for competitive price red lead primers and urge them to test same. Probably vehicle No. 13 with pigmentations similar to Mr. McMullen's submission. Dr. Carrick believes that if such samples are submitted, the Maritime Commission will make such tests. He called Mr. Pearson of the U.S. Maritime Commission and Mr. Pearson agreed to include these paints in his test if they were delivered during the week beginning July 31. Two samples are immediately available:

Paint No. GL-51078 - Glidden Company
Paint No. GL-51078 - Glidden Company

Mr. Coots asked are these primers suitable for top side or only for underwater. Mr. Eickhoff said they are satisfactory for boot-topping area. Mr. Shobe said they are not so good for top sides. Mr. Coots said we have no recommendations for primers for top side, should we not submit one? Dr. Carrick asked what about pigmentation J in a suitable vehicle, or a modified pigmentation J to be used with the vehicle now used in 52-MC-29. Mr. Coots asked Mr. Eickhoff what he thought of the value of tide water test for top side paints. Mr. Eickhoff replied he did not put much faith in it.

The formulation data of the three low-cost formulations suggested by the Eagle-Picher Lead Company are given in the minutes of the June 23, 1944 meeting of the Technical Committee. The formulation data of the three samples

prepared by the National Lead Company have not arrived to date. The formulation data of the Glidden Company samples GL-81076-77-78-79 which are red lead primers and a control sample GL-80641 which is SS-MC-21 are given below. We quote from Mr. Shobe's letter of July 31, 1944:

"Our formula for specification Zinc Chromate Primer SS-MC-21 is covered by our laboratory formulation GL-80641, which is as follows:

Spec SS-MC-21 Alkyd Varnish	51.8428 gals
Mineral Spirits	48.4375 gals
6% Cobalt Naphthenate Liquid	.14648 gals
24% Lead Naphthenate Liquid	.29296 gals
Cumisol	.04882 gals
Lamp Black Neutral Shoo	Grams
Zinc Chromate	300 lbs.
ZZZ Zinc Oxide	90.625 lbs.
TiPure R-CR	71.875 lbs.
Asbestine Pulp	175. lbs.
Litharge	6.25 lbs.

"The material cost per gallon is 1.1867.

"Our formula for a Red Lead Primer (GL-81076) is as follows:

Spec. SS-MC-21 Alkyd Varnish	53.125 gals
Mineral Spirits	34.375 gals
Kerosene	12.50 gals
Cumisol	.04882 gals
24% Lead Naphthenate Liquid	.29296 gals
6% Cobalt Naphthenate Liquid	.14648 gals
97% Red Lead	337.50 lbs
ZZZ Zinc Oxide	62.28 1/8 lbs
Zinc Chromate	62.28 1/8 lbs
Metallic Brown	118.625 lbs
#28 Asbestine Pulp	75.4375 lbs
Diatomaceous Earth #666 Celite	62.50 1/8 lbs
Litharge	10.64 1/16 lbs

"Material cost per gal., 1.1021.

"Our formula for Red Lead Primer, our GL-81076, does what we have designated as modified "J" pigment. The vehicle meets SS-MC-21 specification and the paint is made up at a pigment volume of 30.

"Our formula for Red Lead Primer (GL-81077) is as follows:

Spec. SS-MC-21 Alkyd Varnish	50.875 gals
Mineral Spirits	31.25 gals
Kerosene	9.375 gals
Cumisol	.04882 gals
24% Lead Naphthenate Liquid	.29296 gals
6% Cobalt Naphthenate Liquid	.14648 gals

97% Red Lead	400 lbs.
ZZZ Zinc Oxide	75 lbs.
Zinc Chromate	75 lbs.
Metallic Brown	127.50 lbs.
#28 Asbestine Pulp	87.50 lbs.
#266 Celite - Diatomaceous Earth	75. lbs.
Litharge	12.50 lbs.

"Material cost per gallon, 1.2151.

"Our formula for Red Lead Primer (GL-61078) is as follows:

Spec. 52-MC-21 Alkyd Varnish	51.5625 gals.
Mineral Spirits	26.9375 gals.
Kerosene	12.50 gals.
Cumisol	.04682 gals.
24% Lead Naphthenate Liquid	.2939 11/16 gals.
6% Cobalt Naphthenate Liquid	.14648 gals.
97% Red Lead	426.5625 lbs.
ZZZ Zinc Oxide	80.078 1/8 lbs.
Zinc Chromate	80.078 1/8 lbs.
Metallic Brown	146.875 lbs.
#28 Asbestine Pulp	93.359 3/8 lbs.
#266 Celite - Diatomaceous Earth	80.078 1/8 lbs.
Litharge	12.50 lbs.

"Material cost per gallon, 1.1530.

"Our formula for Red Lead Micalith Primer (GL-61079) is as follows:

Spec. 52-MC-21 Alkyd Varnish	57.6125 gals.
Mineral Spirits	32.6125 gals.
Kerosene	8.375 gals.
Cumisol	.04682 gals.
24% Lead Naphthenate Liquid	.32226 gals.
6% Cobalt Naphthenate Liquid	.14648 gals.
97% Red Lead	387.50 lbs.
ZZZ Zinc Oxide	72.65 5/8 lbs.
Zinc Chromate	72.65 5/8 lbs.
Metallic Brown	132.8125 lbs.
Micalith 6	84.76 9/16 lbs.
#266 Celite -Diatomaceous Earth	72.65 5/8 lbs.
Litharge	12.50 lbs.

"The vehicle used in our formula for Red Lead Micalith Primer (GL-61078) meets specification 52-MC-21 and the formula incorporates Micalith-6 pigment, and the paint is made up at a pigment volume of 36.

"Material cost per gallon, 1.2167.

"The Diatomaceous Earth used in the above formulas is Johns-Manville's #266 Celite.

"The Metallic Brown used in these formulas is #187 D Metallic Brown, which we purchase from the C.E.Williams Co. and the George S. Mepham Co."

[illegible] Lead Technical Committee [illegible] [illegible] (as [illegible])
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STATUS OF THE TOP COAT REQUIREMENT OF THE NAVY

Dr. Carrick stated that the National Lead Company following the recommendation of the Technical Committee of June 23, 1944 had recommended the formulation presented at the aforesaid meeting to Mr. Graham of the Bureau of Ships.

Mr. Coutts and Mr. Thebe requested a breakdown of the proposed formulation for the record so all parties concerned could back the recommendations.

DISCUSSION OF THE RED LEAD PAINTS PREPARED BY THE SHERWIN-WILLIAMS CO.

Dr. Carrick said Mr. Van Loo has been assigned by the Sherwin-Williams Co. to do the experimental work pertaining to red lead. He has made up six paints using pigmentation J and a modified pigmentation J in each of three vehicles.

The summarized formulations of the Sherwin-Williams Company red lead paints are given below:

LIA Paint Nos.	S-W Paint Nos.	LIA Pigmentation No.	LIA Vehicle No.	Cost per Gallon
97	WS-17	J (P-16)	13 (V-19)	$1.[illegible]
98	WS-18	J (P-16)	88	
99	WS-19	71	13 (V-19)	$1.91
100	WS-20	71	88	
101	WS-21	71	13 (V-19)	$1.78
102	WS-22	J (P-16)	13 (V-19)	$1.91

This vehicle is the same as used in L.I.A. Paints Nos. 101 and 102, except it was cooked by the Sherwin-Williams Company according to the directions used by the National Lead Company in cooking vehicle 13 (V-13), while the vehicle in L.I.A. Paints Nos. 101 and 102 was part of a batch cooked by the George Y. Walker Co. of Philadelphia as part of a 30-gallon batch.

The vehicle in L.I.A. paints Nos. 98 and 100 is the same as the vehicle in L.I.A. paints Nos. 97 and 99, except Dybenne 13000 was replaced [illegible] in the LV-287 varnish.

The vehicles used in L.I.A. paint Nos. 97 to 102, inclusive, contain 60% by weight varnish LV-287 and 40% alkyd U.S. Maritime Commission Specification MC-69-A-1 Class XIIIa.

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FORMULATIONS INVOLVED

Pigmentation #

	Percent	Bulk Value	Gallons of Materials per 100 lb.	Cost per pound	Total Cost per 100 lb.
Red Lead	58	0.0136	.7870	.0825	5.0975
Zinc Oxide	10	0.0218	.2180	.0725	.7250
Zinc Chromate	10	0.0318	.3180	.1500	1.5000
Iron Oxide	7	0.0272	.1904	.0900	.6300
Diatomaceous Silica	8	0.0811	.4068	.0675	.5400
Magnesium Silicate	10	0.0421	.4210	.0100	.1000
	100%		2.2962		8.6925

Cost per lb. $0.08625 - Cost per solid gal. $2.6197

Pigmentation #2

Red Lead	80	0.0136	0.8700	.0825	6.6250
Zinc Chromate	18	0.0318	0.4760	.1500	2.2500
Iron Oxide	8	0.0272	.1360	.0900	.4800
Magnesium Silicate	80	0.0421	1.2650	.0100	0.8000
	100%		2.5480		7.6250

Cost per lb. $0.07625 - Cost per solid gal. $2.000

If there is no objection by the Committee these samples of paint will be placed on (1) total submersion (2) tide-range, and (3) atmospheric exposure, along with those of Research Project No. 3. It was so authorized.

REPORT OF THE U.S. MARITIME COMMISSION REQUEST FOR MODIFICATION OF L.I.A. PAINTS NOS. 4 and 6 (OF THE MARCH 31 and 32.)

On the showing these paints were making at the Solomon Island testing grounds, Mr. C.H. Brown, Ch. Materials Section, U.S.M.C., requested Mr. George Dieblman of the National Lead Company to make the following modification, quote from Mr. Dieblman's letter, February 24, 1944.

The modifications made are listed below:

"1. L.I.A. No. 4 with alkyd reduced to 20% of vehicle
2. L.I.A. No. 6 with alkyd reduced to 20% of vehicle
3. Pigmentation and PV as above but vehicle to be 8 gallon Castung 12-Cumar V2-1/2 (80%) and linseed alkyd containing 25% phthalic anhydride (20%)
4. Same as No. 3 except alkyd increased to 40% of vehicle
5. Same as No. 3 except 8 gallon Castung-Cumar vehicle (60%) alkyd (20%) and coal tar (20%), provided the mixture can be made compatible. The use of coal tar solvent is probably necessary. If compatible, varnish may be increased to 80% and the alkyd omitted."

The composition data - Pounds required for 100 gallons of paint.

L.I.A. designation (Paint No.	93	93a	94	95	96	96a
(Pigmentation	P-18	P-18	P-18	P-18	P-18	P-18
(Vehicle	V-40	V-19	V-41	V-42	V-43	V-40
Paint No.(National Lead Co.)	M-2787	M-2788	M-2789	M-2790	M-2791	M-2810
Red Lead (97%)	830	846	837	852	846	488
Zinc Oxide	61	102	98	100	99	98
Zinc Chromate	61	102	98	100	99	98
Indian Red	42	72	68	70	69	69
Asbestine XX	61	102	98	100	99	98
Celite No. 289	46	82	78	80	79	69
GR No. 2464	100	118	204	96	91	98
ALV-288	440	-	-	-	-	371
ALV-287	-	482	-	-	-	-
ALV-281	-	-	208	204	276	
Liquid Coal Tar (BITS)	-	-	-	-	91	
Cobalt Naphthenate (6%)	1.6	2	1	0.8	0.8	1
Lead Naphthenate (24%)	4	5	-	-	-	5
Coal Tar Naphtha	-	-	100	122	186	-
Thinner (Solvesso No. 2)	100	208	-	-	-	137
Weight/Gallon	12.8	16.5	15.9	16.2	16.2	14.6
PV	28.4	39.7	40	40	40	40
% Pigment	47.9	56.9	61.5	62.0	61.4	58.6
% Vehicle	52.1	43.1	38.5	38.0	38.6	41.4

*10 gal. (80% Linseed Oil-80% Castor Oil)-RH5432; 80% Solids by weight.
** 6 gals Linseed (80% Cumar V-2-1/2 80% RH5432); 82% Solids by weight.
80 gals. Castor Oil; Cumar V-2-1/2; 70% Solids by weight.

RESEARCH PROJECT NO. 6

Prior to the appointment of the Technical Research Committee, Dr. Carrick and the technical staff of the Glidden Co. worked out a series of red lead, zinc yellow, iron oxide, zinc oxide and micalith formulations designed to establish what part micalith might have in red lead mixed pigment formulations. This was designated as Red Lead Research Project No. 6.

For the record, we quote from Mr. Shebo's letter of April 8, 1944:

"At a meeting held at the Glidden Company on April 4, between Drs. Carrick and Shutt, and Messrs. Shebo and Doll pigmentations and vehicles were selected to be used in preparing L.I.A. primers containing Micalith pigment. The fineness of grind, Krebs Units Viscosity, and amounts to be made should correspond exactly with the regular L.I.A. paints indicated above."

"It was decided by the men present to make all of these Micalith L.I.A. primers using vehicle (13) V-19 and (21) V-27. All paints are to carry a 35 pigment volume. These paints are to be given numbers as indicated in the following chart which will serve as Glidden Laboratory reference numbers for each of the Micalith primers made up.

Micalith L.I.A. Paint No.	Glidden Paint No.	Pigmentation	P.V.	Vehicle No.
115	80808	P26	35	(13) V19
116	80804	P26	35	(21) V27
117	80807	P27	35	(13) V19
118	80808	P27	35	(21) V27
119	80809	P28	35	(13) V19
120	80810	P28	35	(21) V27
121	80811	P32	35	(13) V19
122	80812	P32	35	(21) V27
123	80813	P33	35	(13) V19
124	80814	P33	35	(21) V27
125	80815	P34	35	(13) V19
126	80816	P34	35	(21) V27
127	80817	P38	35	(13) V19
128	80819	P38	35	(21) V27
129	80820	P41	35	(13) V19
130	80821	P41	35	(21) V27
131	80822	P42	35	(13) V19
132	80823	P42	35	(21) V27
133	80824	P43	35	(13) V19
134	80825	P43	35	(21) V27
135	80826	P45	35	(13) V19
136	80827	P45	35	(21) V27
137	80828	P46	35	(13) V19
138	80829	P46	35	(21) V27

"The pigmentations to be followed in making all of these L.I.A. primers and Micalith L.I.A. primers are listed below:

L.I.A. PIGMENT NO. / NAME OF PIGMENT	PERCENTAGE PIGMENT IN L.I.A. PAINTS TO BE MADE BY GLIDDEN LAB.															
	P18 (J)	P18 (L)	P30 (K)	P26	P27	P28	P32	P33	P34	P38	P41	P42	P43	P45	P46	P32
Red Lead (97%)	55	55	80	50	55	55	55	50	55	70	70	70	70	55	55	50
Basic Sulfate White Lead									20							20
Litharge				14												
Zinc Oxide	10	20			10	10	20				10		10		20	
Zinc Chromate	10				10	10		20			10	10		20		5
Iron Oxide	7				7		7		7							7
Magnesium Silicate	10	10														10
Diatomaceous Silica	8	8	10													8
Micalith				20	18	28	18	28	18	20	20	20	20	25	25	
Monobasic Lead Chromate	20															
Aluminum Stearate			0.4													
Lead Aluminate																0.4

V-19 is old L.I.A. Vehicle No. 19 and is composed of 60% LV254 Varnish and 40% GE2454 Glyptol.

LV254 Varnish is composed of 8 gallons 22 Bodied Linseed Varnish, Acid No. Not over 11; Resin 50% Barrett's Cumar V-2-½; Resin 50% Phenolic Resin (RE9432).

V-27 is old L.I.A. Vehicle No. 21 and is a castor oil alkyd. 2 Body; 10.6 acid number; 87% non-volatile, and 44% Glyceryl Phthalate. This material has been made by the Glidden Company Laboratory for previous L.I.A. primer preparations.

V-28 old L.I.A. Vehicle No. 22 is a Phenolic Resin Modified Alkyd Varnish using linseed oil fatty acids. The acid number is 9.4 and the non-volatile is 47.1%. The resin used in the preparation of this vehicle is Bakelite BR10025. This vehicle has also been prepared in the Glidden Company Laboratory on previous L.I.A. primer preparations.

It was agreed that these formulations are to be placed on (1) total immersion, (2) tide-range, and (3) atmospheric exposure.

DISCUSSION OF VEHICLES SUBMITTED BY BAKELITE CORPORATION

Dr. Carrick said before the committee was appointed he visited the Bakelite Corporation and obtained a series of vehicles which they recommend for red lead primers. Mr. Shebe does not think they will work with lead pigments. Mr. Coats is certain that they will not work successfully with lead pigments because of high solid content and high viscosity. Mr. Coats was asked to take the formulation of these vehicles for study and comment and send them to Mr. Shebe who will comment and forward them to other members.

DISCUSSION OF RED LEAD PRIMERS FOR ATMOSPHERIC EXPOSURE

Dr. Carrick asked should a study of vehicles for primers for atmospheric exposure be undertaken at this time. Mr. Coats said it had better be undertaken at once because such tests take a long time. Dr. Carrick said that Mr. Emmes of the Reichhold Chemical Company was asked what in his opinion was the proper concentration of phthalic anhydride in primer vehicles for use with red lead. In his opinion the Navy uses too much phthalic anhydride and the Maritime Commission not enough. Mr. Emmes has phthalic anhydride vehicles ranging from 18 to 36 per cent concentrations which have been used with zinc chromate pigmentations. They have also tried mixed pigments with 10 per cent red lead. He offered to make a series of paints with varying percentages of phthalic anhydride which contain 60% red lead and zinc chromate, iron oxide and inert in an effort to determine the optimum percentage of phthalic anhydride for such mixed pigmentations. He said the only oil which should be used for modifying phthalic anhyaride is linseed oil. Phthalic anhydride vehicles should be cooked in such a manner that the body is kept down as low as possible and should receive a minimum of adjustments.

Mr. Shebe said that he is positive that soybean alkyd products are superior to linseed alkyd products. Mr. Coats asked how about vehicle No. 18 and said it will be necessary to decide what proportions of phthalic anhydride should be used. Dr. Carrick asked should the committee go into this study or should it be left until a later date.

Mr. Shobe suggested concentrations of 20, 25, 30 and 35% phthalic anhydride in linseed, soybean and dehydrated castor oils with the low priced modified pigmentation J as is used in GL-81078 low cost primer, be tested in PV of 30 and 35. All these to be submitted to tide-range and atmospheric exposure. Control samples to be exposed with these to be a 52-MC-29, September 21, 1943, and TT-P-86, September 9, 1939. Mr. Shobe indicated his willingness to prepare the paints for this study at his earliest convenience.

PROPOSED SUPPLEMENT TO INDUSTRIAL CODE RULE NO. 23 OF N.Y. STATE

On Monday, July 17, we received a copy of the Proposed Supplement to Code Rule No. 23 of New York (copy mailed to industry members under date of July 18, 1944.) Hearings were to be held in Albany, Rochester, Buffalo and New York. I attended the hearings in Buffalo, prior to the Technical Committee meeting on July 21 and learned that it was the intention of the news release, given below, to force the hand of the Lead Industry in regard to the Proposed Supplement to Industrial Code Rule No. 23 of N.Y. State.

COPY OF NEWS RELEASE

SUBJECT: LEAD POISONING HEARINGS CALLED.
SPECIAL TO THE WORLD-TELEGRAM, ALBANY, JULY 15.

"Protection of workers from lead poisoning will be the subject of discussion at hearings to be held this month under the State Labor Department sponsorship in four cities, New York, Albany, Rochester and Buffalo. The New York hearings will be held July 26. Labor Department spokesmen will make an effort to amend the construction code to provide elimination of lead as a coating compound for structural steels."

Upon learning the true intention of the news release pertaining to the Proposed Supplement to Industrial Code Rule No. 23, Mr. Wormser made arrangements to appear at the N.Y. meeting and asked the advice of the committee as to the statement he should make.

DISCUSSION OF MEANING OF NAME MONOBASIC LEAD CHROMATE

Mr. Coots suggested that the committee should adopt a definition for monobasic lead chromate. Mr. Shobe said the accepted meaning is medium chrome yellow. Mr. Kiekhoff concurred. Mr. Shobe said it was his opinion that the more red tone developed the more basic the material becomes.

Mr. Coots said that fellow manufacturers stated that the term monobasic lead chromate is meaningless because colors from different manufacturers will be of different shades. Mr. Shobe said that the lemon and primrose shades are lead sulfate. Mr. Coots stated his purpose in bringing up the question is to set up a definite meaning for the term monobasic lead chromate and suggested that it be left to Mr. Carrick to attempt to determine.

GAS HOLDERS FORMULATIONS

With a view of developing a low-cost primer for gas holders, five experimental formulas were approved for experimental tests.

The suggestions of Mr. Shobe are as follows:

TEST FORMULATION I

Pigmentation

Red Lead 17 lb.(96% grade).
Litharge 4 lb. 8 oz. (The litharge to be added just before the paint is applied).

Vehicle

Raw linseed oil 7-1/8 pts.
Lead-manganese cooked drier (Gliddem) 1/8 pt.
Turpentine 5/8 pt.
The red lead should be ground into the raw linseed oil and the drier and turpentine added. The litharge should be added just prior to application of the paint.

TEST FORMULATION II.

Pigmentation

Red Lead 13 lb. 8 oz. (96% grade)
Micalith 1 lb. 8 oz.
Litharge 4 lb. 4 oz. (to be added just prior to application of paint)

Vehicle
Raw Linseed Oil 7-1/8 pts.
Lead-Manganese cooked drier 1/8 pt.
Turpentine 5/8 pt.

The red lead and micalith should be ground into the raw linseed oil and the drier and turpentine added. The litharge is added just before the paint is applied.

TEST FORMULATION III.

Pigmentation

Red Lead 47%(96% grade)
Zinc Oxide 8%
Zinc Chromate 8%
Iron Oxide 18%
Asbestine 10%
Diatomaceous silica 8%
Litharge 1-1/4 oz. per gallon of paint (or 0.1%)

Vehicle

L.I.A. Vehicle V-11, which is
23.1% LV-197 or L.I.A. V-8
60.1% Raw Linseed oil
8.7% Pale heat bodied linseed oil, 28
1.8% Liquid drier (6% Pb, 0.06% Mn, 0.06% Co)
7.3% Bevacel #6 (TT-C-291)

It was also suggested the L.I.A. pigmentation 8 (P-16) which is

Red Lead 70%
Zinc Oxide 10%
Iron Oxide 10%
Diatomaceous silica 5%
Manganese silicate 5%

to be ground into L.I.A. Vehicle V-11 given above.

TEST FORMULATION IV.

Pigmentation

Use either or both of the pigments listed in III above and A (L.I.A. P-8). 1½ to 2 lbs. litharge to be added whichever pigmentation is employed.

Vehicle

The above pigmentations to be ground into the old vehicle No. 8 (or L.I.A. vehicle No. V-7), which is

Raw linseed Oil 3.5 pts.
V-706-CL Varnish (See V-4 for breakdown) 4.0 pts.
D-29 Drier (Lead-manganese Soligen liquid drier) 4 liqs. ozs.
Mineral Spirits 0.5 pts.

TEST FORMULATION V.

Use GL-GLOTE test paint (L.I.A. Paint No. 103).
Mr. Diehlman suggests the pigmentation be Specification 3-33 Metal Prime Coat No. 512 in 2-33 Vehicle No. 2 of the U.S. Eng. Dept. of Pittsburgh, Pa. This is for the water seal area.
The top coat to be the present top coat used on gas holders where the tests are conducted.
No provision was made for the preparation of these test samples.
Dr. Carrick was to arrange for test sights.

OIL STORAGE TANKS

Several formulations were suggested by Mr. Shobe to the Committee.

TEST FORMULATION I.

The National Lead Co. formulation N-1900 (L.I.A. Paint No. 22) which was exposed as part of Research Project No. 1.
Pigmentation 3 (LIA P-6)
Vehicle 4 (LIA V-11)

TEST FORMULATION II.

The Glidden Co. formulation S-8-6-8 (L.I.A. Paint No. 11) which was exposed as part of Research Project No. 1.
Pigmentation A (LIA P-8)
Vehicle 8 (LIA V-7)

TEST FORMULATION III.

Mr. Shobe suggested a modified pigmentation J (LIA P-18) in Vehicle 6 (LIA V-11).

TEST FORMULATION IV.

The Glidden Company suggested the trial of GL-51076 test paint (or LIA Paint No. 108).

Mr. Richlman suggests the following:

(1) For inside of oil storage tanks use a polyvinyl, chlorinated rubber or a baked phenolic vehicle.

(2) For the outside, use (1) a bituminous paint or (2) the best of the L.I.A. paints that are on atmospheric exposure.

The Continental Storage Tank Company is to be contacted in regard to a place to test the prepared oil storage tank paints.

It was suggested the Bakelite Company be contacted for recommendations of phenolic types of vehicles to use.

RAILWAY STEEL CAR PAINT

No recommendations were made. It was suggested that Dr. Carrick contact the shops of the following railways to study their present paint formulations and to arrange for test cars on some of the lines if possible.

New York Central - Albany shops
Pennsylvania lines - Philadelphia and Altoona shops
Chesapeake & Ohio lines - Richmond shops
Baltimore & Ohio lines - Baltimore shops
Southern RR - Washington, D.C. shops
Norfolk & Western - Roanoke, Va. shops

The use of alkyd resin vehicles was suggested as an alternate for linseed oils.

The meeting adjourned at 9:45 P.M., July 21, 1944, to meet again on August 25, 1944 at 10 A.M. in the office of the Lead Industries Association, New York.

L. L. Carrick

L. L. Carrick,
Director, Red Lead Research

Red Lead Technical Committee
Meeting Minutes

Exhibit
A

LEAD INDUSTRIES ASSOCIATION

TO: TECHNICAL COMMITTEE OF
THE RED LEAD DIVISION

DATE: JULY 21, 1944 MEETING

FROM: L. L. CARRICK

MARITIME COMMISSION, JULY 18, 1944

In an interview with Mr. Phil Pearson of the Materials Section of the Maritime Commission, I was told that they are actively seeking a vehicle for their Low Visibility Gray Top Coat, SS-MC-6, April 1, 1944, which does not contain phthalic anhydride.

I asked if he preferred to retain the present pigmentation of SS-MC-6 and he said yes, but if a better pigmentation could be developed he would be willing to consider it.

This is purely an emergency vehicle, but if it proves satisfactory, it would be retained as a specification.

I would recommend for your consideration two types of vehicles:

1. One that does not contain phthalic anhydride.
2. A vehicle which contains less than 18% phthalic anhydride and is a long oil modification.

They also would like to have a good deck paint formulation.

The ships on which these paints would be used are in active service.

Mr. Pearson is not entirely satisfied with the present zinc chromate primer. He is now trying to determine the maximum limit of soluble salts it may contain. He has been told, but doubts it, that the soluble salts are covered in properly precipitated zinc yellows. He is checking this idea advanced by zinc yellow color manufacturers.

BUREAU OF YARDS & DOCKS, JULY 18, 1944

At the suggestion of Mr. C.J. Hickson of the Bureau of Standards, I called upon the Bureau of Yards and Docks and contacted Mr. O.M. Bader and obtained from him a copy of the specification 52P68 (INT), Amendment Ser 2, April 1, 1944, and the original Specification 52P68 (INT), also a copy of the Specification 52S8(INT) which is the vehicle used in Specification 52P68.

Mr. Hickson thinks it would be advisable for us to formulate a red lead zinc yellow-magnesium silicate-mica formulation which could be substituted for the present pigment formulation in Specification 52P68. Zinc oxide may be added if a low zinc oxide zinc yellow is used. He believes that a mixed pigmentation along the lines indicated above would be better than the formulation now in use by the Bureau of Yards and Docks in Specification 52P68. A vehicle for this formulation should contain an average of 18% to 20% (maximum) phthalic anhydride.

Red Lead Technical Committee
Meeting Minutes

July 21, 1944

TECHNICAL COMMITTEE - 2 - JULY 21 MEETING

Specification 52P68 and 5252 are only edited by the Bureau of Yards and Docks. They do not write these specifications nor do they develop them; Mr. Hickson runs accelerated tests for the Bureau of Yards and Docks.

With the present cost of the new red lead formulations which we discussed at the last technical committee it should be possible for us to enter the competition of 52P68, both as to cost and durability.

BUREAU OF SHIPS, JULY 13, 1944

During my conversation on July 13 with Lt.-Com. A.E. MacGee and Mr. K.A. Millikan the following points were developed:

1. Inspection and the handling of the recommendations for the top coat to be used on ships which are to be laid up after the war will be handled by Lt. Hank Bottemiller upon his return about August 1.

2. They are anxious to have several recommendations for consideration, but prefer those with long service records.

3. They are also looking for a good deck paint which will have the characteristics of long service in a more or less active status. The ships will be serviced at least once a month by various technicians. This should give some idea as to the type of service it must withstand.

4. Most of the ships are to be tied up in fresh water.

5. They also desire recommendations for a top coat to be used on wooden ships. A wood ship topcoat should have a preservative in it to help retard fungus growth and/or the decay of the wood.

6. They are beginning to lay up certain types of ships at this time, hence as soon as Lt. Bottemiller returns and makes his selections for experimental testing the painting of experimental ships will commence.

7. Any recommendation for a deck paint or top coat paint should carry with it a recommendation of the company manufacturing the same and as complete a story as possible extolling its virtues. I understand that an excellent presentation may result in the trial of some paints which otherwise might not be considered.

Exhibit 3

Red Lead Technical Committee
Meeting Minutes

July 21, 1944

To: Shipbuilders Constructing under U.S. Maritime Commission Specifications

AVAILABILITY OF RED LEAD PAINTS

We have learned that there is some misunderstanding regarding the Directive issued by the U.S. Maritime Commission, April 3, 1944, covering the optional use of primers for steel ships built under the U.S. Maritime specifications.

This Directive which we are informed is still in effect makes the use of red lead paints (52-MC-18, March 2, 1943; and 52-MC-23, August 28, 1943) and zinc chromate paints (52-MC-29, September 21, 1943) optional as primers. Since the Directive makes the use of these paints optional, shipyards wishing to use red lead may do so.

The U.S. Maritime Commission 52-MC-18, March 2, 1943, Modified Red Lead Paint, usually contains no critical material or at best, very small amounts of critical material. U.S.M.C. 52-MC-23, August 28, 1943, Quick-Drying Red Lead Paint and U.S.M.C. Specification 52-MC-29, September 21, 1943, Zinc-Chromate Paint contain resins made with very critical phthalic anhydride, but the specification 52-MC-23, Quick-Drying Red Lead contains slightly less of this very critical material. Zinc chromate is very tight in supply and is limited to Military, Navy and Maritime uses at the present time. There is no immediate relief in sight, whereas red lead is readily available and not limited to use.

You may be assured that the supply of red lead paint is adequate to take care of your requirements for ship construction.

Therefore, as you have probably been using red lead as a primer in the past with complete satisfaction, there is no reason why you should not continue to use red lead if you so desire.

Respectfully submitted,

LEAD INDUSTRIES ASSOCIATION