chemicals for industry

National Lead NL

index OF CHEMICAL MATERIALS AVAILABLE FROM NATIONAL LEAD COMPANY AND ITS DIVISIONS AND SUBSIDIARIES

pigments & chemicals division
CHEMICALS

VINYL STABILIZERS (LEAD)

PRODUCT	PRINCIPAL USE	COMPOSITION	Mol. Wt.	Color & Form	Fineness (Retained on 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.
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®[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

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.

chemicals continued

Basic Lead Content % Total PbO (Average)	Basic Lead Content % Safely Reactive PbO (Average)	Specific Gravity	Refractive Index	Standard Package (Net. Wt.) Fiberboard Drums (Except as noted)	REMARKS
89	67.3	6.4	2.1	400 lb.	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
68	50.8	4.9	2.1	50 lb. bags	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
79.8	54.6	4.5	1.99 (av.)	250 lb.	Also supplied as a paste in DNODP plasticizer for ease in dispersion.
89	59	6.1	2.25	300 lb.	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 lb. bags	
90	72.5	6.5	2.1	325 lb.	
55.5	44	3.6	2.1	400 lbs.	Surface treated to reduce dusting.
55.3	36.5	2.0	1.60	225 lb.	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	135 lb. 150 lb.	PLUMB-O-SIL C is specially treated for easy dispersion.
46.5	....	2.3	1.78 (av.)	200 lb.	
89	66.5	6.3	2.08	400 lb.	
29.5	....	1.4	1.58-1.60	225 lb.	Melting point, 100°C.-115°C. 1.2% max. retained on 100 mesh sieve.

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

		1.4	1.56 (Max.)	225 lb.	Supplied as a two package system— PROVINITE A and PROVINITE B.
....	....	0.9	1.45	375 lb. (55-gal. metal drums)	
....	....	1.5	1.48	60 lb. (5 gal. cans)	Supplied only as a 70% solids content paste in DOP.
....	....	2.5	1.50	50 lb.	
....	....	1.3	....	100 lb.	

chemicals continued

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® 18-C For polar systems. Especially useful where pigment suspension is desired without strong thickening action, as in the case of aerosol paints.	Organic derivatives of hydrous magnesium aluminum silicate minerals. **For organic systems.**	3.0% max.	less than 1 micron	1.85	15.4	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.	less than 1 micron	1.7	14.2	50 lb. bags
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.	less than 1 micron	1.8	15	50 lb. bags
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.		3.5% max.	less than 1 micron	1.8	15	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.		6.0% max.	less than 5 microns	2.0	16.7	50 lb. bags
BEN-A-GEL® **BEN-A-GEL® EW**	Highly beneficiated hydrous magnesium silicates. **For Aqueous Systems**	6% ± 2%	Less than 0.1 Micron	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*

*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.

pigments & chemicals division NL oncor

ONCOR PIGMENTS

CHEMICAL MATERIAL	NAME BRAND	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.
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.

pigments & chemicals division

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111 Broadway,
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P.O. Box 7109

IN CANADA
ENELCHEM PRODUCTS
Division of Canadian Titanium Pigments, Ltd.

MONTREAL 2, QUEBEC
1401 McGill College Avenue

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

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

baroid division

BAROID DIVISION is one of the world's largest manufacturers and suppliers of natural and synthetic clays, amines, organic colloids, and chemicals made from these materials.

CHEMICAL MATERIALS	BRAND NAME	DESCRIPTION & APPLICATIONS	NET WT. STD. PKG.
CANADIAN BENTONITE	ALBERTABOND	High-yield bentonitic clay for use as foundry sand binder, pelleted feed binder.	50 lb bag
SOUTHERN BENTONITE	BARABOND®	Low-yield bentonitic clay for use as non-ferrous foundry sand binder.	50 lb bag
WESTERN BENTONITE	NATIONAL®	High-yield bentonitic clay foundry sand binder, pelleted feed binder, sealer for ponds and ditches.	50 lb bag
TEXAS BENTONITE	CERCLAY	Medium-yield bentonitic clay for use as non-ferrous foundry sand binder, pelleted feed binder.	50 lb bag
MAGNESIUM SILICATE CLAY	MH BENTONITE	Hectorite clay used in refractory linings.	50 lb bag
ORGANOPHILIC CLAY	TANSUL® 7	Organophilic clay used as a precipitating and clarifying agent in brewing, paper manufacturing.	25 lb bag
MODIFIED ORGANOPHILIC CLAY	PROPALOID® T	Chemically modified organophilic clay used as gelling agent in paint, pharmaceuticals, cosmetics.	25 lb bag
BENEFICIATED HECTORITE	MACALOID®	Organopihlic clay for suspending, absorbing, purifying, gelling.	25 lb bag
ORGANOPHILIC CLAY	BENTONE®	Chemically modified clay mineral used as grease gelling agent.	25 lb bag
ORGANOPHILIC CLAY	BARAGEL®	Chemically modified high-yield bentonite used as grease gelling agent.	50 lb bag
MODIFIED ORGANOPHILIC CLAY	NYKON®	Special gelling agent for non-corrosive greases.	50 lb bag
BARITE AGGREGATE	BARAWATE®	High density barite for making heavy concrete for use in atomic shielding and as coating for pipelines.	50 lb bag
ORGANOPHILIC CLAY	PETROTONE®	Non-gelling colloid imparting suspension to oil with little effect on viscosity.	50 lb bag
ORGANOPHILIC CLAY	GELTONE®	Gel-forming colloid that gives viscosity, gel strength and suspension properties to oils.	50 lb bag
SURFACTANT	E Z MUL	Emulsifier for water-in-oil emulsions.	50 lb bag
ORGANOPHILIC ORGANIC COLLOID	DURATONE®	Oil dispersible colloid designed to control filtration properties.	50 lb bag
POLYSACCHARIDE	DEXTRID®	Stabilized, partially dextrinized, toxic flocculent.	50 lb bag
PREGELATINIZED STARCH	IMPERMEX®	Non-toxic powder filtration control agent for drilling fluids.	50 lb bag
BARIUM SULFATE	GROUND BARITE	For use in industrial radio-active shielding.	50 lb bag
ATTAPULGITE CLAY	ZEOGEL®	Viscosifier for salt water type systems.	50 lb bag
LIGNITIC DISPERSANT	CARBONOX®	Alkaline soluble lignitic dispersant and thinning agent.	50 lb bag
LIGNITIC DISPERSANT	CC-16®	Solubilized alkaline lignitic thinner and dispersant.	50 lb bag
SURFACTANTS	CLEAR	Removal and prevention of paraffin deposition.	55 gal drum

baroid division continued

CHEMICAL MATERIALS	BRAND NAME	DESCRIPTION & APPLICATIONS	NET WT. STD. PKG.
FILM-FORMING AMINES	COAT	Selected polar amine-salt corrosion inhibitors.	55 gal drum
DEMULSIFIERS	DROP	Compounds for breaking water-in-oil emulsions.	55 gal drum
AMINE-PHENOL COMPOUNDS	SURFLO	Compounds for inhibiting scale deposition, hydration, and for bactericides.	55 gal drum
BARIUM CARBONATE	ANHYDROX®	Precipitated barium carbonate used to remove calcium sulfate from hard water.	50 lb bag
FATTY PRIMARY AMINES	BD-AMINE	Flotation reagent used in mining silica, mica, feldspar, potash, phosphate, etc.	55 gal drum
FATTY SECONDARY AMINES	BD-AMINE 2	Chemical intermediates used in manufacturing textile chemicals.	55 gal drum
MONOFATTY DIMETHYL TERTIARY AMINES	BD-AMINE 2M	Chemical intermediates used in manufacturing insecticides, cosmetics, textile,chemicals.	55 gal drum
MONOMETHYL DIFATTY TERTIARY AMINES	BD-AMINE M2	Chemical intermediate for manufacturing bactericides, textile softeners, gelling agents.	55 gal drum
TRIFATTY TERTIARY AMINES	BD-AMINE 3	Solvent extraction processing of uranium and other rare metals.	55 gal drum
MONOFATTY, TRIMETHYL AMMONIUM CHLORIDE QUATERNARY AMINES	BD-QUAT	Chemical used as a bactericide, antistatic agent, germicide.	55 gal drum
DIFATTY, DIMETHYL AMMONIUM CHLORIDE QUATERNARY AMINES	BD-QUAT 2	Chemical used for textile softening.	55 gal drum
QUATERNARY AMINE MIXTURES	BD-QUAT 1 & 2	Chemical blends used in manufacturing bactericides, corrosion inhibitors.	55 gal drum
DIAMINE ACETATE	BD-DIAMINE AC	Industrial water treating agent.	55 gal drum
DIAMINE ADIPATE	BD-DIAMINE AD	Industrial water treating agent.	55 gal drum
DIAMINE DIADIPATE	BD-DIAMINE 2AD	Industrial water treating agent.	55 gal drum
DIAMINE MONOLEATE	BD-DIAMINE OLEATE	Petroleum additives, anti-strippants, corrosion inhibitors.	55 gal drum
DIAMINE DIOLEATE	BD-DIAMINE 2 OLEATE	Petroleum additives, corrosion inhibitors, anti-strippants.	55 gal drum
PRIMARY AMINE ACETATE	BD-AMAC	Chemical reagent for flotation, industrial water treating.	55 gal drum

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
614 Philtower Building
Tulsa, Oklahoma 74103

UPPER TEXAS GULF COAST AREA
P. O. Box 631
Liberty, Texas 77575

LOWER 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.
840 Guinness House
Calgary, Alberta, Canada

titanium alloy manufacturing division

NL TAM

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) SODIUM ZIRCONIUM GLYCOLATE SOLUTION ZIRCONIUM GLYCOLATE *ZIRCONIUM ACETYLACETONATE *ZIRCONYL NITRATE SOLUTION
ZIRCONIUM OXIDE AND STABILIZED ZIRCONIUM OXIDE ZrO_2 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.	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.

titanium alloy manufacturing division continued TAM

(approximate physical properties)

EMPIRICAL FORMULA	Color	Wgt. Lbs./ Cu. Ft.	Melt Pt.	SOLUBILITY H_2O	Dil. Acids	Alkalis	Hot Conc. H_2SO_4	HF	STANDARD PKGS. Paper Bags Lbs.	Drums or Bbls. Lbs.
$ZrOCl_2.8H_2O$	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
$ZrO_2.xH_2O$	Milk White			Ins.	Sol	Gels	Sol			
$H_2ZrO_2(C_2H_3O_2)_2$	Clear			Sol.	Sol	Ppt.	Decomposes			500
$(NH_4)_2ZrOH-(CO_3)_2.2H_2O$	Clear			Sol.	Decomposes	Decomposes	Decomposes			500
$ZrO_2.xH_2O$	White		Decomposes	Ins.	Sol	Ins	Sol			250
$2ZrO_2.CO_2.xH_2O$	White		Decomposes	Ins.	Sol	Ins	Sol			250
$Na_2ZrO(SO_4)_2.2H_2O + SiO_2$	White	77	Decomposes	Pt. Sol.	Pt. Sol.	Decomposes	Pt. Sol.		100	
$NaH_3ZrO-(HCHOCO_2)_3$	Clear			Sol.	Decomposes	Decomposes	Decomposes			5 gal. pail 50 gal. drum
$H_4ZrO(HCHOCO_2)_3$	White		Decomposes	Sl. Sol.	Sl. Sol.	Sol	Decomposes			250
$Zr(C_5H_7O_2)_4$	White		Decomposes	Sl. Sol.	Sl. Sol.	Decomposes	Decomposes			
$ZrO(NO_3)_2$	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	68		Ins.	Ins.	Ins.	Ins.	Sl. Sol.	50	400
$ZrSiO_4$	White	98	Dissociate at approx. 3000°F	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 *titanium alloy manufacturing division continued*

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

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.

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.
1401 McGill College Avenue, Montreal 2, Que. • Terminal Warehouse, Toronto 1, Ont.
1575 W. Georgia St., Vancouver 5, B. C.

de lore 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 1¾ 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 1¾ 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.

de lore division
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617-527-0762

Oakbrook, Illinois
The Cary Co. 312-654-1135

Cincinnati, Ohio
National Lead Co.
513-922-4100

Cincinnati, Ohio
G. H. Roettker & Co.
513-661-0011

Cleveland, Ohio
Harshaw Chemical Co.
216-721-8300

Dallas, Texas
Thompson Hayward
Chemical Co. 214-331-6521

Denver, Colorado
Herr-Hartnell Co.
303-534-7350

Des Moines, Iowa
Thompson Hayward
Chemical Co. 515-244-2281

Detroit, Michigan
Baker & Collinson, Inc.
313-366-2100

Houston, Texas
Thompson Hayward
Chemical Co. 713-869-5801

Kansas City, Missouri
Thompson Hayward
Chemical Co. 913-342-6800

Los Angeles, California
A. J. Lynch & Co.
213-583-2271

Louisville, Kentucky
Wm. B. Tabler Co.
502-634-0596

Minneapolis, Minnesota
Thompson Hayward
Chemical Co. 612-332-5394

New Orleans, Louisiana
North American Sales Co.
504-834-5411

New York, New York
Columbian Carbon Co.
212-687-2300

Philadelphia, Pennsylvania
Dowdy Brothers
215-222-8083

Pittsburgh, Pennsylvania
National Lead Co.
412-321-2335

Seattle, Washington
National Lead Co.
206-622-1950

IN CANADA

ENELCHEM PRODUCTS
Division of Canadian
Titanium Pigments, Ltd.

MONTREAL, QUEBEC
514-844-1106

TORONTO, ONTARIO
416-363-2454

VANCOUVER, BRITISH
COLUMBIA 604-685-0813

goldsmith division
PRECIOUS METALS — Base Chemicals

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

titanium pigment corporation

THE WORLD'S MOST COMPLETE LINE OF TITANIUM PIGMENTS
A type to fit the manufacturing process and the properties
of virtually any product that needs white pigment.

THE TITANOX "RA" PIGMENTS

The rutile "pure" titanium dioxide pigments. "R"-rutile, "A"-titanium dioxide.

	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.	
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-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-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	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

titanium pigment corporation continued

THE TITANOX "A" PIGMENTS

The anatase "pure" titanium dioxide pigments.

	TYPE OF PIGMENT	MEETS THE FOLLOWING SPECIFICATIONS
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.	A.S.T.M. D-476 Type I Anatase
TITANOX A-WD	Water dispersible for paper, especially beater addition.	A.S.T.M. D-476 Type I Anatase
TITANOX A-MP	Exceptionally easy dispersion, color retentive, chalking; highest tinting strength of anatase; truly multi-purpose.	A.S.T.M. D-476 Type I Anatase
TITANOX A-WG	Welding rod coatings.	
TITANOX TGA	Highly purified; Cosmetic grade.	Toilet Goods Association; Federal Drug Administration; U.S. Formulary; U.S. Pharmacopoeia

THE TITANOX "C" PIGMENTS

Titanium dioxide (rutile)-calcium sulfate pigments. "C" for calcium sulfate extender.

	TYPE OF PIGMENT	MEETS THE FOLLOWING SPECIFICATIONS
TITANOX C-50	Approx. 50% TiO_2. General utility; strongest "C" pigment.	A.S.T.M. D-476-66 Military MIL-T-15195A U.S. Maritime Commission 52-MA-521a
TITANOX RC	Approx. 30% TiO_2. "Non-chalking," exterior paint grade.	
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 FM-A	Frit makers. Porcelain enamels and glazes.	
TITANOX GM	Glass makers. Free flowing. Low dusting characteristics.	

ENELCHEM TITANYL SULPHATE CAKE

Standard Packaging of TITANOX pigments is 50 lb. paper bags.
Standard Packaging of ENELCHEM TITANYL SULPHATE CAKE is 300 lb. fiber drums.

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titanium pigment corporation continued

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.

NATIONAL LEAD COMPANY • TITANIUM DIVISION

The following products are offered by National Lead Company, Titanium Division, 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 TITANIUM HYDRATE PULP**
- **ENELCHEM TITANYL SULFATE SOLUTION**
- **ENELCHEM TITANYL CHLORIDE SOLUTION**

ENELCHEM is a trademark of The National Lead Company

titanium pigment corporation

GENERAL OFFICE
111 Broadway, New York, N.Y. 10006
Tel. 212-732-4942

SALES OFFICES
Atlanta, Ga. 30305
3272 Peachtree Rd., N.E.
404-261-2223

Baltimore (Towson), Md. 21204
724 York Rd.
301-828-8155

Boston, Mass. 02119
800 Albany St.
617-427-3710

Chicago, Ill. 60603
104 So. Michigan Ave.
312-726-8494

Cleveland, Ohio 44113
2208 Terminal Tower
216-241-7195

Houston, Texas 77027
5115 Westheimer
713-622-3553

Los Angeles, Calif., 90022
6449 Corvette St.
213-723-6501

Oakland, Calif. 94601
4825 San Leandro St.

Phila. (Bala Cynwyd) Pa. 19004
One Belmont Ave.
215-839-4475

Pittsburgh, Pa. 15212
1376 River Ave.
412-321-2335

Portland, Ore. 97214
49 S.E. Clay St.
503-235-6689

St. Louis, Mo. 63111
Carondelet Station
314-353-3980

30 warehouses are strategically located throughout the country

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