

LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE

NEW YORK 17, N. Y.

RED LEAD DIVISION

CONFIDENTIAL - FOR COMMITTEE USE ONLY

SUBJECT TO REVISION

RED LEAD TECHNICAL COMMITTEE

Sayville, L.I.

May 8, 1948

Committee

K.C. Goets
O.F. Shobe
J.O. Johnstone
G. Diehlman

Representing

Engle-Pipher Lead Co.
Glidden Co.
Hammond Lead Products, Inc.
National Lead Co.

R. Shurtz
A.J. Kischhoff

Glidden Co.
National Lead Co.

L. L. Carriek, Director of Red Lead Research

The Red Lead Technical Committee met on Thursday, May 8, 1948, and proceeded immediately to Sayville, L.I. where they inspected the complete immersion panels of the Lead Industries Association which were placed on exposure as follows:

Panel Nos. 415 - 446, Sept. 28, 1944
Panel Nos. 447 - 478, Sept. 27, 1944
Panel Nos. 477 - 506, Sept. 28, 1944
Panel Nos. 507 - 508, Oct. 8, 1944.

A detailed report of the inspection of these panels is attached. Suffix letter on the Paint No. has the following significance:

a stands for a PV of 30
b stands for a PV of 35
c stands for a PV of 40
d stands for a PV of 45

The tide-range panels corresponding to the complete immersion panels were not inspected. The failure had not progressed to such an extent that the difference in formulation would be significant. It is planned to inspect tide-range panels sometime during the month of August.

In studying the exposure data attached you should have before you Red Lead Technical Committee Bulletin No. 3 which gives the Panel No., L.I. No., Pigmentation No., Vehicle No. and remarks concerning the variation in the vehicles or pigmentations used. Briefly, the inspection data may be summed up as follows:



L.I. Technical Bulletin No. 4 - 2 -

May 3, 1943

Panels Nos. 418 - 439 inclusive, constitute a series of formulations which were designed to study the effect of variations of PV upon the weathering characteristics of pigmentations J and N in vehicles Nos. 18, 20 and 22. From an inspection of the following groups of panels:

418-419 inclusive
 420-423 inclusive
 424-427 inclusive
 428-431 inclusive
 432-435 inclusive
 436-439 inclusive

it may be seen that a PV of approximately 35 is better for Pigmentation J or Pigmentation N than higher or lower PV's in vehicles 18, 20, and 22. This conclusion may be subject to change as the exposure progresses.

Panels Nos. 441-453 inclusive, have not weathered to an extent that definite trends may be predicted from making the following variations in L.I.A. vehicle 18 --

1. the substitution of Oumar V-2- $\frac{1}{2}$,
2. the substitution of Castung 103 for linseed oil,
3. the substitution of Oumar RS for Oumar V-2- $\frac{1}{2}$ and the substitution of Castung 103 for linseed oil,
4. the substitution of tung oil for linseed oil,
5. the substitution of tung oil for linseed oil and Oumar RS for Oumar V-2- $\frac{1}{2}$.

Panels Nos. 454-457 inclusive, in this series of panels the following variations in Vehicle No. 20 were tried:

1. the substitution of Durez 870 for BR9432,
2. the substitution of Amberol 226 for BR9432,
3. the substitution of BR254 as soaked in V7634 for BR9432.

None of these substitutions have improved Vehicle No. 20 as shown by the attached report.

Panels Nos. 461-466 inclusive, represent the effect of cooking Vehicle 18 by different manufacturers. Comparison of Panels Nos. 461-463 with panels 464-465, respectively, indicate that no definite conclusion can be drawn as to the difference of cooking vehicle 18 by different manufacturers. Each company's cook of Vehicle 18 is superior in at least one test.

The substitution of Dyphane 12000 for BR9432 in Vehicle 18 does not seem to benefit the quality of Vehicle 18.

Panels Nos. 467-495 inclusive, constitute the study of the effect of Micalith-W upon red lead pigmentations. Two vehicles were tried -- Vehicle 18 and Vehicle 21. Vehicle 21 having a longer oil length than vehicle 18. The data here is not significant as the exposures have not progressed to such an extent that definite conclusions can be given.

R.I. Technical Bulletin No. 4 - 3 -

May 3, 1945

The comparison of Panels Nos. 499, 492 and 493 will show the effect of substituting for Micalith-0, 325 mesh waterground mica and micronized mica, respectively, in vehicle 13. Here again the difference is not significant.

The effect of different percentages of Micalith-0 upon red lead pigmentation's cannot be definitely determined, hence conclusions should not be drawn at this time.

Panels Nos. 496-501 inclusive, constitute exposure panels which carry variations in vehicle 13 as requested by the Maritime Commission. These variations are not of any great value, with the possible exception of a composition represented by Panel 498. The vehicle used in the preparation of this panel is substantially vehicle 13 with the substitution of an 8-gallon castor oil Omar 70% solid varnish in place of the regular 6-gallon linseed 50% Omar V-2-1/2-50% BR3432 (80% solids). It would seem that the higher solid content of the vehicle has shown up better than any of the other paints or in other variations tried. This will be subject to change as the exposure progresses.

Panels Nos. 502-508 inclusive, This group of panels is interesting, as they show a comparison of the standards used in this series of tests. It is significant that Panels Nos. 506, 507 and 508 are outstanding among the standards. Panel No. 506 represents the Navy 14-A primer, 507 is old L.I.A. No. 4 and 508 is old L.I.A. No. 6. Each of these three panels, 506, 507, 508, have a topcoat of Navy Gold Plastic Anti-Fouling, No. 143-A. It will be interesting to follow the exposure of these three panels.

The inspection adjourned at 4:25 P.M. and the members returned to New York to reconvene at 9:30 A.M. on Friday, May 4, at the offices of the Lead Industries Association.

L. L. Carriek

L. L. Carriek

PIGMENTATION NUMBERS	P-6	P-16	P-20	P-18	P-26	P-27	P-28	P-29	P-30	P-31	P-32
VEHICLE NO.	13 21 13 21 13 21 13 13 13 13 21										
PANEL NO.	467 468 469 470 471 472 481 482 483 473 473										
Composition											
Red Lead, 97% grade	70	66	80	86	66	66	66	66	66	66	66
Basic Lead Sulfate	-	-	-	-	-	-	-	-	-	-	-
Litharge	-	-	-	-	14	-	-	-	-	-	-
Zinc Oxide	10	10	-	10	-	10	10	10	10	10	20
Zinc Yellow	-	10	-	-	-	10	10	10	10	10	-
Iron Oxide	10	7	-	-	-	7	-	7	7	7	7
Magnesium Silicate	7	10	-	10	-	-	-	18	-	-	-
Diatomaceous Silica	8	8	10	8	-	-	-	-	-	-	-
Micalith-0	-	-	-	-	20	18	28	-	-	-	18
Mica, 325	-	-	-	-	-	-	-	18	-	-	-
Mica, Micronized	-	-	-	-	-	-	-	-	18	-	-
Mono-basic lead chromate	-	-	-	20	-	-	-	-	-	-	-
Aluminum Stearate	-	-	0.4	-	-	-	-	-	-	-	-

Continued below --

PIGMENTATION NUMBERS	P-33	P-34	P-35	P-36	P-39	P-41	P-42	P-44	P-45	P-46	P-71	P-72
VEHICLE NO.	13	21	13	21	13	13	13	21	13	21	13	21
PANEL NO.	475	476	477	478	494	495	479	480	481	482	483	484
Composition												
Red Lead, 97% grade	66	66	66	66	70	70	70	66	66	66	80	80
Basic Lead Sulfate	-	20	-	-	-	-	-	20	-	-	-	-
Litharge	-	-	-	-	-	-	-	-	-	-	-	-
Zinc Oxide	-	-	10	10	-	10	-	10	-	20	-	10
Zinc Yellow	20	-	10	10	-	10	10	8	20	-	18	10
Iron Oxide	7	-	28	-	-	-	-	-	-	-	8	-
Magnesium Silicate	-	-	-	-	-	-	-	-	-	-	20	20
Diatomaceous Silica	-	-	-	-	-	-	-	-	-	-	-	10
Micalith-0	18	25	-	25	20	10	20	10	25	25	-	-
Mica, 325	-	-	-	-	-	-	-	-	-	-	-	-
Mica, Micronized	-	-	-	-	-	-	-	-	-	-	-	-
Mono-basic lead chromate	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum Stearate	-	-	-	-	-	-	-	-	-	-	-	-

Vehicle No. 13 - 60% Medium Linseed Oil Alkyd, 40% LV-357 Varnish-a-cumar, V-3-4, BR9432, Linseed oil
 (6 gal. length) varnish
 Vehicle No. 21 - 60% Medium Linseed Oil Alkyd, 40% LV-357 Varnish-a-cumar, V-3-4, BR9432, Linseed oil

INSPECTION RECORD - SALT WATER EXPOSURE COMPLETE IMMERSION

- 1 -

Project No. _____

Date Exposed _____

Area Inspected _____

Exposed Time _____

Panel No.	Panel Size	P.	V.	Corrosion		Peeling or Blistering										Cracks		Remarks
				Rate	Cor.	Rate	Cor.	Rate	Cor.	Rate	Cor.	Rate	Cor.	Rate	Cor.	Rate	Cor.	
415	1	P-8	V-6	8	10					3	5		8/7					
416	4	P-16	V-28	7	10					4	7		10					
417	8	P-16	V-12	9	10					6	6							
418	15a	P-16	V-28	9	10					3	8		9					
419	35b	P-16	V-28	9	9					4	8		0					Cracking is very bad.
420	35c	P-16	V-28	8	10					6	9		8/7					
421	35d	P-16	V-28	6	9					8	8		8/7					
422	35e	P-16	V-18	6	9					6	7		9/7					
423	35f	P-16	V-18	8	9					4	7		8/7					
424	36a	P-16	V-18	8	10					6	6		8/7					Blisters large.
425	36b	P-16	V-18	2	10					4	6		8/7					1/4 in. blisters.
426	38a	P-16	V-28	7	10					4	6		8/7					
427	38b	P-16	V-28	8	10					6	6		10/7					
428	36c	P-16	V-28	8	10					8	7		8/7					
429	36d	P-16	V-28	8	10					2	7		10/7					
430	40a	P-20	V-18	7	10					5	9		10/7					
431	40b	P-20	V-18	8	10					6	9		10/7					
432	40c	P-20	V-18	8	10					5	8		10/7					

INSPECTION RECORD - SALT WATER EXPOSURE COMPLETE IMMERSION

Project No. _____
Date Reported _____
Date Inspected _____
Elapsed Time _____

Elapsed Time				Peeling to										Chalk Peeling			
Elapsed Time				Percent Blistering Check-Grabs-Test-										Percent Blistering			
Panel No.	Panel Loc.	P.	V.	Cathodic Protection	Notes	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%	
431	40d	P-20	V-19	5	9						2	7		10/T			
432	41a	P-20	V-20	4	10						5	5		5/T			Large breakings.
433	41b	P-20	V-20	4	10						4	5		10/T	7		Large blisters.
434	41c	P-20	V-20	4	10						4	7		5/M	8		Large blisters near top.
435	41d	P-20	V-20	4	8						5	7		5/M			Peeling to 1 sq. in.
436	42a	P-20	V-20	6	10						6	8		5/T	9		
437	42b	P-20	V-20	6	9						6	9		7/T	9		
438	42c	P-20	V-20	6	9						6	8		7/T			Peeled 3 sq. in.
439	42d	P-20	V-20	6	9						6	9		5/T			1 sq.in. peeled to metal.
440	40e	P-72	V-19	8	9						8	10		5/T			
441	44	P-72	V-19	8	10						8	8		9/T			
442	45	P-72	V-19	7	10						6	6		6/T			
443	46	P-72	V-19	8	10						5	8		9/T			1/4" blisters.
444	47	P-72	V-19	9	10						7	7		9/T			Large blisters 1/2".
445	48	P-72	V-19	8	10						8	8		10/T			
446	52-P-18			7	10						4	8		10/T			
447	48	P-72	V-19	8	10						5	5		10/T			
448	56a	P-18	V-19	9	10						5	5		10/T			

INSPECTION RECORD - SALT WATER EXPOSURE COMPLETE IMMERSION

- 3 -

Project No. _____

Date Reported _____

Date Inspected _____

Elapsed Time _____

Panel No.	No.	P.	V.	C.	D.	Corrosion		Peeling to		Blistering		Check-Cracks		Scale or		Chalk Foulings		Remarks	
						Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom		
449	47	P-16	V-14	7	10					5	6	10/T						1/6 to 1/2" blisters.	
450	50	P-16	V-14	9	10					6	7	10/T							
451	51	P-16	V-14	6	10					6	6	10/T						Looks as if topcoat had been scrubbed, causing blisters.	
452	52	P-16	V-14	6	10					6	7	10/T							
453	53	P-16	V-14	9	10					3	3	10/T						1/8"	
454	53	P-16	V-14	8	10					6	8	10/T							
455	54	P-16	V-14	9	10					4	5	10/T						1/8"	
456	55	P-16	V-14	9	10					3	3	10/T						1/8"	
457	58	P-16	V-14	9	10					8	6	10/T							
458	56	P-20	V-27	7	10					2	2	10/T						Sealing 1/2 sq. in.	
459	340	P-16	V-27	7	10					4	6	10/T							
460	370	P-18	V-27	8	10					3	3	10/T							
461	97	P-16	V-14	10	10					6	8	10/T							
462	98	P-16	52	10	10					5	8	10/T							
463	99	P-71	V-14	10	10					5	8	10/T							
464	100	P-71	52	10	10					5	7	10/T							
465	101	P-71	V-14	8	10					6	8	10/T							
466	102	P-16	V-14	10	10					4	7	10/T							

INSPECTION RECORD - SALT WATER EXPOSURE COMPLETE IMMERSION

Project No. _____

Date Exposed _____

Date Subjected _____

Exposure Time _____

- 4 -

Serial No.	Plate No.	P.	V.	Y.	Exposure Time (hrs.)	Sealing to				Chalk, Peeling, or				Comments
						Notes	Blistering	Cracks	Grains	Scale	or	Large	Close	
407	115	P-25	V-15		10	Not exposed.								
408	116	P-25	V-15	9	10		5	5	5	5	5			
409	117	P-25	V-15	9	10		5	5	5	5	5			
470	118	P-25	V-15	8	10		5	5	5	5	5			
471	119	P-25	V-15	9	10		6	7						
472	120	P-25	V-15	9	10		7	8						
473	121	P-30	V-15	9	10		7	7						
474	122	P-30	V-15	6	10		5	5						Sealed & a few blisters.
475	123	P-30	V-15	5	10		5	7						
476	124	P-30	V-15	8	10		4	5						
477	125	P-34	V-15	7	10		5	5						1/2 to 3/4" blisters.
478	126	P-34	V-15	8	10		4	4						Peeling to metal 1/2
479	127	P-30	V-15	1	10		4	4						1 spot sealed to metal.
480	128	P-30	V-15	8	10		5	5						Sealing to metal.
481	129	P-41	V-15	9	10		4	5						Blisters 3 sq.in. in area.
482	130	P-41	V-15	6	9		2	3						
483	131	P-42	V-15	8	10		5	5						
484	132	P-42	V-15	3	10		2	3						Sealing to metal.

INSPECTION RECORD - SALT WATER EXPOSURE

COMPLETE IMMERSION

- 8 -

Project No. _____

Date Inspected _____

Area Inspected _____

Elapsed Time _____

Panel No.	Panel Size	P.	V.	Corrosion		Peeling to		Cracks		Blistering		Chalk		Peeling		Comments
				Face	Edge	Face	Edge	Face	Edge	Face	Edge	Face	Edge	Face	Edge	
455	133	P-4	V-1	5	10					6	7	6/7				1 crack to metal.
456	134	P-4	V-1	7	10					3	3	7/7				Little scaling (one spot to metal)
457	135	P-4	V-1	5	10					4	6	9/7				
458	136	P-4	V-1	3	10					4	6	7/7				
459	137	P-4	V-1	5	10					3	6	6/7				2 places sealed to metal
490	138	P-4	V-1	6	10					3	4	6/7				Some blisters sealed to metal
491	179	P-23	V-1	9	10					6	7	6/7				
492	180	P-50	V-1	8	10					6	7	6/7				
493	181	P-51	V-1	8	10					6	7	6/7				
494	182	P-34	V-1	9	10					7	8	7/7				Cracking to metal 2 places.
495	183	P-35	V-1	8	10					6	7	6/7				
496	95	P-14	V-4	8	10	6				7	8	6/7				6 sq.in. sealed to metal
497	3500	P-14	V-1	8	10					2	8	6/7				
498	94	P-14	V-4	9	10					6	9	6/7				
499	96	P-14	V-4	8	10					6	6	6/7				
500	98	P-14	V-4	9	10					3	3	9/7				Intercoat scaling - 7.
501	950	P-14	V-4	10	10					2	2	10/7				
502	950	P-14	V-4	8	4	4				6	4	6/7				10 sq.in. sealed to metal

INSPECTION RECORD-SALT WATER EXPOSURE
COMPLETE IMMERSION

Project No. _____

Net Income _____

Date Inspected _____

134049

- 6 -

WILLIAM

Call Pooling

Conclusions

Fig. 10

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Verifying Class

-Crash- and

— 27 —

1. **Introduction**

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