

LIA10567

LEAD INDUSTRIES ASSOCIATION

888 MADISON AVENUE

NEW YORK 17, N. Y.

May 25, 1960

PROJECT PROJECT No. 22

To Members of the Lead Pigments Technical Committee:

Mr. E. H. Deacy
Dr. L. L. Carrick
Mr. M. E. Kinore
Mr. E. F. Bates
Mr. Paul Whitford
Mr. R. H. Gansell

Mr. C. A. Lomasha of the National Lead Company, Bayville, informed me that Project No. 22 had developed about as much information as it was ever going to and requested the Committee's approval to discontinue this project.

A copy of his report is enclosed.

Your advice will be appreciated.

Sincerely yours,

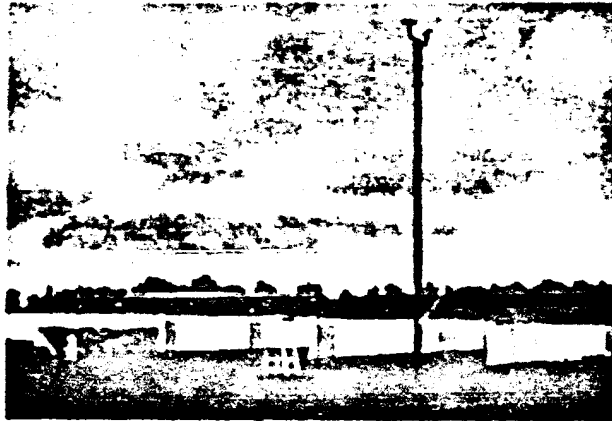
David M. Borvina
David M. Borvina
Secretary, Lead Pigments Technical Committee

NATIONAL LEAD COMPANY

PIGMENTS, PAINTS, CHEMICALS

Sayville Paint Testing Station

PAINT EXPOSURE REPORT



RED LEAD PRIMERS FOR NEW GALVANIZED IRON OR
WEATHERED GALVANIZED IRON WITH LITHARGE ADDITIONS - LIA #22

PROGRESS REPORT #2 (FINAL)



Exposed: December 8, 1934 (New Galvanized) Panels 6980-7000A, AD
May 18, 1935 (Weathered Galvanized) Panels 7171-91A
Inspected to: December 3, 1936

The purpose of this project was to determine the effect of litharge additions, in varying amounts, to red lead-iron oxide paints on the adhesion of these paints to new or weathered galvanized steel. The litharge additions ranged from 1 to 6 lbs. Straight linseed oil, straight alkyd, and a mixture of linseed oil and alkyd, were used for the vehicles of the experimental primers. Paints containing zinc dust were included for comparison.

The paints were applied by spray to 12" x 12" panels using two coats of primer over the entire area and a finish coat of an aluminum-cumar paint LIA #379 over the upper half. The primer coats were applied at 1.5 mils dry film thickness per coat and the finish coat at 1 mil. The new panels were cleaned with mineral spirits prior to painting. The weathered panels were cleaned with mineral spirits and then placed out of doors and weathered for a period of six months. Single panels were used for each paint on weathered galvanized. The tests on the new panels were exposed in duplicate.

RESULTS: The results are shown in Table I which lists the last rating for peeling shown in the previous report (Dec. 10, 1956) and subsequent ratings.

COMMENTS: 1. All the paints on weathered galvanized steel were rated perfect for adhesion except two which were rated "9" for peeling after this five year period of exposure.

2. As indicated in the table, many of the paints have failed on the new galvanized steel panels. Failure was much more severe on the three coat area than on the two coat area. The following comments are based on the results on the new galvanized steel panels.

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3. In the Group I tests which have a vehicle consisting of two parts of linseed oil and one part of alkyd solids, a 6 lb. Litharge addition has shown a superiority over the control with no Litharge. The intermediate additions of 1, 2, and 4 lbs. were inferior to the control. Zinc dust additions to the control formula produced paints which were much superior to it. The zinc dust paints without chromium oxide green have either very slight failure or no failure.

4. Group II paints had an alkyd resin solution for the entire vehicle. In this group, the 4 lb. and 6 lb. Litharge addition paints are still rated perfect for adhesion after five and a half years of exposure. The control and the paints with 1 and 2 lb. additions of Litharge had failed during the second or third year of exposure. The zinc dust paints in this vehicle have no peeling failure.

5. In the Group III paints which have a linseed oil vehicle, a 6 lb. Litharge addition was superior to the control. However, the smaller additions of 1, 2, or 4 lbs. were all much inferior to the control.

In this group, an 80 Zinc Dust - 20 ZnO paint (TTP 641b Type I) was used as secondary control. It behaved quite differently than the experimental paints. It failed on the two coat area but had no loss of adhesion on the three coat area. The experimental paints, on the other hand, had only slight failure on the two coat area but failed badly on the three coat area in all tests except the 6 lb. Litharge paint.

C. A. Lowinski

May 18, 1960

Distribution: Messrs. D. Bercina
E. K. Zimmermann
R. P. Bates
A. J. Rickhoff

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TABLE I

PEELING ON NEW GALVANIZED STEEL

Panel No.	Description	2 Coat Area								3 Coat Area							
	Age-Mos.	24	30	36	41	47	53	59	66	24	30	36	41	47	53	59	66
Group I																	
Base Formula: 62% RL- 38% IO Veh; 2 parts LO - 1 part GE 2466 Solids - 42PV																	
6980	Control-No Litharge	10	9	9	9	9	9	9		10	8	5	4	2	2	2	1
6980D	Addition	10	9	9	9	9	9	9		10	5	1	--				
6981	1 lb. Litharge per	10	9	8	8	8	8	8	7	9	7	4	3	2	1		
6981D	Gallon	10	8	8	8	8	8	8		2	1	--					
6982	2 lbs.	"	10	8	8	7	7	7	7	1	--						
6982D			8	8	7	6	6	5	5	1	--						
6983	4 lbs.	"	10	9	8	7	6	5	5	1	--						
6983D			10	9	8	7	7	7	7	1	--						
6984	6 lbs.	"					10	9	9		10	9	7	6	5	5	4
6984D								10	9		10	8	7	6	4	3	2
Secondary Controls																	
6995	Zn Dust for Iron Ox.								10						10	9	9
6995D	by Vol. in Control					10	9	9	9								10
6997	30% RL - 15% IO - 55%								10								10
6997D	Zn Dust - LIA #361								10					10	9	9	9
6999	40% RL-40% Zn Dust-	10	8	8	8	8	8	8		10	8	7	7	7	7	7	7
6999D	20% Chr Oxide Green- LIA 378		10	9	9	9	9	9		10	7	6	6	5	5	5	5

Note: Litharge additions replace an equal volume of Iron Oxide.

PURLING ON WEATHERED GALVANIZED STEEL

Panel No.	<u>2 Cont Area</u>	<u>3 Cont Area</u>
	60	34 60
7171	10	10 9
7172	10	10
7173	10	10
7174	10	10
7175	10	10
7186	10	10
7188	10	10
7190	10	10

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TABLE I (CONT.)

PEELING ON NEW GALVANIZED STEEL

Panel No.	Description	Age-Mos.	2 Cost Area								3 Cost Area							
			34	30	36	41	47	53	59	65	24	30	36	41	47	53	59	65
<u>Group II</u> Base Formula; 62% RL- 38% Iron Oxide Veh: GL2466 Alkyd- 42.4PV																		
6985	Control-No Litharge		10	9	7	7	5	5	4	2	10	2	1	--				
6985D	Addition					10	9	9	9	9	10	2	1	--				
6986	1 lb. Litharge per		10	9	9	8	8	8	8		1	--						
6986D	Gallon		10	8	8	8	8	8	8		1	--						
6987	2 lbs.	-							10	9	10	2	1					
6987D							10	9	9	9	10	9	9	1				
6988	4 lbs.	-								10								10
6988D										10								10
6989	6 lbs.	-								10	9							10
6989D										10								10
<u>Secondary Controls</u>																		
6996	Zn Dust for I.O.									10								10
6996D	by Volume									10								10
6998	30% RL-15% I.O. -									10								10
6998D	55% Zn Dust-LIA 362									10								10

PEELING ON WEATHERED GALVANIZED STEEL

Panel No	<u>2 Coat Area</u>	<u>2 Coat Area</u>
	60	60
7176	10	10
7177	10	10
7178	10	10
7179	10	10
7180	10	10
7187	10	10
7189	10	10

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TABLE I (CONT.)

PEELING ON KEY GALVANIZED STEEL

Panel No.	Description	Age-Mos.	2 Coat Area								3 Coat Area							
			24	30	36	41	47	53	59	66	24	30	36	41	47	53	59	66
<u>Group III</u>																		
Base Formula: 62% RL																		
38% Iron Oxide																		
LO Vehicle-42PV																		
6990	Control-No Litharge	10	9	9	9	9	9	9	9	9	10	9	9	9	9	9	9	9
6990D	Addition										10	9	8	8	7	4	2	2
6991	1 lb. Litharge per									10	5	2	1	--				
6991D	Gallon									10	9	7	7	5	3	2	1	
6992	2 lbs. "									10	7	6	4	2	2	1		
6992D										10	9	2	1	--				
6993	4 lbs. "				10	9	9	9	9	8	2	1	--					
6993D										10	9	2	2	1	--			
6994	6 lbs. "				9	9	8	8	8	8							10	9
6994D					9	9	8	8	8	8							10	9
<u>Secondary Control</u>																		
7000	80% Zn Dust-20% ZnO-	10	8	6	4	3	2	2	2	2								10
7000D	TTP641t Type I	10	8	6	4	3	2	2	2	2								10

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No.

2 Cent Area
30 36 42 47 54 60

3 Cont Area
60

7181 10 10

7182 10 10

7183 10 10

7184 10 10

7183	10	FL	FL	FL	FL	FL	20
	9	9	9	9	9		

7191 10 10