



Chemicals for Industry

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N 2634



Chemicals for Industry

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BARIUM SILICATE COMPLEX (VINYL STABILIZER)	CHEMICALS	4	MAGNESIUM ZIRCONATE	TAM	14
LEAD CHLOROSILICATE COMPLEX (VINYL STABILIZER)	CHEMICALS	4	SODIUM ZIRCONIUM SILICATE	TAM	14
LEAD CHLOROSILICATE-SULFATE COMPLEX (VINYL STABILIZER)	CHEMICALS	4	SODIUM ZIRCONIUM SULFATE (TECHNICAL GRADE)	TAM	12
LEAD ORTHOSILICATE-SILICA GEL COPRECIPITATE (VINYL STABILIZER)	CHEMICALS	4	STRONTIUM ZIRCONATE	TAM	12
LEAD SILICATE SULFATE, BASIC	CHEMICALS	4	ZIRCON G (MILLED OR GRANULAR)	TAM	12
LEAD SILICO CHROMATE, BASIC	ONCOR	7	ZIRCONIA, COLLOIDAL	TAM	14
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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, BRAKE LINING.

Addresses

De Lore Division

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SALES REPRESENTATIVES

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NL Industries, Inc.
404-876-7361

BOSTON, MASSACHUSETTS
NL Industries, Inc.
617-762-7400

CHICAGO AREA, ILLINOIS
The Cary Company
312-629-6600

CINCINNATI, OHIO
NL Industries, Inc.
513-922-4100

CLEVELAND, OHIO
Chem-Materials Co., Inc.
216-961-4400

DALLAS, TEXAS
Thompson-Hayward Chemical Co.
214-638-8034

DALTON, GEORGIA
Latex Filler & Chemical Co., Inc.
404-278-4998

DENVER, COLORADO
Herr-Hartnell Company
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, KANSAS
Thompson-Hayward Chemical Co.
913-342-6800

LOS ANGELES, CALIFORNIA
A. J. Lynch & Company
213-583-2271

LOUISVILLE, KENTUCKY
Wm. B. Tabler Company
502-634-0596

MINNEAPOLIS, MINNESOTA
Thompson-Hayward Chemical Co.
612-332-5394

NEW YORK, NEW YORK
Cities Service Company
212-422-1600

PHILADELPHIA, PENNSYLVANIA
Dowdy Brothers
215-642-8663

PITTSBURGH, PENNSYLVANIA
Chem-Materials Co., Inc.
c/o Chemply, Inc.
412-462-7134

SAN FRANCISCO AREA, CALIFORNIA
A. J. Lynch & Company
415-632-2520

SEATTLE, WASHINGTON
NL Industries, Inc.
206-622-1950

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ENELCHEM PRODUCTS
Division of Canadian
Titanium Pigments, Ltd.

MONTREAL, QUEBEC
514-866-2401

TORONTO, ONTARIO
416-363-2454

VANCOUVER, BRITISH COLUMBIA
604-685-0813



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.	
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 external type lubricant for rigid vinyl compounds. Does not retard compound fusion.	Lead-calcium soap of mixed organic acids	.....	Off-white flakes		
PLASTIFLOW [™] PL-1	Costabilizer and external type lubricant for rigid vinyl compounds. Does not retard compound fusion.	Lead soap complex basic	.....	Light tan 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)

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-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-R-1.5% Max.	

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	Basic Lead Content % Total PbO % Safely Reactive PbO (Average)		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.	
	78	59	3.6		400 lbs. (fiberboard drum)	Very fine particle size lead stabilizer with special wax coating. Fluidity point 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	50 lbs.	Surface treated to reduce dusting.
	55.3	36.5	2.0	1.60	50 lbs.	Non-melting at high temperatures.
	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.
	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.
	36	....	1.7	....	200 lbs. (fiberboard drum)	Fluidity point 70°C.

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

	....	....	2.5	1.50	70 lbs. (fiberboard drum)	
	....	....	1.3	....	100 lbs. (fiberboard drum)	

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-51 Heat and light stabilizer for high clarity flexible vinyl compounds.	Dibutyl tin diarsenate	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.	Highly beneficiated hydrous magnesium silicates. For Aqueous Systems	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.		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.

FLAME RETARDANTS

PRODUCT	DESCRIPTION & APPLICATION	COMPOSITION	COLOR & FORM	SPECIFIC GRAVITY
ONCOR® 75RA	ONCOR 75RA flame retardant is a complex antimony compound containing a lower level of metal than found in conventional antimony based flame retardants. When used in conjunction with halogen containing resins or additives, a highly efficient flame retardant system is obtained.	Complex antimony compound	Fine white powder	3.3
ONCOR® 23A	ONCOR 23A is a unique pigment, composed of an inert silica core of low specific gravity, with a surface layer of antimony oxide fused to the core. It imparts flame resistance to paint and plastic compositions based on halogenated resins. Oncor 23A pigment provides unusually low reactivity, which is particularly useful in polyurethanes.	Antimony silico oxide	White powder	3.6
ANTIMONY OXIDE*	ANTIMONY OXIDE is a fine white pigment, widely used as a flame retardant in paints and plastics containing chlorinated or other halogenated constituents. In addition, it functions as an opacifier in vitreous enamels and as a decolorizer in glass.	Antimony trioxide	Fine white pigment	5.3-5.6

*Available in four standard grades: Regular, Red Star, White Star Grade M and Grade 10. Each is a high quality, pigment grade, pure antimony trioxide.



Pigments & Chemicals Division

PAINT PIGMENTS

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® F31	Similar to M50 but finer particle size. For use in electrocoating and dipping 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.
DIBASIC LEAD PHOSPHITE	DYPHOS® PG	A white anticorrosive pigment for wood and metal coatings, both water and solvent base. Also effective for tannin stain control.

ALSO AVAILABLE: WHITE LEAD AND RED LEAD PIGMENTS, LITHARGE

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

SPECIAL CHEMICALS

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.

NORMASAL®

Normal lead salicylate, useful as a light screening agent in plastics and paints, as a retarder in vulcanization of elastomers and as a flame modifier in ballistics.

Addresses

Pigments & Chemicals Division

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CINCINNATI, OHIO 45211
3670 Werk Road

CLEVELAND, OHIO 44113
1776 Columbus Road

DALLAS, TEXAS 75222
P.O. Box 5449

DEPEW, N. Y. 14043
3241 Walden Avenue

DETROIT, MICH. 48211
3501 Griffin Street

LOS ANGELES, CAL. 90023
P.O. Box 23396, Lugo Station

PHILADELPHIA, PA. 19125
2607 E. Cumberland Street

PITTSBURGH, PA. 15212
1376 River Avenue

OAKLAND, CALIF. 94601
4701 San Leandro Street

SEATTLE, WASH. 98134
1128 S.W. Spokane St.

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

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.

0000-NLI-000019623



Baroid Division

BRAND NAME	MATERIALS & APPLICATIONS	STD. PKG.
AKTAFLO®-S (E)	S-Surfactant, E-Emulsifier for well drilling fluids.	55 gal drum
ALBERTABOND™	High-yield Canadian bentonite for use as a binder in foundry sand and pelleted feed.	50 lb bag
ALDACIDE™	Formaldehyde compound for fermentation control in well drilling fluids.	100 lb bag
AQUAGEL®	High-yield Western bentonite used primarily in well drilling fluids.	100 lb bag
BARABOND®	Low-yield Southern bentonite used as a non-ferrous foundry sand binder.	50 lb bag
BARAFLOC®	Clay flocculant for low solids drilling fluids.	1 lb bag
BARAFOS®	Polyphosphate thinner for well drilling fluids.	100 lb bag
BARAGEL®	Organophilic clays used as grease gelling agents.	50 lb bag
BARASYM™	A group of synthetic silicates.	50 lb bag
BARAWATE®	High density barite for making heavy concrete for use in atomic shielding and pipeline coatings.	100 lb bag
BAROCHEM™	Group of compounds for inhibiting corrosion and scale, and eliminating oxygen in cooling and boiler waters.	450 lb fiber drum, 55 gal drum
BAROCO®	High-yield Southern bentonite used primarily in well drilling fluids.	100 lb bag
BAROID®	Pulverized barite used to weight well drilling fluids.	100 lb bag
BARONITE®	Mixture of bentonite and humate used as a foundry sand binder.	50 lb bag
BD AMINE™	A group of primary, secondary and tertiary amines used in compounding corrosion inhibitors, textiles, rubber and other materials.	55 gal drum
BD DIAMINES™	A group of 1-3 propylene diamines used in petroleum additives, chemical formulations, etc.	55 gal drum
BD QUATS™	Alkyl ammonium chlorides used as corrosion inhibitors, fabric softeners and chemical intermediates.	55 gal drum
BENTONE®	Organophilic clays used as grease gelling agents.	25 lb bag
CARBONOX®	Alkaline soluble lignitic thinning agent used primarily in well drilling fluids.	50 lb bag
CC-16®	Solubilized lignitic thinning agent used primarily in well drilling fluids.	50 lb bag
CERCLAY™	Medium yield Texas bentonite used as a binder in foundry sands and pelleted feeds.	50 lb bag
CLEAR™	A group of paraffin solvents and inhibitors.	55 gal drum
COAGULOID™	Bentonitic clay for use in water clarification.	50 lb bag
COAT™	A group of cationic, amine based corrosion inhibitors.	55 gal drum
DEXTRID®	Stabilized, partially dextrinized polysaccharide used as a flocculant in well drilling fluids.	50 lb bag

0000-NLI-000019624

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.

BRAND NAME	MATERIALS & APPLICATIONS	STD. PKG.
DROP™	A group of compounds for breaking water/oil emulsions.	55 gal drum
DURATONE®	Oil dispersible colloid for controlling filtration in oil based drilling fluids.	50 lb bag
E P MUDLUBE®	Extreme pressure lubricant for well drilling fluids.	55 gal drum
E Z MUL™	Water emulsifier for oil based drilling fluids.	50 lb bag
GELTONE®	Viscosifier for oil based drilling fluids.	50 lb bag
IMPERMEX®	Pregelatinized starch powder used for filtration control in well drilling fluids.	50 lb bag
INVERMUL®	Emulsifier for water-in-oil drilling fluids.	50 lb bag
MACALOID®	Beneficiated hectorite used as an agent in gellation and purification.	25 lb bag
NATIONAL®	High-yield bentonite for use as a foundry sand binder, pelleted feed binder and pond sealer.	50 lb bag
NYKON®	Organophilic clay gelling agent for compounding non-corrosive greases.	50 lb bag
PETRO BOND®	Waterless foundry sand binder.	50 lb bag
PETROTONE®	Organophilic clay that imparts suspension to oil based drilling fluids.	50 lb bag
PROPALOID® T	Chemically modified clay gelling agent for paint, pharmaceuticals and cosmetics.	25 lb bag
QUIK-GEL®	High-yield bentonite used in water well, mining and seismic drilling fluids.	50 lb bag
SKOT FREE®	Selected, highly polar petroleum derivatives used to free stuck drill pipe.	55 gal drum
SURFLO™	A group of water treating compounds used for scale inhibition, bactericides and surfactants.	55 gal drum
TANSUL® 7	Beneficiated clay used as a clarifying agent in brewing and paper manufacturing.	25 lb bag
TORQ-TRIM™	Biodegradable drilling fluid lubricant.	55 gal drum
TRIMULSO®	Non-ionic surfactant and emulsifier used in drilling fluids.	55 gal drum
TRIP-WATE™	Coarse ground barite used to temporarily weight drilling fluids.	100 lb bag
ZEOGEL®	Attapulgite clay used as a viscosifier for salt water mud systems.	100 lb bag

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
912 Security Life 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

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



Titanium Pigment Division

PHYSICAL PROPERTIES (Average Values)

	TITANOX GRADE	PER CENT TiO ₂ (min.)	SP. GRAV.	1 LB. BULKS (U.S. Gal.)	(1) TINTING STRENGTH (Reynolds)	(2) TINTING STRENGTH (Latex)	(3) OIL ABSORPTION	RESISTANCE TO CHALKING	* MEETS SPECS.
RUTILE	RA	97.0	4.20	0.0286	1700		19.5	NONE	B, G
	RA-45	95.0	4.10	0.0293	1875		19.5	MODERATE	C, G
	RA-47	89.0	3.87	0.0310	1775	1875	36.0	MODERATE	H
	RA-48	84.0	3.82	0.0314		2025	45.0	MODERATE	H
	RA-50	94.5	4.10	0.0293	1750		24.5	MODERATE	C, G
	RA-51	93.0	4.10	0.0293	1825	1675	26.5	MODERATE	C, G
	CL	94.0	4.10	0.0293	1875		18.5	MODERATE	C, G
	RANC	94.0	4.10	0.0293	1625		23.5	HIGH	D, I
	RANC-1	94.0	4.10	0.0293	1750		21.5	HIGH	D, I
	2020	94.0	4.10	0.0293	1875		17.0	HIGH	C, I
	CL-NC	94.0	4.10	0.0293	1875		18.5	HIGHEST	C, I
	RA-10	98.0	4.20	0.0286	1625		19.0	NONE	B, G
	RA-30	95.0	4.10	0.0293	1875		19.5	MODERATE	C, G
	RA-40-I	96.7	4.20	0.0286	1900 (5)		16.5	NONE	B, G
	RA-41	97.0	4.20	0.0286	1930 (5)		16.5	NONE	B, G
	RA-41-Z	95.1	4.00	0.0300	1880 (5)		16.5	NONE	B, G
	PL	92.0	4.10	0.0293	1575		26.5	VERY HIGH	I
	CL-PL	91.0	4.10	0.0293	1725		22.5	VERY HIGH	I
	2050 (6)	66.0	1.95	0.0614		2025		MODERATE	H (7)
	RCHT	29.5	3.25	0.0369	580		22.5	NONE	E, J
	RCHT-X	29.5	3.25	0.0369	590		21.0	NONE	E, J
ANATASE	C-50	49.0	3.47	0.0345	975		21.0	NONE	J
	RC	29.5	3.25	0.0369	610		21.0	HIGH	E, J
	A-MO	98.0	3.90	0.0308	1200		25.0	NONE	A, F
	A-MP	95.0	3.80	0.0316	1275		23.5	NONE	A, F
	A-WD	98.5	3.90	0.0308	1200		LOW WATER ABSORPTION	NONE	A, F
	A-MWD	98.5	3.90	0.0308	1200		LOW WATER ABSORPTION	NONE	A, F
	A-CG	97.0	3.80	0.0316	1275		18.5	NONE	F
NON-PIGMENTARY	PDA (6)	72.0	2.15	0.0559					F (7)
	GM	99.5							
	FMA	99.4	4.00	0.0300					
	TGA	99.0	3.90	0.0308	1200		25.0	NONE	NATIONAL FORMULARY

The following chemical products are also available:
 COPPERAS (IRON SULPHATE)
 MAGNETITE (Iron Ore)
 TITANIUM TETRACHLORIDE
 TITANYL SULPHATE CAKE
 TITANIUM HYDRATE PULP
 TITANYL SULFATE SOLUTION
 TITANYL CHLORIDE SOLUTION

COMMERCIAL CRYSTALS DEPT.
 STRONTIUM TITANATE BOULE for gem, optical and scientific applications.
 TITANIA BOULE for various scientific applications.
 SPECIAL CRYSTALS can be made upon request.

- (1) Tinting Strength: Reynolds constant volume method—0.5 grams std. TITANOX-A plus 1.25 gm. ultramarine blue (6 parts barytes, 1 part ultramarine blue) plus 0.515 ml. refined linseed oil has tinting strength 1250.
 (2) Numbers are proportional to average brightness of comparable grey latex flats. Higher strength of TITANOX RA-48 is indicative of higher dry hiding at higher pvc levels.
 (3) Oil Absorption: Spatula method expressed as lb. oil per 100 lb. pigment — determined in relation to standard sample under controlled conditions.
 (4) Gradings are not absolute and should be compared only within one field of application. See product description sheets.
 (5) Tinting Strength in Plastics: Plastic Reynolds Tinting Strength (PRTS) of rutile TiO₂ in plastic at 5 PHR, based on TxRA at 1700 RTS.
 (6) Stable dispersion in water.
 (7) Refers to titanium pigment content.

- * SPECIFICATIONS**
 A. Federal TT-P-442b, Type I
 B. Federal TT-P-442b, Type II
 C. Federal TT-P-442b, Type III
 D. Federal TT-P-442b, Type IV
 E. Maritime 52-MA-521b
 Military MIL-P-15195B
 F. ASTM D476-70, Type I
 G. ASTM D476-70, Type II
 H. ASTM D476-70, Type III
 I. ASTM D476-70, Type IV
 J. ASTM D476-70, Extended TiO₂

0000-NLI-000019626



TAM Division

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

SODIUM ZIRCONIUM SILICATE

ZIRCONIUM ACETATE SOLUTION, 22% ZrO_2

AMMONIUM ZIRCONYL CARBONATE SOLUTION

HYDROUS ZIRCONIA

HYDROUS ZIRCONIA (CARBONATED PHARMACEUTICAL or TECHNICAL GRADE)

SODIUM ZIRCONIUM SULFATE (WITH INSOLUBLE SILICA)

BASIC ZIRCONIUM SULFATE (CAKE)

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 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® BT BARIUM TITANATE

TICON® TO HEAVY GRADE TiO_2

TICON® BZ BARIUM ZIRCONATE

(approximate physical properties)
SOLUBILITY

STANDARD PKGS.

	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
	Na ₂ ZrSiO ₃	White		Decomposes	Ins.	Sol	Ins.	Sol		70	
	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 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.

0000-NLI-000019629

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

POLISHING COMPOUNDS

Zirox® B Zirconium Oxide and other compounds for ophthalmic lens, silicon chip and other polishing applications.

CERAMIC (Opacifiers)

Superpax®
Superpax® A
Zircopax®
Zircopax® A
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 Sales Department at Niagara Falls.

FIELD ENGINEERS

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

Addresses

TAM
Division

EXECUTIVE OFFICES

111 Broadway, New York, N.Y. 10006

SALES OFFICE, PLANT AND RESEARCH LABORATORIES

Box C, Bridge Station, Niagara Falls, N.Y. 14305
Tel: 716/BU 5-9304

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.



Goldsmith Division

PRECIOUS METALS

Headquarters for silver chemicals, platinum group chemicals, gold 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 silver brazing products.

Research

Goldsmith is an active participant in NL Industries, Inc. 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 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 CHLORIDE In powder, sheet, strip, blanks or preformed electrodes, this precision-rolled product affords high energy output, compactness and dependable performance in batteries. SILVER CYANIDE SILVER POTASSIUM CYANIDE SILVER IODATE SILVER IODIDE SILVER LACTATE SILVER NITRITE SILVER OXIDE SILVER SULFATE SILVER SULFIDE SILVER SULFITE
Gold 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 IRIIDIUM SALTS

0000-NLI-000019631



The Baker Castor Oil Company

TRADE NAME	DESCRIPTION AND USE
AA® CASTOR OIL	Cold pressed castor oil having light color, high purity and low acidity. Grades available meeting U.S.P. and Federal Specification JJJ-C-86 requirements.
CASTORWAX®	Hydrogenated castor oil (glyceryl tri-hydroxystearate). A white, hard, brittle synthetic wax, insoluble in most organic solvents at room temperature. Used in greases, gasket and impregnating compositions, and wax hot melts. Noted for oil, grease and solvent resistance.
CASTUNG®	Dehydrated castor oil. A conjugated drying oil. Available in several viscosities. Used in varnishes, alkyds and copolymers. Noted for quick dry, flexibility, chemical and water resistance.
CRYSTAL® O	Odorless and tasteless U.S.P. quality castor oil. Specific for cosmetic and pharmaceutical usage. Broadly used in coatings and inks.
DB® OIL	A specially refined castor oil with minimum acidity and moisture content for dielectric and sonar applications; for urethane polymers.
ESTYNOX®	Epoxidized castor and other oils and fatty esters. Plasticizers, heat and light stabilizers; especially in vinyl and cellulotics.
FLEXRICIN®	A group of castor oil (ricinoleic acid) esters including alkyl ricinoleates, acetyl ricinoleates, and polyol ricinoleates. Used as plasticizers for cellulotics, vinyls, and rubbers and for synthesis, cosmetics, brake fluids; in waxes and greases.
HYDRICIN®	Ricinoleic base for hydraulic and functional fluid.
LUBRICIN® N-1	A low viscosity derivative that increases the oiliness and wetting power of mineral oils, decreases corrosion, and exhibits detergent action on tar, varnish, and carbon deposits. Used as an additive for lubricating oils, motor fuels, cutting oils, process lubricants.
M-P-A®	A rheological agent used in paints and lacquers to prevent pigment settling and to control film flow.
P®-10	Castor oil fatty acids containing approximately 90% ricinoleic acid. Used to enhance dye colors in inks; to impart lubricity and rust-proofing qualities to soluble cutting oils; in germicidal soaps and pharmaceuticals; and in glycerine-free soaps for foam rubber stabilization.
POLYICIN®	A series of castor oil-derived polyols used in the preparation and curing of urethane polymers for protective coatings, foamed insulation and elastomers. Viscosities increase to an elastic, tacky, gel-like solid (resulting from the complete oxido-polymerization of castor oil). Used in rubber compounding and as a polymeric plasticizer.
POST-4®	A liquid, stir-in rheological agent for paints and lacquers to prevent pigment settling and excessive film flow.
SOLRICIN®	A series of aqueous solutions of ricinoleate soaps. Used in cutting oils, shampoos, foamed rubber and as emulsifiers and defoamers.



The Baker Castor Oil Company

17

TRADE NAME	DESCRIPTION AND USE
SULFRICIN®	A modified castor oil of increased hydroxyl content used as a sulfonation base oil.
SURFACTOL®	A series of non-ionic surfactants including a water dispersible grade of glyceryl monoricinoleate, and alkoxy adducts of castor oil. Used as emulsifiers, defoamers, plasticizers, solubilizers for oils, dyes, lubricants, in emulsion paints, pigment dispersions, cosmetics and polishes.
THIXATROL®	A powder rheological agent for paints, lacquers, caulks, sealants, etc. to prevent pigment settling and to control flow.
THIXIN®	A powder rheological agent for paints, lacquers, caulks, sealants, etc., to prevent pigment settling and control flow.
VORITE®	A series of urethane prepolymers based on ricinoleates. Used for potting, casting, adhesives, binders, foams and coatings.
9-11® ACID	Water white conjugated drying oil acids derived from dehydrated castor oil. Used for producing alkyds, epoxy esters, copolymers, etc.
POLYMERIZED CASTOR OIL	Two series of castor oils which have been oxidized. Viscosity increases throughout both series (a Pale and a regular series). Plasticizers for cellulotics; tackifiers; grease ingredients.
FATTY ACIDS	Fatty acids obtained from castor oil including ricinoleic, hydroxystearic, linoleic, undecylenic, heptanoic.
HYDROXY WAXES	Synthetic waxes produced from ricinoleic and hydroxystearic acids. Processing aids for plastics; plug valve lubricants; investment waxes; hot melts.
XXX-1	A mineral oil soluble castor oil useful as a lubricity additive.
HEPTALDEHYDE	A pyrolytic derivative of castor oil. Useful in perfumes and flavors.
HEPTYL ALCOHOL	A pyrolytic derivative of castor oil. Chemical intermediate.

BAKER SALES OFFICES

NEW YORK METROPOLITAN AREA

The Baker Castor Oil Co.
40 Avenue A
Bayonne, New Jersey 07002
Area Code 201-436-8800
Area Code 212-349-0500

CHICAGO METROPOLITAN AREA

The Baker Castor Oil Co.
605 E. Algonquin Road
Arlington Heights, Illinois 60005
Area Code 312-439-7350-1-2

LOS ANGELES METROPOLITAN AREA

The Baker Castor Oil Co.
5585 East 61st Street
Los Angeles, California 90022
Area Code 213-RA 3-1318

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NL INDUSTRIES, INC.

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