

LEAD INDUSTRIES ASSOCIATION

488 LEXINGTON AVENUE

NEW YORK 17, N. Y.

Pigments and Chemicals Division

April 21, 1954

SUBJECT: RED LEAD TECHNICAL
LETTER NO. 8

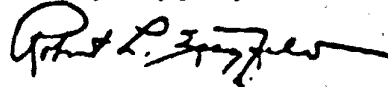
To Members of the Pigments and Chemicals Divisions

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**

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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 301 Mission Street, San Francisco 1, California
For technical information write F. A. Schenberg at above address.
Baton, Baton, Fresno, Los Angeles, Oakland, Phoenix, Portland (Ore.), Sacramento,
Salt Lake City, San Diego, Seattle, Spokane, Tacoma, Yakima (Wash.)

THE GLIDDEN COMPANY 1396 Union Commerce Building, Cleveland 14, Ohio
For technical information write G. F. Shale at above address.
Atlanta, Boston, Minneapolis, New York, North Bergen (N. J.), San Francisco,
Adams & Elting Division, Chicago; American Paint Works Division, New Orleans;
Campbell Paint & Varnish Division, St. Louis; Hubbs Paint & Varnish Division,
Chicago; A. Williams Company Division, Reading; Canadian Division, Toronto;
The Chemical & Pigment Company, Baltimore, Collinsville (Ill.), Oakland,
Kenton Lead Company, Scranton; Metals Refining Company (representative),
Detroit, Hammond (Ind.), Kansas City (Mo.), New Orleans, New York,
Philadelphia, Pittsburgh, St. Louis, Ft. Thomas (Ky.)

HAMMOND LEAD PRODUCTS, INC. 5231 Hohman Avenue, Hammond, Indiana
426 Lexington Avenue, New York 17, N. Y.
For technical information write J. G. Johnson at Hammond, Indiana.

NATIONAL LEAD COMPANY 111 Broadway, New York 4, N. Y.
For technical information write George Stahman at above address.
Atlanta, Buffalo 1, Chicago 8, Cincinnati 1, Cleveland 13, Dallas 1, Philadelphia
24, Pittsburgh 12, St. Louis 1, San Francisco 10, National Lead Company of
Mass., Boston 6

WESTERN LEAD PRODUCTS COMPANY 4430 E. Pacific Way, Los Angeles 22, California
1225 Fourth Street, Berkeley 1, California
For technical information write Thomas S. Blair 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)	99.7	1999.0	99.0
Aluminum Oxide	0.3	0.6	0.0
	100.0		
VEHICLE: Raw Linseed Oil (Fed. Spec. TT-O-389)	49.0	980.0	99.0
Pale Heat Treated Linseed Oil (2.5 Viscosity) (Fed. Spec. TT-O-387, Type II)	17.0	340.0	11.0
Mineral Spirits (Fed. Spec. TT-T-361, Grade 1)	30.0	150.0	30.0
Liquid Driers (Fed. Spec. TT-D-851a, Type I)	1.0	20.0	0.1
	100.0	1390.0	140.0

Pigment = 77.25
Vehicle = 22.35
Wt./Gal. = 94.5 lbs.
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 M75-60, 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, 85% Grade	75.0	750.0	9.0
Magnesium Silicate	14.7	147.0	0.1
Disinfectant Solvent	10.0	100.0	0.0
Aluminum Oxide	0.3	0.6	0.0
	100.0		
VEHICLE: Raw Linseed Oil	49.0	980.0	99.0
Pale Heat Treated Linseed Oil (2.5 Viscosity) Federal Specification TT-O-387, Type II)	35.0	140.0	10.0
Petroleum Spirits	30.0	150.0	30.0
Liquid Driers	1.0	20.0	0.1
	100.0	1290.0	140.0

Pigment = 80.0
Vehicle = 97.0
Wt./Gal. = 12.5 lbs.
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
Federal Highway Administration Specification 220-04-007

FORMULA 8-3*

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

	Component	Parts by Weight	Parts by Volume	Parts by Solids
PIGMENT:	Red Lead, 90% Grade	45.0	88.0	4.0
	Zinc Yellow	15.0	131.0	4.0
	Scheerer Iron Oxide, 70% Fe ₂ O ₃	15.0	131.0	4.0
	Magnesium Silicate	25.0	178.0	7.0
		100.0		
VEHICLE:	Heat Treated Oil	85.0	88.0	45.0
	Mineral Spirits	85.0	100.0	50.0
	Japan Driers	5.0	47.0	0.5
		100.0	135.0	95.5

Pigment = 90%
Vehicle = 45%
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 noted to formulate specifically to meet a designated specification, Rustine 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 schedule demand accelerated drying. Although these vehicles contain enough zinc to obtain reasonably good wetting of the metal surface, their wetting characteristics are limited by the presence of pyrophoric residues. 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 8-4*

This is an emulsion and vehicle and not solution with good hiding power and stable under heat.

Formulation		
PRIMER: Red Lead (Fed. Spec. TT-A-111, Type I, Class B).....	14.1	100.0
Iron Oxide (Fed. Spec. TT-A-111).....	8.5	60.3
Aluminum Oxide (Heavy Spec. 88-A-115).....	4.2	30.2
100.0		
VEHICLE: Red Lead Oxide (Fed. Spec. TT-A-111, Type II, Class A).....	8.5	60.3
Aluminum Oxide (Heavy Spec. 88-A-115).....	4.2	30.2
Pigment Vehicle and Diluent.....	14.1	100.0
100.0		

Primer: 100%
Vehicle: 100%
Wt. Vol. 100%
TV 100%

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

*Compare to the following product: Red Lead Oxide Primer
This is a high quality primer which has been tested with comparisons for dry and full coats.
The following table shows the results of the tests.

FORMULA 8-5*

This is a high quality primer which has been tested with comparisons for dry and full coats.

Formulation		
PRIMER: Red Lead (Fed. Spec. TT-A-111, Type I, Class C).....	14.1	100.0
Iron Oxide (Fed. Spec. TT-A-111).....	8.5	60.3
Aluminum Oxide (Heavy Spec. 88-A-115).....	4.2	30.2
100.0		
VEHICLE: Red Lead Oxide (Fed. Spec. TT-A-111, Type II, Class A).....	8.5	60.3
Aluminum Oxide (Heavy Spec. 88-A-115).....	4.2	30.2
Pigment Vehicle and Diluent.....	14.1	100.0
100.0		

Primer: 100%
Vehicle: 100%
Wt. Vol. 100%
TV 100%

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

*Compare to the following product: Red Lead Oxide Primer
This is a high quality primer which has been tested with comparisons for dry and full coats.
The following table shows the results of the tests.

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 S-6*

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

Component	Pounds	Pounds	Gallons
PIGMENT: Red Lead (Fed. Spec. TT-R-181a, Type I, Class C).....	99.7	1571.0	17.50
Aluminum Silicate	0.3	4.5	0.05
	100.0		
VEHICLE: Alkyd Resin Solution (Fed. Spec. TT-R-208, Type II)**.....	94.0	288.0	67.50
Aromatic Petroleum Spirits	14.5	99.0	15.70
Cobalt Naphthenate Drier (66 Co)	0.5	1.5	0.20
Antioxidants and Wetting Agents	1.5	7.5	0.24
	100.0	1000.0	100.00

Pigment = 97.55
Vehicle = 82.75
Wt./Gal. = 13.84
PV = 88

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

* Conforms to the following specifications:
Federal Specification TT-R-208, Type II
** Lowest molecular glyceryl phthalate alkyd resin solution containing 50-60% phthalic anhydride in the molecule, 50% petroleum spirits by weight.

FORMULA S-7*

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

Component	Pounds	Pounds	Gallons
PIGMENT: Red Lead (Fed. Spec. TT-R-181a, Type I, Class B).....	95.0	280.0	5.10
Zinc Yellow (Fed. Spec. TT-Z-415)	10.1	70.0	2.80
Mica (Navy Dept. Spec. 53M43)	0.4	65.0	2.77
Indian Red (Fed. Spec. TT-R-511, Type I)	1.5	10.0	0.20
Magnesium Silicate (Navy Dept. Spec. 53M42, Type A).....	25.1	100.0	0.70
Aluminum Silicate (Navy Dept. Spec. 53M45)	0.5	0.5	0.71
	100.0		
VEHICLE: Alkyd Resin Solution (Fed. Spec. TT-R-208, Type I, Class A)**.....	94.0	415.0	95.00
Dipentone (Fed. Spec. TT-D-879)	5.0	35.0	0.20
Paint Thinner (Fed. Spec. TT-T-201, Grade I)	20.0	100.0	20.00
Lead Drier (Fed. Spec. TT-D-643, Type I)	0.5	4.7	0.05
Cobalt Drier (Fed. Spec. TT-D-645, Type II)	0.5	4.7	0.20
	100.0	1000.0	100.00

Pigment = 808
Vehicle = 808
Wt./Gal. = 12.84
PV = 86.1

Set to touch - 2 hours
Dry hard - 6 hours

* Conforms to the following specifications:
Bureau of Ships Paint Formulas No. 118, MIL-P-17540 (MILP-17540)
** Same molecular glyceryl phthalate alkyd resin solution containing a minimum of 50% phthalic anhydride in the molecule, 50% petroleum spirits by weight.
Note: This paint is very similar in composition and approximate the performance of United States Maritime Administration Specification 50-544-201a.

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

	Component	Pounds	Pints	Gals.
VEHICLE:	Red Lead, 97% Grade	88.4	838.8	8.5
	Zinc Yellow	8.8	43.1	1.5
	Silicic Acid, 70-75% FeO	27.8	182.4	8.0
	Magnesium Silicate	55.0	178.5	7.5
		180.0		
VEHICLE:	Ester Gum Varnish*	45.0	201.5	88.5
	Heat Resistant Linseed Oil (2-3 Viscosity)	22.0	123.5	14.1
	Mineral Spirits and Naphthalene Driers	33.0	212.4	88.5
		100.0	1238.5	100.0

Pigment = 51.25
Vehicle = 48.75
Wt./Gal. = 11.0
FY = 88

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

* 25 Gal. Ester Gum Dehydrated Cedar Oil Varnish, 60% H. V.

FORMULA 8-9

	Component	Pounds	Pints	Gals.
PIGMENT:	Red Lead, 97% Grade	85.0	121.0	1.0
	Zinc Yellow	20.0	108.0	9.0
	Zinc Oxide	15.0	78.0	1.7
	Silicic Acid, 70-75% FeO	20.0	101.0	2.0
	Magnesium Silicate	20.0	108.0	4.4
		160.0		
VEHICLE:	Ester Gum Varnish*	85.0	215.0	88.7
	Heat Resistant Linseed Oil (2-3 Viscosity)	12.0	111.0	11.7
	Mineral Spirits and Naphthalene Driers	47.0	288.0	64.3
		144.0	1188.0	100.0

Pigment = 48
Vehicle = 92
Wt./Gal. = 11.4
FY = 88

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

* 25 Gal. Ester Gum Dehydrated Cedar Oil Varnish, 60% H. 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 preliminary 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.