

LEAD INDUSTRIES ASSOCIATION

488 LEXINGTON AVENUE

NEW YORK 17, N. Y.

Pigments and Chemicals Division

April 21, 1958

**SUBJECT: RED LEAD TECHNICAL
LETTER NO. 8**

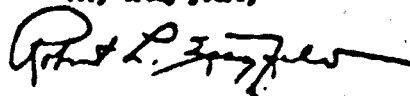
To Members of the Pigments and Chemicals Divisions

Enclosed is a copy of the most recent Red Lead Technical Letter. This letter has been mailed to approximately 9,000 individuals on the following mailing lists:

Railroads
Paint Production Clubs
National Paint, Varnish and Lacquer Association
National Association of Corrosion Engineers
Miscellaneous

You may want to distribute quantities of this latest technical letter to members of your Sales Department. We have several hundred copies available for this purpose.

Very truly yours,



Secretary



PRIMERS **for** **RAILROAD STRUCTURES** **and** **ROLLING STOCK**

	PAGE
FOREWORD	2
RED LEAD PAINT FORMULATIONS FOR STRUCTURES	3
FOR STEEL CONTAINING MILL SCALE AND REMEDIAL RUST (Slow Dry)	3
FOR STEEL CONTAINING MILL SCALE AND REMEDIAL RUST (Accelerated Dry)	5
FOR STEEL COMPLETELY FREE OF MILL SCALE AND RUST (Fast Dry)	6
RED LEAD PAINT FORMULATIONS FOR ROLLING STOCK	7

Red Lead Technical Committee
LEAD INDUSTRIES ASSOCIATION
 430 LEXINGTON AVENUE
 New York 17, N. Y.

Foreword

AWARE of the keen interest of the railroad industry in the development of better and more economical paint systems for railroad structures the Red Lead Technical Committee of the Lead Industries Association has prepared this collection of high quality primer paint formulations for railroad bridges and other structures along the right-of-way. These primer paints were formulated to meet all commonly encountered surface conditions and environments.

This Technical Letter also includes two low-cost formulations designed specifically to meet the need for an improved anti-corrosive primer for steel rolling stock.

Inquiries on these formulations or on specific painting problems are welcome and should be addressed to the Lead Industries Association or to the designated individuals in the member companies listed below.

THE EAGLE-PICHER COMPANY American Building, Cincinnati 1, Ohio
For technical information write Paul Whitford at above address.
Chicago, Cleveland, Dallas 24, Detroit, Kansas City 6, (Mo.), New Orleans,
New York 17, Philadelphia 4, Pittsburgh 22. On the Pacific Coast: Associated Lead
and Zinc Company, Seattle 4, Los Angeles 21, San Francisco 7.

W. P. FULLER & COMPANY 201 Mission Street, San Francisco 2, California
For technical information write F. J. Sollenberg at above address.
Boston, Butte, Fresno, Los Angeles, Oakland, Phoenix, Portland (Ore.), Sacramento,
Salt Lake City, San Diego, Seattle, Spokane, Tacoma, Yakima (Wash.)

THE GLIDDEN COMPANY 1296 Union Commerce Building, Cleveland 14, Ohio
For technical information write G. J. Shale at above address.
Atlanta, Boston, Minneapolis, New York, North Bergen (N. J.), San Francisco;
Adams & Kiting Division, Chicago; American Paint Works Division, New Orleans;
Campbell Paint & Varnish Division, St. Louis; Hobson Paint & Varnish Division,
Chicago; A. Wilkins Company Division, Reading; Canadian Division, Toronto;
The Chemical & Pigment Company, Baltimore, Collinsville (Ill.), Oakland;
Eastern Lead Company, Scranton; Metals Refining Company (representative),
Detroit, Hammond (Ind.), Kansas City (Mo.), New Orleans, New York,
Philadelphia, Pittsburgh, St. Louis, Ft. Thomas (Ky.)

HARMON LEAD PRODUCTS, INC. 5231 Hobson Avenue, Hammond, Indiana
430 Lexington Avenue, New York 17, N. Y.
For technical information write J. G. Johnson at Hammond, Indiana.

NATIONAL LEAD COMPANY 111 Broadway, New York 6, N. Y.
For technical information write George Stelman at above address.
Atlanta, Buffalo 2, Chicago 2, Cincinnati 2, Cleveland 15, Dallas 2, Philadelphia
28, Pittsburgh 12, St. Louis 1, San Francisco 18, National Lead Company of
Mass., Boston 6

WESTERN LEAD PRODUCTS COMPANY 4430 E. Pacific Way, Los Angeles 22, California
1233 Fourth Street, Berkeley 2, California
For technical information write Thomas E. Malt at Los Angeles, California.

RED LEAD PAINT FORMULATIONS FOR STRUCTURES

For Steel Containing Mill Scale and Residual Rust (Slow Dry)

THE following three formulations are used successfully on ferrous surfaces containing tightly adherent mill scale and small amounts of rust. This type of surface is prevalent where preparation is limited to hand or power wire brushing, scraping, flame cleaning or combinations of these methods. The free linseed oil content of these paint vehicles assures the degree of wetting ability needed for good anchorage to a heterogeneous surface.

FORMULA S-1*

This is the highest quality primer available for shop and field priming of steel where surface preparation is limited to the methods mentioned above.

Component	Pounds	Pounds	Gallons
PIGMENT: Red Lead (Fed. Spec. TT-B-181A, Type I, Class C)	88.7	1880.0	26.0
Aluminum Oxide	0.5	0.5	0.0
	100.0		
VEHICLE: Raw Linseed Oil (Fed. Spec. TT-O-300)	40.0	200.0	35.0
Pale Heat Treated Linseed Oil (2-8 Viscosity) (Fed. Spec. TT-O-307, Type II)	17.0	91.0	11.0
Mineral Spirits (Fed. Spec. TT-T-301, Grade I)	20.0	104.5	26.0
Liquid Driers (Fed. Spec. TT-D-351A, Type I)	5.0	25.5	0.4
	100.0	2000.5	100.0

Pigment = 77.25
Vehicle = 22.25
Wt./Vol. = 84 Lb.
PV = 80

Dry for handling - about 24 hours
Dry for recoating - about 60 hours

*Conforms to the following specifications:
Federal Specification TT-B-181, Type I
American Association of State Highway Officials 1075-60, Type II

FORMULA S-2*

This is a high quality reduced red lead content primer, suitable for use on the surfaces specified.

Component	Pounds	Pounds	Gallons
PIGMENT: Red Lead, 90% Grade	71.0	700.0	9.0
Magnesium Silicate	14.7	144.0	0.1
Distomaceous Silica	10.0	90.0	0.0
Aluminum Oxide	0.5	0.5	0.0
	100.0		
VEHICLE: Raw Linseed Oil	40.0	200.0	35.0
Pale Heat Treated Linseed Oil (2-8 Viscosity) Fed. Spec. TT-O-307, Type II)	25.0	124.0	12.0
Petroleum Spirits	20.0	170.0	26.0
Liquid Driers	5.0	25.5	0.4
	100.0	1200.0	100.0

Pigment = 90.5
Vehicle = 77.5
Wt./Vol. = 115.5 Lb.
PV = 80

Dry for handling - about 24 hours
Dry for recoating - about 60 hours

*Conforms to the following specifications:
Federal Specification TT-B-181, Type I
American Association of State Highway Officials 1075-60, Type II

FORMULA S-3*

This is a lower cost formulation useful as a maintenance or intermediate coat under mild exposure conditions.

Component	Pigment	Film	Solids
PIGMENT: Red Lead, 98% Grade	45.0	200.0	4.0
Zinc Yellow	15.0	121.0	4.5
Aluminum Iron Oxide, 70% Fe ₂ O ₃	15.0	121.0	4.5
Magnesium Silicate	25.0	170.0	7.0
	100.0		
VEHICLE: Heat Treated Oil	60.0	200.0	45.0
Mineral Spirits	20.0	200.0	20.0
Japan Drier	5.0	47.0	0.5
	100.0	1047.0	100.0

Pigment = 98%
Vehicle = 40%
Wt./Vol. = 11.5 lbs.
PV = 50

Dry for handling - about 24 hours
Dry for recoating - about 48 hours

*Conforms to the following specifications:
Chicago and Northwestern Railway Company Standard Paint No. 8

NOTE: In all of the formulations presented in this Technical Letter, except where paint is formulated specifically to meet a designated specification, Rustone 84 may be used for suspension and resistance to sagging instead of aluminum stearate, in approximately equal amount.

For Steel Containing Mill Scale and Residual Rust (Accelerated Dry)

The following two high quality primer formulations are intended for priming, intermediate and maintenance coats on structural steel when work schedules demand accelerated drying. Although these vehicles contain enough free oil to attain reasonably good wetting of the metal surface, their wetting characteristics are limited by the presence of synthetic resins. For optimum performance they should be applied to surfaces freed of loose mill scale and corrosion products. The steel must be degreased and carefully cleaned.

FORMULA S-4*

This is an excellent and widely used red lead-type oxide paint with good hiding power and chalk resistance.

	Quantity	Pound	Pound	Galons
PIGMENT: Red Lead (Fed. Spec. TT-S-101a, Type I, Class B)...	70.1	1280.0		17.0
Iron Oxide (Fed. Spec. TT-S-101b).....	20.0	400.0		5.0
Aluminum Stannate (Navy Spec. SS-6-12a).....	0.9	0.0		0.0
	100.0			
VEHICLE: Raw Linseed Oil (Fed. Spec. TT-O-500).....	80.0	800.0		10.0
Abrasive Rust Solution (Fed. Spec. TT-S-500, Type II, Class A)**	20.0	170.0		2.0
Potassium Sparite and Driers.....	10.0	70.0		1.0
	100.0	1000.0		100.0

Pigment in TB
Vehicle in 200
Wt./Vol. in 25 lb.
PV in 25

Dry for handling - about 10 hours
Dry for recoating - about 24 hours

*Conforms to the following specifications:
Federal Specification TT-S-500
Navy Specification SS-6-12a

** Licensed qualified pigment/plasticizer plant shall submit analysis containing a minimum of 90% plasticizer activity in the unreacted, 90% plasticizer activity by weight.

FORMULA S-5*

This is a high quality specification primer that has received wide acceptance for ship and field prime coats for structural steel.

	Quantity	Pound	Pound	Galons
PIGMENT: Red Lead (Fed. Spec. TT-S-101a, Type I, Class C)...	60.0	710.0		9.0
Shrouded Iron Oxide, 800 FeO.....	15.0	100.0		1.0
Magnesium Silicate.....	14.7	100.0		1.0
Mica, 985 Mesh.....	0.0	0.0		0.0
Aluminum Stannate.....	0.0	0.0		0.0
	100.0			
VEHICLE: Abrasive Rust Solution (Fed. Spec. TT-S-500, Type II)**	80.0	670.0		8.0
Raw Linseed Oil (Fed. Spec. TT-O-500).....	20.0	100.0		2.0
Potassium Sparite.....	10.0	70.0		1.0
Lead Naphthenate Drier (54% Pb).....	0.75	4.0		0.05
Cobalt Naphthenate Drier (60 Co).....	0.25	2.0		0.05
	100.0	1071.0		100.00

Pigment in 200
Vehicle in 200
Wt./Vol. in 10.7 lb.
PV in 25

Dry for handling - about 8 hours
Dry for recoating - about 16 hours

*Conforms to the following specifications:
Federal Specification TT-S-500
Navy Specification SS-6-12a

** Licensed qualified pigment/plasticizer plant shall submit analysis containing 90-95% plasticizer activity in the unreacted, 90% plasticizer activity by weight.

For Steel Completely Free of Mill Scale and Rust (Fast Dry)

The following two fast drying formulations are suggested for application over steel thoroughly freed from rust, mill scale and other foreign matter by pickling or sand-blasting. These synthetic vehicle primers offer outstanding protection in industrial environments where the atmosphere is contaminated with chemical fumes.

FORMULA 8-6*

This is a heavy duty, full and lead primer intended for use on unadorned structures and factory fabricated equipment such as railroad cars, window sash, signal equipment, etc.

Composition	Pigment	Vehicle	Galloy
PIGMENT: Red Lead (Fed. Spec. TT-R-181a, Type I, Class C)	99.7	1571.0	17.35
Aluminum Oxide	0.3	0.5	0.45
	100.0		
VEHICLE: Alkyd Resin Solution (Fed. Spec. TT-S-334, Type II)	54.0	384.0	67.35
Acromatic Petroleum Spirits	14.5	99.0	15.70
Colony Naphthamene Drier (M Co)	0.5	1.0	0.20
Antioxidants and Wetting Agents	1.5	7.0	0.24
	100.0	1000.0	100.00

Pigment = 97.25
Vehicle = 92.75
Wt./Gal. = 10 lbs.
PV = 88

Dry for handling - about 1 hour
Dry for painting - about 4 hours

*Conforms to the following specifications:
Federal Specification TT-S-334, Type II

** Based on standard gravity; plasticizer alkyd resin solution containing 50-60% plasticizer in the standard, 50% plasticizer by weight.

FORMULA 8-7*

This is a medium weight and lead paint for use on surfaces which are exposed to rural, industrial and marine atmospheres of high humidity.

Composition	Pigment	Vehicle	Galloy
PIGMENT: Red Lead (Fed. Spec. TT-R-181a, Type I, Class B)	95.0	380.0	5.15
Zinc Yellow (Fed. Spec. TT-Z-413)	10.1	70.0	2.25
Mica (Navy Dept. Spec. 32143)	0.4	0.5	0.77
Indian Red (Fed. Spec. TT-I-311, Type I)	1.5	10.0	0.25
Magnesium Silicate (Navy Dept. Spec. 32142, Type A)	28.1	140.0	0.70
Aluminum Oxide (Navy Dept. Spec. 32143)	0.5	0.5	0.71
	100.0		
VEHICLE: Alkyd Resin Solution (Fed. Spec. TT-S-334, Type I, Class A)	64.0	410.0	20.00
Dipentene (Fed. Spec. TT-D-378)	1.0	10.0	0.25
Paint Thinner (Fed. Spec. TT-T-30, Grade 1)	30.0	150.0	20.30
Lead Drier (Fed. Spec. TT-D-643, Type I)	0.5	4.7	0.40
Colony Drier (Fed. Spec. TT-D-643, Type II)	0.5	4.7	0.30
	100.0	1000.0	100.00

Pigment = 905
Vehicle = 905
Wt./Gal. = 12.0 lbs.
PV = 88.1

Set to touch - 3 hours
Dry hard - 6 hours

*Conforms to the following specifications:

Paint Thinner (Navy Dept. Spec. 32142, Type A)
** Based on standard gravity; plasticizer alkyd resin solution containing a minimum of 50% plasticizer in the standard, 50% plasticizer by weight.
Note: This paint is very similar in composition and appearance to United States Maritime Administration Specification 32-142-101a.

RED LEAD PAINT FORMULATIONS FOR ROLLING STOCK

THE transition to steel cars has indicated a definite need for better low-cost primers having rust inhibitive properties to protect the equipment against corrosion. Considering the low cost of the following two formulations, these primers have an unusually high degree of desirable characteristics for the protection of steel rolling stock.

FORMULA 8-8

Constituents	Penny	Penny	Galley
VEHICLE: Red Lead, 97% Grade	88.4	858.5	8.5
Zinc Yellow	6.9	43.1	1.5
Silicic Iron Oxide, 70-78% Fe ₂ O ₃	27.2	182.4	5.9
Magnesium Silicate	25.9	170.5	7.2
	100.0		
VEHICLE: Ester Gum Varnish*	48.0	281.5	28.9
Heat Resistant Linseed Oil (2-3 Viscosity)	22.0	125.5	14.1
Mineral Spirits and Naphthalene Driers	25.0	211.4	22.5
	100.0	1288.5	100.0

Pigment = 51.55
Vehicle = 48.15
Wt./Gal. = 11.5
TV = 50

Dry for handling - 4 to 6 hours
Dry for recoating - about 18 hours

* 25 Gal. Ester Gum Dehydrated Castor Oil Varnish, 40% R. V.

FORMULA 8-9

Constituents	Penny	Penny	Galley
PIGMENT: Red Lead, 97% Grade	25.0	131.0	1.5
Zinc Yellow	20.0	105.0	3.0
Zinc Oxide	15.0	75.0	1.7
Silicic Iron Oxide, 70-78% Fe ₂ O ₃	20.0	105.0	2.9
Magnesium Silicate	20.0	105.0	4.4
	100.0		
VEHICLE: Ester Gum Varnish*	85.0	515.0	29.7
Heat Resistant Linseed Oil (2-3 Viscosity)	15.0	111.0	11.7
Mineral Spirits and Naphthalene Driers	47.0	289.0	44.3
	100.0	1189.0	100.0

Pigment = 405
Vehicle = 545
Wt./Gal. = 11.4
TV = 50

Dry for handling - 4 to 6 hours
Dry for recoating - about 18 hours

* 25 Gal. Ester Gum Dehydrated Castor Oil Varnish, 40% R. V.

Although the formulations contained in this Technical Letter have been established by our Red Lead Technical Committee through careful evaluation, no guarantee of results is made or implied. Users are urged to make additional supplementary evaluations to meet their specific requirements. The Lead Industries Association and its member companies will be glad to give further information on metal protective paints or to assist on other paint problems.