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National Lead

NL

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National Lead



Pigments & Chemicals Division

CHEMICALS

Vinyl Stabilizers (Lead)

PRODUCT	PRINCIPAL USE	COMPOSITION	Mol. Wt.	Color & Form	Fineness (Retained on No. 325 Mesh Sieve)
TRIBASE ^{1,2}	Most basic of the lead sulphates. Used for electrical and other vinyl compounds requiring high heat stability.	Tribasic lead sulfate	991	Fine white powder	0.15% Max.
TRIBASE-E ^{1,2}	For low volume cost vinyl electrical insulation.	Basic lead silicate sulfate	....	Fine white powder	0.1% Max.
TRIBASE AG	High efficiency stabilizer for rigid vinyl compounds. Gives stability in molding and extrusion under extreme shear and high temperature conditions.	Modified tribasic lead sulfate	....	Off-white flakes	....
DYTHAL ^{1,2}	Heat and light stabilizer for general vinyl use. Excellent for high temperature vinyl insulation and opaque film and sheeting.	Dibasic lead phthalate	818	Fluffy white crystalline powder	0.1% Max.
DYPHOS ^{1,2}	Outstanding anti-oxidant; heat, light and weather stabilizer in opaque stocks including plastisols, organosols, chlorine-containing paints.	Dibasic lead phosphite	743	Fine white acicular crystals	0.3% Max.
LECTRO "60" ^{1,2}	Economical stabilizer for vinyl electrical insulation and vinyl tapes.	Lead chlorosilicate complex	....	Fine white powder	0.1% Max.
LECTRO [®] 78	Heat stabilizer for electrical grade plastisols, phonograph records and electrical insulation. Vulcanization agent for chlorosulfonated polyethylene.	Tetrabasic lead fumarate	1250	Fine creamy white powder	0.2% Max.
LECTRO [®] 80	Multi-purpose stabilizer for all common classes of vinyl electrical insulation.	Basic lead chlorosilicate-sulfate complex	....	Fine white powder	0.1%
DS-207 ^{1,2}	Stabilizer-lubricant for vinyls. Excellent for vinyl records and as costabilizer in vinyl insulation.	Dibasic lead stearate	1221	Soft white unctuous powder	0.3% Max.
PLUMB-O-SIL [®] B ² and C	For translucent and colored vinyl film, sheeting, and upholstery stocks.	Coprecipitates of lead orthosilicate and silica gel	....	Soft white powders	0.75% Max.
NORMASAL [®]	Stabilizer or costabilizer for flooring and other vinyl compounds requiring good light stability.	Normal lead salicylate	481	Soft, creamy white crystalline powder	0.2% Max.
TRI-MAL [®]	Vulcanizing agent for chlorosulfonated polyethylene. Highly basic stabilizer with high heat stability in vinyls.	Tribasic lead maleate	1008	Soft, yellowish white crystalline powder	0.2% Max.
LEADSTAR [®]	Lubricant and costabilizer for vinyl plastics.	Normal lead stearate	774	Fine white unctuous powder	See Remarks
PLASTIFLOW LPC	Costabilizer and lubricant for rigid vinyl compounds. Does not retard compound fusion.	Lead-calcium soap of mixed organic acids	....	Off-white flakes	....

1 Special XL Grade also available. Offers substantial improvements in heat stability, electrical properties, physical and mechanical properties, and color.

Vinyl Stabilizers (Non-Lead)

PROVINITE [®] A and B	Clear, heat and light stabilizer systems for vinyl film, sheeting, and dispersion resin systems.	Barium-cadmium organic	....	A Soft white powder	0.5% Max.
				B Clear straw colored liquid	....
CS-137 [®]	Outstanding stabilizer for transparent organosols and solution coatings. Remarkable light and weathering resistance.	Barium-sodium organic	....	Creamy white paste	....
BAROSIL [®]	Supplementary stabilizer for barium-cadmium and/or zinc types. Especially useful in film, sheeting, extrusions and dispersion resin systems. Controls plating, hazing, crocking and fogging.	Complex barium silicate	....	Fine white powder	1.0% Max.
TEMEX [®] 15 and 15-R	Clear heat stabilizers for vinyl phonograph record and other rigid stocks, based on vinyl copolymer resins. Offer excellent dispersion characteristics.	Barium-cadmium organics		Fine white powders	15-1.0% Max. 15-R-1.5% Max.

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	Basic Lead Content % Total PbO (Average)		% Safely Reactive PbO	Specific Gravity	Refractive Index	Standard Package (Net. Wt.) Multiwall Paper Bags (except as noted)	REMARKS
	89	67.3		6.4	2.1	50 lbs.	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
	68	50.8		4.9	2.1	50 lbs.	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
	78	59		3.6		400 lbs. (fiberboard drum)	Very fine particle size lead stabilizer with special wax coating. Coating melts at 70°C.
	79.8	54.6		4.5	1.99 (av.)	50 lbs.	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
	89	59		6.1	2.25	50 lbs.	Also supplied as a: (A) A paste in DNODP plasticizer for ease in dispersion (B) 50% Dyphos—50% CaCO ₃ as DYPHOS 50A
	47.5	36.1		3.9	2.1	50 lbs.	
	90	72.5		6.5	2.1	50 lbs.	
	55.5	44		3.6	2.1	400 lbs. (fiberboard drum)	Surface treated to reduce dusting.
	55.3	36.5		2.0	1.60	50 lbs.	Non-melting at high temperatures. Also supplied as a paste in DNODP plasticizer for ease in dispersion.
	B 51 C 46	25-51 23-46		3.9 3.1	1.58-1.60 1.58	25 lbs. 25 lbs.	PLUMB-O-SIL C is specially treated for easy dispersion.
	46.5	....		2.3	1.78 (av.)	200 lbs. (fiberboard drum)	
	89	66.5		6.3	2.08	50 lbs.	
	29.5	....		1.4	1.58-1.60	50 lbs.	Melting point, 100°C.-115°C. 1.2% max. retained on No. 100 Sieve.
	22.2	....		1.3	....	200 lbs. (fiberboard drum)	Melting point 69°C.

2 Also available in oiled grade — (Contains 5% of a colorless mineral oil)

			1.4	1.56 (Max.)	225 lbs. (fiberboard drum)	Supplied as a two package system— PROVINITE A and PROVINITE B.
	....	....	0.9	1.45	375 lbs. (55-gal. metal drum)	
			1.5	1.48	60 lbs. (5 gal. can)	Supplied only as a 70% solids content paste in DOP.
			2.5	1.50	70 lbs. (fiberboard drum)	
			1.3		100 lbs. (fiberboard drum)	

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Stabilizers continued on next page.



Vinyl Stabilizers (Organotin)

PRODUCT AND PRINCIPAL USE	COMPOSITION	Color & Form	Tin Content, % Sn	Specific Gravity	Melting Point, °C.	Standard Package (Net Wt.) Steel Drums	Remarks
CLARITE® NS-1 High tin content heat and light stabilizer for clear vinyl compounds.	Modified dibutyl tin maleate	Light cream powder	32.1	1.5	65	225 lbs.	
CLARITE® NS-2 General purpose heat and light stabilizer for clear vinyl products.	Modified dibutyl tin maleate	Light yellow liquid	22.1	1.3	—	400 lbs.	Refractive index, 1.51
CLARITE® NS-3 Clear heat and light stabilizer for rigid vinyl blow molding applications.	Modified dibutyl tin maleate	Light yellow liquid	19.0	1.3	—	400 lbs.	Refractive index, 1.52
CLARITE® NS-4 Clear costabilizer-lubricant for rigid vinyl products.	Modified dibutyl tin maleate	Cream colored powder	11.9	1.1	50	225 lbs.	
CLARITE® NS-51 Heat and light stabilizer for high clarity flexible vinyl compounds.	Dibutyl tin diacrylate	Colorless liquid	18.6	1.0	20	400 lbs.	Refractive index, 1.46

GELLING AND PIGMENT SUSPENDING AGENTS FOR VISCOSITY AND FLOW CONTROL, PIGMENT SUSPENSION

PRODUCT AND PRINCIPAL USE	COMPOSITION	Moisture	Particle Size* Max.	Sp. Gr.	Bulking Value	Standard Package Net Wt.
BENTONE® 38 Will efficiently thicken and gel solvents of both the intermediate and non-polar types as well as mixtures of low polarity organic liquids with ketones, alcohols and low molecular weight esters.	Organic derivatives of hydrous magnesium aluminum silicate minerals. For organic systems.	3.5% max.	less than 1 micron	1.8	15	50 lb. bags
BENTONE® 38 MASTERGEL Predispersed Masterbatch containing 15% BENTONE 38 thickening agent in odorless mineral spirits. Incorporates efficiently with high speed, low shear equipment during any stage of paint manufacturing to impart suspension, thixotropy, and viscosity increases which are stable and unaffected by temperature changes.		2.5% max.		.89	7.4	35 lb. pail
BENTONE® 34 Will thicken and gel straight non-polar solvents such as benzene, toluene, mineral spirits and naphtha as well as liquids of intermediate polarity such as vegetable oils, plasticizers, alkyds and other resins.		3.5% max.		1.8	15	50 lb. bags
BENTONE® 27 Bodies high polarity solvents such as diethylene glycol, ethyl acetate, methyl ethyl ketone and other lacquer solvents. Recommended for epoxy, polyester, lacquer and vinyl systems.		3.5% max.		1.7	14.2	50 lb. bags
BENTONE® 18-C For polar systems. Especially useful where pigment suspension is desired without strong thickening action, as in the case of aerosol paints.		3.5% max.		1.85	15.4	50 lb. bags
BENTONE® 11-N Suspending agent for use in organic systems. Prevents hard settling of pigments without producing a significant increase in viscosity.		7.0% max.	less than 5 microns	2.0	16.7	50 lb. bags
BENTONE® LT A highly efficient gellant for latex paints. Use results in stable, reproducible thixotropic consistencies. Improves "wet-edge" levelling and brushing properties. Acceptable in a wide range of latex paint systems.	Highly beneficiated hydrous magnesium silicates. For Aqueous Systems	6.0% max.	less than 1 micron	1.98	16.5	100 lb. fiber drums
BEN-A-GEL® BEN-A-GEL®EW		6% ± 2%		2.4	20	100 lb. fiber drums
BENAQUA® For thickening or gelling water systems and/or as suspension agents... emulsion stabilizers in oil-in-water emulsions. BEN-A-GEL requires high shear incorporation equipment. BEN-A-GEL EW and BENAQUA gel readily using low shear equipment.		4% ± 2%				
PROPALOID-T® Thickener for latex paints. Provides pigment suspension and good paint handling properties. Easily incorporated with low shear equipment.		4% ± 2%		2.2	18.3	50 lb. bags
MACALOID® Thickening and pigment suspending agent for water systems.		4% ± 2%		2.65	22.1	50 lb. bags

*Ultimate size when properly dispersed.

SPECIAL CHEMICALS

ONCOR® 23A

A pigment of low specific gravity composed of a surface layer of antimony oxide fused to a core of inert silica. It imparts flame resistance to paint and plastic compositions based on halogenated resins. In addition, it has low tinting strength and excellent dispersion characteristics.

L-26

The normal lead salt of 2-ethylhexoic acid. L-26 is a straw-colored viscous liquid characterized by its solubility in many common organic solvents and its stability at comparatively high temperatures. Used as a curing agent for silicone paints and insulating varnishes.

PEARLESCENT PIGMENT

This is lead monohydrogen phosphate, a soft white powder of fine plate-like crystals. Having excellent heat resistance, it imparts pearlescence, economically and directly, to flexible or rigid plastics. Used most effectively in polystyrene and casein.

ALSO AVAILABLE: WHITE LEAD • RED LEAD • LITHARGE • ANTIMONY OXIDES*

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*National Lead Company offers four standard grades of Antimony Oxide: REGULAR, RED STAR, WHITE STAR GRADE M, AND GRADE 10. Each is a high quality, pigment grade, pure antimony trioxide.

National Lead



Pigments & Chemicals Division

ONCOR® 100-000020669

CHEMICAL MATERIAL	BRAND NAME	DESCRIPTION & APPLICATION
LEAD SILICO CHROMATE, NORMAL	ONCOR® Y47	Intended for use in coatings, such as yellow traffic marking paints requiring a bright "alert" yellow color.
LEAD SILICO CHROMATE, BASIC	ONCOR M50	Corrosion inhibitive pigment for metal protective coatings, primers and finishes. Ideally suited for electrocoated primers.
LEAD SILICO CHROMATE, BASIC	ONCOR S25	Similar to M50 but finer with higher hiding for use in industrial enamels requiring high gloss. Also for electrocoating primers.
WHITE LEAD, BASIC SILICATE	ONCOR 45X	In multiple pigment exterior house paint coatings, both water and solvent base. Effective in controlling tannin staining of water base coatings.
ANTIMONY SILICO OXIDE	ONCOR 23A	Flame retardant for halogenated paints and plastics.
DIBASIC LEAD PHOSPHITE	DYPHOS® PG	A white anticorrosive pigment for wood and metal coatings, both water and solvent base.

STANDARD PACKAGING: Net weight 50 lb. multi-wall paper bags.

Addresses

Pigments &
Chemicals
Division

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New York, N.Y. 10006

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P.O. Box 7000A

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3501 Griffin Street

LOS ANGELES, CAL. 90023
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PHILADELPHIA, PA. 19125
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PITTSBURGH, PA. 15212
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ST. LOUIS, MO. 63177
P.O. Box 7109

IN CANADA

ENELCHEM PRODUCTS
Division of Canadian
Titanium Pigments, Ltd.

MONTREAL 110, QUEBEC
2140 Sun-Life Bldg.

TORONTO 1, ONTARIO
Terminal Bldg., Foot of York St.

VANCOUVER 5, B.C.
1575 W. Georgia Street

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NOTE: The foregoing recommendations, based on our research and that of others, are believed to be accurate. But no guarantee of accuracy is made. The products are sold without warranty, expressed or implied, and upon the condition that purchasers shall make their own tests to determine the suitability of such products for their particular purposes. Likewise, statements concerning the possible use of these products are not intended as recommendations to use these products in infringement of any patent.

National Lead



Baroid Division

Baroid Division is a leading manufacturer and distributor of natural and synthetic materials used in the oil and chemical industries.

BRAND NAME	MATERIALS & APPLICATIONS	STD. PKG.
ALBERTABOND	High-yield Canadian bentonite for use as foundry sand binder, pelleted feed binder.	50 lb bag
AQUAGEL®	High-yield Western bentonite used primarily in well drilling muds.	100 lb bag
ANHYDROX®	Precipitated barium carbonate used to remove calcium sulfate from hard water, and anhydrite and gypsum from drilling muds.	100 lb bag
BARABOND®	Low-yield Southern bentonite for use as non-ferrous foundry sand binder.	50 lb bag
BARAGEL®	Chemically modified organophilic bentonite used as grease gelling agent.	50 lb bag
BARAWATE®	High density barite for making heavy concrete for use in atomic shielding and as pipeline coating.	100 lb bag
BAROCO®	High-yield Southern bentonite used primarily in well drilling muds.	100 lb bag
BAROID®	Pulverized barite used primarily in well drilling mud.	100 lb bag
BARONITE®	Intimate mixture of bentonitic and water-soluble organic materials used as foundry sand binder.	50 lb bag
BD AMINES	A group of primary, secondary and tertiary ammonia derivatives used in corrosion inhibitors, textile finishing, rubber compounding and other uses.	55 gal drum
BD DIAMINES	A group of 1-3 propylene diamines used in petroleum additives, chemical formulations and other uses.	55 gal drum
BD QUATS	Alkyl ammonium chlorides used as corrosion inhibitors, fabric softeners, chemical intermediates, etc.	55 gal drum
BENTONE®	Chemically modified organophilic clay used as grease gelling agent.	25 lb bag
CARBONOX®	Alkaline soluble lignitic dispersant and thinning agent used primarily in well drilling muds.	50 lb bag
CC-16®	Solubilized alkaline lignitic thinner and dispersant used primarily in well drilling muds.	50 lb bag
CERCLAY	Medium yield Texas bentonite for use as non-ferrous foundry sand binder, pelleted feed binder.	50 lb bag
CLEAR	A group of surfactants for removal and prevention of paraffin deposition.	55 gal drum
COAGULOID	High-yield bentonitic clay for use in water clarification.	50 lb bag
COAT	A group of selected polar film-forming amine-salt corrosion inhibitors.	55 gal drum
DEXTRID®	Stabilized, partially dextrinized polysaccharide (toxic) flocculent, used primarily in drilling mud.	50 lb bag
DROP	A group of compounds for breaking water-in-oil emulsions.	55 gal drum
DURATONE®	Oil dispersible organophilic organic colloid for controlling filtration properties in oil drilling fluids.	50 lb bag
E Z MUL	Surfactant, emulsifier for water-in-oil emulsions.	55 gal drum
GELTONE®	Gel-forming organophilic clay that gives viscosity, gel strength and suspension properties to oil muds.	50 lb bag
GROUND BARITE	Barium sulfate for use in industrial radioactive shielding.	100 lb bag

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Baroid Division Continued



BRAND NAME	MATERIALS & APPLICATIONS	STD. PKG.
IMPERMEX®	Pregelatinized starch powder used for filtration control in drilling fluids.	50 lb bag
INVERMUL®	Emulsifier for water-in-oil emulsion drilling fluids.	50 lb bag
MACALOID®	Beneficiated hectorite for suspending, adsorbing, purifying, gelling.	25 lb bag
M H BENTONITE	Hectorite clay used in refractory linings.	50 lb bag
NATIONAL®	High-yield bentonite clay foundry sand binder, pelleted feed binder, pond and ditch sealer.	50 lb bag
NYKON®	Modified organophilic clay gelling agent for compounding non-corrosive greases.	50 lb bag
PETRO BOND®	Waterless foundry sand binder.	50 lb bag
PETROTONE®	Non-gelling organophilic clay that imparts suspension to oil with little effect on viscosity.	50 lb bag
PROPALOID®T	Chemically modified clay used as gelling agent in paint, pharmaceuticals, cosmetics.	25 lb bag
QUIK-GEL®	High-yield bentonite used in water well, mining and seismic drilling fluids.	50 lb bag
SF-100®	Mixed oleophilic oil mud additive used to free stuck drill pipe or for casing packs.	55 gal drum
SKOT FREE®	Selected, highly polar petroleum derivative used to free stuck drill pipe.	55 gal drum
SURFLO	Group of compounds for inhibiting scale deposition, hydration, and as bactericides.	55 gal drum
TANSUL®7	Beneficiated clay used as a precipitating and clarifying agent in brewing, paper manufacturing.	25 lb bag
TRIMULSO®	Non-ionic surfactant and emulsifier used in drilling fluids.	55 gal drum
TRIP-WATE	Coarse ground barite used to weight drilling fluid column temporarily.	100 lb bag
X-COR	Modified oil soluble, film forming corrosion inhibitor, used primarily in drilling fluids.	14 gal drum
ZEOGEL®	Attapulgitic clay used as a viscosifier for salt water type mud systems.	100 lb bag

0000-NLI-000020671

Addresses

Baroid Division

MAIN OFFICE
P.O. Box 1675,
2404 Southwest Freeway,
Houston, Texas 77001

BRANCH OFFICES

PACIFIC COAST AREA
19301 S. Santa Fe Avenue
Compton, California 90224

ROCKY MOUNTAIN AREA
290 Denver Club Building
Denver, Colorado 80202

WEST TEXAS AREA
118 Vaughn Building
Midland, Texas 79701

MID-CONTINENT AREA
412 Philtower Building
Tulsa, Oklahoma 74103

TEXAS GULF COAST AREA
300 Southwest Tower
Houston, Texas 77002

TRI-STATE AREA
1618 Slattery Building
Shreveport, Louisiana 71102

LOUISIANA GULF COAST AREA
1512 Pere Marquette Building
New Orleans, Louisiana 70112

IN CANADA

BAROID OF CANADA, LTD.
600 Humford Bldg.
608 7th St., S.W.
Calgary, Alberta, Canada

National Lead



DeLore Division EXTENDER PIGMENTS

CHEMICAL MATERIAL	TRADE NAME	DESCRIPTION AND USE
BARIUM SULPHATE (BARYTES)	FOAM A®/BARYTA WHITE	A refined white waterground extender pigment of high specific gravity. Average particle size 6 microns.
BARIUM SULPHATE (BARYTES)	X10R	A microfine grade of white Barytes having excellent dispersing characteristics. Average particle size 3½ microns.
BARIUM SULPHATE (BARYTES)	X5R	A supermicrofine grade of white Barytes showing the ultimate in pigment dispersion. Average particle size 1¼ microns.
BARIUM SULPHATE (BARYTES)	PRIMEX	A waterground microfine grade of natural Barytes used extensively where color is unimportant but speed of dispersion is required. Average particle size 1¼ microns.
DIATOMACEOUS CALCITE	LORITE®	An ideal extender pigment for low sheen interior and exterior paints. Water base and oil base paints formulated with LORITE have excellent film characteristics because of its low binder demand. Acicular diatoms and calcium carbonate combine to promote stain removal, enamel holdout, scrub resistance, color retention and smoothness of film.
CALCIUM CARBONATE	CCO WHITE/VERA BLANC	A waterground amorphous type of calcium carbonate used primarily where high purity and uniformity is required. Used in conjunction with dry ground OOLITIC F and OOLITIC C for putty and caulking compounds.

STANDARD PACKAGING: Net weight 50 lb. multi-wall paper bags.

EXTENDER PIGMENTS FOR: URETHANE FOAMS, MIRROR BACKING FINISHES, VINYL COATINGS, SEALING COMPOUNDS, LET DOWN COLORS, RUBBER COMPOUNDING, PAINTS, BRAKING LINING.

Addresses

De Lore Division

MAIN OFFICE:
Mississippi River and
River Des Peres,
St. Louis, Mo. 63111
Tel. 314-638-0404

SALES REPRESENTATIVES

Oakland, California
A. J. Lynch & Co.
415-632-2520
Los Angeles, California
A. J. Lynch & Co.
213-583-2271
Denver, Colorado
Herr-Hartnell Co.
303-534-7350
Addison, Illinois
The Cary Co.
312-629-6500
Des Moines, Iowa
Thompson Hayward
Chemical Co. 515-244-2281
Louisville, Kentucky
Wm. B. Tabler Co.
502-634-0596

New Orleans, Louisiana
North American Sales Co.
504-834-5411
Boston, Mass.
National Lead Company
617-427-1000
Detroit, Michigan
Baker & Collinson, Inc.
313-366-2100
Minneapolis, Minnesota
Thompson Hayward
Chemical Co. 612-332-5394
Kansas City, Missouri
Thompson Hayward
Chemical Co. 913-342-6800
New York, New York
Columbian Carbon Co.
212-687-2300

Cincinnati, Ohio
National Lead Co.
513-922-4100
Cincinnati, Ohio
B. H. Roettker & Co.
513-661-0011
Cleveland, Ohio
Harshaw Chemical Co.
216-721-8300
Pittsburgh, Pennsylvania
National Lead Co.
412-321-2335
Philadelphia, Pennsylvania
Dowdy Brothers
215-222-8083
Dallas, Texas
Thompson Hayward
Chemical Co. 214-331-6521

Houston, Texas
Thompson Hayward
Chemical Co. 713-869-5801
Seattle, Washington
National Lead Co.
206-622-1950

IN CANADA

ENELCHEM PRODUCTS
Division of Canadian
Titanium Pigments, Ltd.
MONTREAL, QUEBEC
514-866-2401
TORONTO, ONTARIO
416-363-2454
VANCOUVER, BRITISH
COLUMBIA 604-685-0813

0000-NLI-000020672

National Lead



Goldsmith Division

PRECIOUS METALS — Base Chemicals

Headquarters for silver base chemicals, platinum group chemicals, gold base chemicals and others, plus all precious metals.

Our new, fully equipped, expanded facilities utilize the most modern methods for processing metals, alloys and chemicals. And have enabled us to meet the demand for products providing higher and more predictable performance... of unquestioned quality, purity and uniformity. These not only include precious metals and their derivatives, but also indium, cadmium and silver brazing products.

Research

Goldsmith is an active participant in National Lead's metallurgical and chemical research and engineering programs.

Recovery

Goldsmith specializes in refining all forms of precious metal scrap. Our modern recovery processes provide total reclamation of all the gold, silver, platinum, etc., from your industrial wastes, solutions and residues. And you are assured of prompt reimbursement, according to the prevailing metal markets.

Silver Base Chemicals	SILVER NITRATE A high purity silver salt widely used in the manufacture of film, photographic and photocopy papers, mirrors and pharmaceuticals. SILVER ACETATE SILVER BROMATE SILVER BROMIDE SILVER CARBONATE SILVER CHROMATE SILVER CYANIDE SILVER POTASSIUM CYANIDE SILVER IODATE SILVER IODIDE SILVER LACTATE SILVER CHLORIDE In powder, sheet, strip, blanks or preformed electrodes, this precision-rolled product affords high energy output, compactness and dependable performance in batteries. SILVER NITRITE SILVER OXIDE SILVER SULFATE SILVER SULFIDE SILVER SULFITE
Gold Base Chemicals	MONO GOLD CYANIDE (88%) POTASSIUM GOLD CYANIDE (41%) POTASSIUM GOLD CYANIDE (67%) POTASSIUM GOLD CYANIDE (68%) SODIUM GOLD CYANIDE (46%) SODIUM GOLD CYANIDE (72%) GOLD CHLORIDE—YELLOW (50%) GOLD CHLORIDE—BROWN (51%)
Platinum Group Chemicals	OSMIC ACID (OSMIUM TETROXIDE) PALLADIUM BLACK PALLADIUM CHLORIDE PLATINUM BLACK PLATINUM CHLORIDE PLATINUM DIOXIDE (ADAMS CATALYST) POTASSIUM PLATINIC CHLORIDE RHODIUM TRICHLORIDE RUTHENIUM TRICHLORIDE IRIDIUM SALTS

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Goldsmith Division • 900 West 18th Street • Chicago, Illinois 60608

National Lead



Titanium Pigment Division

THE WORLD'S MOST COMPLETE LINE OF TITANIUM PIGMENTS

A complete line of titanium pigments, including rutile, anatase, and mixed, in various grades and colors, for use in all types of white pigments.

The Titanox "RA" And "CL" Pigments

The Titanox "RA" and "CL" pigments are prepared by the chloride process.

	TYPE OF PIGMENT	MEETS THE FOLLOWING SPECIFICATIONS
TITANOX RA	General utility; interior paints; plastics.	Federal TT-P-00442a Type II Semi chalking rutile A.S.T.M. D-476 Type II Semi chalking rutile
TITANOX RA-10	Unmodified for special effects; highest TiO ₂ content for specialized products.	
TITANOX RA-40	Rubber and plastic; especially floor-covering grade.	Same as TITANOX 4A
TITANOX RA-40-I	Like RA-40 with improved dispersion and greater heat stability.	
TITANOX RA-41	Like RA-40-I with greater tinting strength.	
TITANOX RA-41-Z	RA-41 treated with 2% zinc stearate.	
TITANOX RA-42	High "blue" or TAPPI brightness grade for paper, filled and coated.	
TITANOX RA-45	Low pvc, high-gloss enamel grade.	Federal TT-P-00442a Type III A.S.T.M. D-476 Type III Chalk resistant rutile
TITANOX RA-46	Flat paint grades, especially latex.	Same as TITANOX RA-45
TITANOX RA-47	Like RA-46 but with lower dispersant demand, higher tinting strength.	
TITANOX RA-48	Like RA-47 but higher hiding.	
TITANOX RA-44	Highest hiding for latex flat paints.	
TITANOX RA-50	Multi-purpose.	Federal TT-P-00442a Type III A.S.T.M. D-476 Type III
TITANOX RA-51	Multi-purpose—higher strength.	Same as TITANOX RA-50
TITANOX RA-NC	"Non-chalking" or least chalking for exterior coatings and compositions.	Federal TT-P-00442a Type IV Chalk resistant rutile A.S.T.M. D-476 Type IV Maximum chalk resistant rutile
TITANOX RA-NC-I	IMPROVED sharper gloss, higher tinting strength, and greater tint clarity.	Same as TITANOX RA-NC
TITANOX PL	For plastic laminates that need light stability. Also used in exterior coatings demanding maximum chalking resistance.	
TITANOX CL-PL	Chloride process pigment for plastic laminates.	
TITANOX CL	Prepared by chloride process. Low pvc, high-gloss enamel grade.	Federal TT-P-00442a Type III A.S.T.M. D-476 Type III Chalk resistant rutile
TITANOX CL-NC	Prepared by chloride process. Maximum exterior durability.	Same as TITANOX CL

The Titanox "A" Pigments

TITANOX A-MO	General utility; chalking type for white house paints. (MO-med. oil absorption)	Federal TT-P-00442a Type I Free chalking anatase A.S.T.M. D-476 Type I Anatase
TITANOX A-168-LO	Similar to AMO, except LO (low oil absorption) for high-gloss goods and color retentive.	Same as TITANOX A-MO
TITANOX AA-F	Fibre grade for delustering acetate.	
TITANOX A-CG	Coating grade for paper coatings.	
TITANOX A-WO	Water dispersible for paper, especially beater addition.	

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Titanium Pigment Division (continued)



The Titanox "A" Pigments

	TYPE OF PIGMENT	MEETS THE FOLLOWING SPECIFICATIONS
TITANOX AM-WD	Like A-WD but easier dispersing.	
TITANOX A-MP	Exceptionally easy dispersion, color retentive, chalking; highest tinting strength of anatase; truly multi-purpose.	Federal TT-P-00442b Type I Free chalking anatase A.S.T.M. D-476 Type I Anatase
TITANOX TGA	Highly purified; Cosmetic grade.	Toilet Goods Association; Federal Drug Administration; U.S. Formulary; U.S. Pharmacopoeia

The Titanox "C" Pigments

TITANOX C-50	Approx. 50% TiO ₂ . General utility; strongest "C" pigment.	A.S.T.M. D-476-66 Extended Titanium Dioxide
TITANOX RC	Approx. 30% TiO ₂ . "Non-chalking," exterior paint grade.	A.S.T.M. D-476-66 Extended Titanium Dioxide Military MIL-P-15195B U.S. Maritime Commission 52-MA-521b
TITANOX RCHT	Approx. 30% TiO ₂ . General utility.	
TITANOX RCHTX	Approx. 30% TiO ₂ . General utility, maximum ease of dispersion.	

TITANOX Non-pigmentary products and chemicals

TITANOX A-WG	Welding rod coatings.	
TITANOX FM-A	Frit makers. Porcelain enamels and glazes.	
TITANOX GM	Glass makers. Free flowing. Low dusting characteristics.	

Standard Packaging of TITANOX pigments is 50 lb. paper bags.

TITANOX® PIGMENTS FOR VARIOUS APPLICATIONS

TITANOX pigments contribute outstanding improvements to many products.

PAINTS, for instance, are enhanced not only in hiding power but in durability through balanced formulation with non-chalking grades of TITANOX.

PAPER and **PAPERBOARD** products gain new high levels of whiteness, brightness and opacity when TITANOX pigments are incorporated in the beater or as the key agent in coatings. Selection of the proper pigments helps to provide for more legible and attractive printing. TITANOX also counteracts transparency caused by wax or plastic impregnation.

PLASTIC and **RUBBER** products become whiter, brighter, cleaner with TITANOX pigment, which can be used in loadings that do not detract from elasticity and flexibility.

PORCELAIN enamels, both white and tinted, made with TITANOX are so opaque that they can be applied in a single cover coat. Acid resistance in **GLASS** can be effected by proper pigment selection at no sacrifice in crystal clear brilliance.

FLOOR COVERINGS, WELDING ROD COATINGS, ROOFING GRANULES, INKS, LEATHER and **LEATHER FINISHES** as well as **TEXTILE DELUSTERING** and **COATED TEXTILES** are other products and applications in which TITANOX pigments are found to impart necessary and valuable properties.

The large variety and number of titanium pigments sold under the TITANOX trademark, together with their multiple uses, suggest that experienced sales representatives be invited to discuss the projected use with the buyer. For immediate contact with the closest office they are listed below.

TITANIUM PIGMENT DIVISION • NATIONAL LEAD COMPANY

The following products are offered by Titanium Pigment Division, National Lead Company, 111 Broadway, New York, N.Y. 10006

ENELCHEM COPPERAS (IRON SULPHATE)
ENELCHEM MAGNETITE (Iron Ore)
ENELCHEM TITANIUM TETRACHLORIDE

ENELCHEM STRONTIUM TITANATE
(Single Crystal Boules)
ENELCHEM TITANYL SULPHATE CAKE

ENELCHEM TITANIUM HYDRATE PULP
ENELCHEM TITANYL SULFATE SOLUTION
ENELCHEM TITANYL CHLORIDE SOLUTION

ENELCHEM is a trademark of The National Lead Company

TITANIUM PIGMENT DIVISION • GENERAL OFFICE: 111 Broadway, New York, N.Y. 10006 Tel.: 212-732-4942.

TITANOX White Pigments are made and sold in Canada by **CANADIAN TITANIUM PIGMENTS LIMITED MONTREAL • TORONTO • VANCOUVER**

SALES OFFICES:			
Boston, Mass. 02119 800 Albany Street 617-427-3710	East Orange, N.J. 07017 725 Park Avenue 201-676-0363	Oakland, Calif. 94601 4825 San Leandro Street 415-535-1770	St. Louis, Mo. 63111 Carondelet Station 314-353-3950
Atlanta, Ga. 30305 3272 Peachtree Road, N.E. 404-261-2223	Cleveland, Ohio 44113 2208 Terminal Tower 216-241-7195	Los Angeles, Calif. 90022 6449 Corvette Street 213-723-6501	Towson, Maryland 21204 724 York Road 301-828-8155
Bala Cynwyd, Pa. 19004 One Belmont Avenue 215-839-4475	Dallas, Texas 75206 5646 Milton 214-363-7628	Oak Brook, Ill. 60521 1301 West Cermak Road 312-654-0760	Portland, Ore. 97214 49 S.E. Clay Street 503-235-6689
			40 warehouses are strategically located throughout the country.

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CLASSIFICATION AND COMMERCIAL APPLICATIONS	PRODUCT
ZIRCONIUM CHEMICALS The number and variety of uses for these compounds is developing rapidly in such applications as: • a precipitant for acid and basic dyestuffs in preparing lakes and toners. • an active ingredient in metal soap type water repellents for textiles and leather. • a raw material in preparing zirconium metal, alloys and organic-zirconium complexes. • a catalyst for silicone type water repellent treatments of leather and textiles. • a strong chelating and coordinating reagent in pharmaceutical preparations. • an active ingredient of latex emulsion paints to improve scrub resistance. • improve bond between fillers and plastics. Plus other applications now in the research and testing stages of development.	ZIRCONIUM OXYCHLORIDE --TECHNICAL
	ZIRCONIUM HYDROXYCHLORIDE SOLUTION
	ZIRCONIUM TETRACHLORIDE
	*COLLOIDAL ZIRCONIA SUSPENSION
	ZIRCONIUM ACETATE SOLUTION, 22% ZrO ₂
	AMMONIUM ZIRCONYL CARBONATE SOLUTION
	HYDROUS ZIRCONIA
	HYDROUS ZIRCONIA (CARBONATED)
	SODIUM ZIRCONIUM SULFATE (WITH INSOLUBLE SILICA)
	BASIC ZIRCONIUM SULFATE (PULP)
	*ZIRCONYL NITRATE SOLUTION
ZIRCONIUM OXIDE AND STABILIZED ZIRCONIUM OXIDE ZrO₂ is commercially important as an opacifier in ceramics where it imparts high opacity and color stability in glazes, enamels and ceramic pigments. In super refractories, it is used as the raw material for crucibles, rods, tubes and shapes... and for application in high temperature furnaces. C.P. Zirconium Oxide is used in the manufacture of Zirconium Metal and as a constituent in high dielectric ceramics. Another Zirconium Oxide finds increasing use in optical glass polishing. Stabilized Zirconia combines a high melting point with excellent thermal shock properties making it an outstanding refractory material for high temperature applications.	ZIRCONIUM OXIDES OF VARIOUS PARTICLE SIZE AND PURITY AVAILABLE
FILLERS FOR RESINS AND RUBBERS TAM produces Zirconium Silicates of various purities for a variety of applications. The use of Zirconium Silicate as a filler for various resins, plastics and synthetic rubbers increases their thermal stability, resistance to solvent and water absorption, and vapor transmission. The use of TAM Barium Titanate and Heavy Grade Titanium Dioxide improves the electrical properties of the various resins and rubbers. Barium Zirconate gives a white, easily colored silicone rubber compound that has good heat stability at temperatures up to 500°F.	EXCELOPAX®
	SUPERPAX A—SUPERPAX®
	ZIRCOPAX A—ZIRCOPAX®
	G ZIRCON MILLED
	G ZIRCON GRANULAR
	TICON B BARIUM TITANATE
	TICON HG HEAVY GRADE TiO ₂
	TICON BZ BARIUM ZIRCONATE

*Available in developmental quantities.

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TAM

	EMPIRICAL FORMULA	Color	Wgt. Lbs./ Cu. Ft.	Melt Pt.	H ₂ O	Dil. Acids	Alkalis	Hot Conc. H ₂ SO ₄	HF	Paper Bags Lbs.	Drums or Bbls. Lbs.
	ZrOCl ₂ ·4H ₂ O	Light Yellow	44	Decomposes	Sol.	Sol.	Ppt.	Sol.			250
	ZrOOHCl	Clear			Sol.	Sol.	Ppt.	Sol.			500
	ZrCl ₄	Light Yellow		Sublimes at 330°C.	Sol. Decomposes	Sol. Decomposes	Ppt. Decomposes	Sol. Decomposes			250
	ZrO ₂ ·xH ₂ O	Milk White			Ins.	Sol.	Gels	Sol.			
	H ₂ ZrO ₂ ·(C ₂ H ₃ O ₂) ₂	Clear			Sol.	Sol.	Ppt.	Decomposes			500
	(NH ₄) ₂ ZrOH· (CO ₃) ₂ ·2H ₂ O	Clear			Sol.	Decomposes	Decomposes	Decomposes			500
	ZrO ₂ ·xH ₂ O	White		Decomposes	Ins.	Sol.	Ins.	Sol.			250
	2ZrO ₂ ·CO ₂ ·xH ₂ O	White		Decomposes	Ins.	Sol.	Ins.	Sol.			250
	Na ₂ ZrO(SO ₄) ₂ ·2H ₂ O +SiO ₂	White	77	Decomposes	Pt. Sol.	Pt. Sol.	Decomposes	Pt. Sol.		100	
	5ZrO ₂ ·3SO ₃ ·15½H ₂ O	White		Decomposes	Ins.	Ins.	Decomposes	Sol.			400
	ZrO(NO ₃) ₂	Colorless		Decomposes	Sol.	Sol.	Ppt.	Decomposes			
	ZrO ₂	White to Salmon	72 to 205	4500°F to 4900°F	Ins.	Ins.	Ins.	Sol.	Sol.		
	ZrSiO ₄	White	65-70	Dissociate at approx. 3200°F	Ins.	Ins.	Ins.	Ins.	Sl. Sol.	50	400
	ZrSiO ₄	White	68		Ins.	Ins.	Ins.	Ins.	Sl. Sol.	50	400
	ZrSiO ₄	White	98		Ins.	Ins.	Ins.	Ins.	Sl. Sol.	80	500
	ZrSiO ₄	Gray-White	95		Ins.	Ins.	Ins.	Ins.	Sl. Sol.	100	500
	ZrSiO ₄	Gray-White	184		Ins.	Ins.	Ins.	Ins.	Sl. Sol.	100	500
	BaTiO ₃	Lt. Gray-Buff		3010°F	Ins.	Sl. Sol.	Ins.	Sol.	Sol.	100	100
	TiO ₂	Cream		3250°F	Ins.	Sl. Sol.	Ins.	Sol.	Sol.	100	100
	BaZrO ₃	Lt. Gray-Buff	140	4550°F	Ins.	Sl. Sol.	Ins.	Sl. Sol.	Sol.	100	100

TAM products continued on next page.

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National Lead



Titanium Alloy Manufacturing Division

TITANIUM AND ZIRCONIUM PRODUCTS by TAM

Chemical, Ceramic, Electronic and Metallurgical

RUFLUX (Welding)

Ceramic Rutile
Frit Rutile
Potassium Titanate
Sodium Titanate
Treopax®
Alloys Milled

ELECTRONIC TITANATES

Barium Titanate
Bismuth Titanate
Calcium Titanate
Cerium Titanate
Magnesium Titanate
Nickel Titanate
Strontium Titanate
H. G. Titanium Oxide
Lead Titanate
Lead Zirconate Titanate
Zinc Titanate 'B'

ELECTRONIC STANNATES

Barium Stannate
Calcium Stannate
Cerium Stannate
Magnesium Stannate
Strontium Stannate

CERAMIC (Opacifiers)

Superpax®
Superpax A
Zircopax®
Opax®
Excelopax®
Zirconium Silicates
Zirconium Double Silicates

CERAMIC CEMENTS

Zircon Cements
Zirconium Oxide Cements

METALLURGICAL

Zirconium Hydride
Titanium Carbide
Zirconites
Zirconia
Alloys
Fused Salts

ELECTRONIC ZIRCONATES

Barium Zirconate
Bismuth Zirconate
Calcium Zirconate
Cerium Zirconate
Lead Zirconate
Magnesium Zirconate
Strontium Zirconate

TAM SERVICE

In developing commercial application for the elements Titanium and Zirconium, TAM has also developed many benefits for the users of these products. An experienced technical staff and specialized research facilities are equipped to cope with problems peculiar to the variety of industrial applications for TAM products. By means of continuing research, products are being developed or adapted to meet changing demands. Extensive raw material deposits assure a continuous supply.

WHERE TO GET DETAILED DATA

The field engineer servicing your territory will be most willing to supply complete data. However, to obtain an immediate answer whether it concerns products, research developments, prices, engineering assistance or matters of similar nature, please contact our New York City Headquarters at 111 Broadway.

FIELD ENGINEERS

TAM resident development engineers are headquartered near key chemical centers to provide personal assistance when needed.

Addresses

Titanium Alloy
Manufacturing
Division

EXECUTIVE AND SALES OFFICES

Dept. CM, 111 Broadway, New York, N. Y. 10006

GENERAL OFFICES, WORKS AND RESEARCH LABORATORIES

Niagara Falls, N. Y.

Please direct inquiries to our New York City General Sales Office for prompt attention.

CANADIAN REPRESENTATIVES

ENELCHEM PRODUCTS, Division of Canadian Titanium Pigments Ltd.

2140 Sun-Life Bldg., Montreal 110, Que. • Terminal Warehouse, Toronto 1, Ont.

1575 W. Georgia St., Vancouver 5, B. C.

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