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PRODUCTS 1961

Monsanto

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MONSANTO CHEMICAL COMPANY

Monsanto Chemical Company is one of the largest chemical, plastics and petroleum products companies in America. The company is "basic" in phosphorus and phosphates, plastics, petroleum products and many organic chemicals . . . relying on no other company for raw materials. As a basic producer, supplies of chemicals, plastics and petroleum products from Monsanto are stable in price and the user is most assured of steady, dependable delivery.

Monsanto is organized into seven divisions, each operating in the production, sales and servicing of its own groups of products. These divisions are:

COVER DESIGN: Molecules from Monsanto's film "The World That Nature Forgot"

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the organic chemicals division

. . . with headquarters at St. Louis, Missouri, produces a wide array of chemicals for industry and agriculture. These include fine chemicals, chemical intermediates, plasticizers, agricultural chemicals, petroleum additives, resin materials, paper chemicals, functional fluids, aviation fluids, industrial fluids and rubber chemicals. The Organic Chemicals Division maintains complete research and development facilities and each department provides its customers with technical service on the products sold.

the inorganic chemicals division

. . . with headquarters at St. Louis, Missouri, maintains extensive research, manufacturing and marketing facilities to serve an increasingly broad spectrum of industry and agriculture. As the world's largest producer of elemental phosphorus, the Division markets such diverse phosphate materials as leavening agents, detergent "builders," food and feed additives. It also produces a full family of anionic and nonionic surface active agents; basic processing chemicals like sulfuric and muriatic acids; silica specialties serving paint and packaging, industrial floor wax and foundry customers; electronic chemicals including ultrapure silicon metal and intermetallic compounds. Serving agriculture are the Division's fertilizer manufacturing solutions and ready-to-use "Lion" brand nitrogen fertilizers: ammonium nitrate, urea and anhydrous ammonia.

the plastics division

. . . with headquarters at Springfield, Massachusetts, is one of the most diversified producers of resins and plastics in the country. The Plastics Division produces its own basic monomers for styrene, ethylene, vinyl and acrylonitrile polymers and copolymers and offers molders, coaters, extruders and fabricators a wide variety of plastics compositions. Among these are styrene-type plastics; phenolformaldehyde resins and plastics; melamines, cellulosics, polyethylene and vinyl butyral compositions for

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molding, coating, extruding, laminating and impregnating. Monsanto is a pioneer in compositions for safety glass inter-layer and a major supplier of polystyrene molding compounds.

the overseas division

. . . with headquarters at St. Louis, Missouri, markets all the company's products for export. All Monsanto products for overseas purchase can be obtained through this division.

the research and engineering division

. . . with headquarters at St. Louis, Missouri, offers engineering and construction facilities in the erection of vanadium-catalyst sulfuric acid plants (which can convert any primary or waste source of sulfur to acid) and De Nora Cell chlorine plants.

the lion oil company division

. . . with headquarters at El Dorado, Arkansas, engages in all phases of oil activity including exploration, production, research, manufacturing and marketing. The more than 90 Lion products include gasolines, Naturalube motor oils, paving and roofing asphalts, protective coatings and hydrocarbons for petrochemical manufacturing.

the domestic subsidiaries and affiliates division

. . . with headquarters at St. Louis, Missouri, administers Monsanto's interests in its domestic subsidiary, associated and affiliated companies.

Monsanto products are produced, sold and serviced from plants and sales offices located throughout the world. Subsidiary companies are located in Canada, Great Britain, Argentina, Australia, Japan, and Mexico.

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Trade-marks which are registered in the U. S. Patent Office are marked with an asterisk (*). Registered trade-marks must be identified when they appear in print. This can be done either by the statement that they are registered marks, by use of an asterisk after the trade-mark referring to the abbreviated notice, "Reg. U. S. Pat. Off." as a footnote or the letter R enclosed within a circle, thus ®, following the mark.

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"Santoflex"* AW (6-ethoxy-1, 2-dihydro-2, 2, 4-trimethylquinoline)	Organic	47
"Santoflex"* DD (6-Dodecyl-1, 2-dihydro-2, 2, 4-trimethylquinoline)	Organic	47
"Santoflex"* 75 (Mixture of N, N'-diphenyl-p-phenylenediamine (DPPD), 75%, and 6-dodecyl-1, 2-dihydro-2, 2, 4-trimethylquinoline (Santoflex DD), 25%)	Organic	47
"Santovar"* A (2, 5-di-(tert-amyl) hydroquinone)	Organic	47
"Santowhite"* Crystals (4, 4'-Dilobis-(6-tert-butyl-m-cresol)	Organic	47
"Santowhite"* L (Essentially) thiobis-(di-sec-amylphenol)	Organic	47
"Santowhite"* MK (Reaction of product of 6-tert-butyl-m-cresol and SCl2)	Organic	47
"Santowhite"* Powder (4, 4'-butylidenebis (6-tert-butyl-m-cresol)	Organic	47
SPECIAL MATERIALS		
"Sulfasan"* R (4, 4'-dithiodimorpholine)	Organic	47
"Elastopar"* (N-Methyl-N, 4-dinitrosoaniline (34½% plus Whitetex Clay (65½%))	Organic	47
"Insoluble Sulfur 60"*	Organic	47
Odors and Deodorants	Organic	48
SPECIALTY PRODUCTS		
ADHESIVES		
Casein and Soybean Adhesives	Plastics	48
Phenolic and Resorcinol Resins	Plastics	48
Urea and Melamine Resins	Plastics	48
ANTI-FOAMING AGENTS		
Defoamer "PC-1244"*	Organic	48
ANTIOXIDANTS		
"Santoquin"* (6 Ethoxy 1, 2-Dihydro 2, 2, 4-Tri-methyl Quinoline)	Organic	48
"Sopanox"* ortho-Tolyl Biguanide	Organic	48
CURING AGENTS		
Catalysts	Plastics	49
FLAVORINGS		
"Vanillin Monsanto"* (Vanillin U.S.P.; also known as methylprotocatechuic aldehyde and 3-methoxy-4-hydroxybenzaldehyde)	Organic	49
"Ethavan"* (Ethyl Vanillin)	Organic	49
FILLERS/BODYING AGENTS		
"Santocel"* Silica Aerogel for Industrial Applications	Inorganic	49
"Santocel"* Silica Aerogel for Thermal Insulation	Inorganic	49
"Syton"* AS-200 Colloidal Silica	Inorganic	49
"Syton"* C-30 and 200 Colloidal Silica	Inorganic	49
"Syton"* DS and D-200 Colloidal Silica	Inorganic	50
"Syton"* P and P-200 Colloidal Silica	Inorganic	50
"Syton"* W-200 Colloidal Silica	Inorganic	50
FUNCTIONAL FLUIDS		
"Aroclor"* Polychlorinated Polyphenyls	Organic	50
"Coolanol 45"* Dielectric Coolant for Electronic Equipment	Organic	50
"Pydraul F-9"* Functional Fluid	Organic	50
"Pydraul 90"* Functional Fluid	Organic	50
"Pydraul 150"* Functional Fluid	Organic	51
"Pydraul 625"* Functional Fluid	Organic	51
"Pydraul A-200"* Functional Fluid	Organic	51
"Pydraul AC"* Functional Fluid	Organic	51
"Skydrol 500-A"* Fire Resistant Jet Aircraft Hydraulic Fluid	Organic	51
"Skydrol 7000"* Fire Resistant Aircraft Hydraulic Fluid	Organic	51
GERMICIDES/FUNGICIDES/DISINFECTANTS		
"Actamer"* (2, 2'-thiobis-(4, 6-dichlorophenol))	Organic	51
Chloramine-T, N.F. (Also known as N-sodium-N-chloro-para-toluenesulfonamide)	Organic	51
"Monsanto Penta"* (Pentachlorophenol, Technical)	Organic	51
"Santobrite"* Sodium Pentachlorophenate, Technical	Organic	52
"Santophen"* 1 Germicide (ortho-benzyl-parachlorophenol)	Organic	52
"Santophen"* 1 Solution (75% Santophen 1, 25% Isopropanol)	Organic	52
TCC (3, 4, 4', Trichlorocarbanilide)	Organic	52
ODORANTS		
"Santomask"* H Odor-Masking Agent	Organic	52
"Coumarin Monsanto"* (Coumarin, N.F.)	Organic	52
"Vanillin Monsanto"* (Vanillin U.S.P.; also known as methyl-protocatechuic aldehyde and 3-methoxy-4-hydroxy-benzaldehyde)	Organic	52
Methyl Salicylate U.S.P. (Synthetic)	Organic	53
PAINT/COATING VEHICLES		
"Santomask"* H Odor-Masking Agent	Organic	53
"Benthal"* Alkyd Resin Intermediate	Organic	53
"D.P. Solution"* (Dibutylamine Pyrophosphate)	Inorganic	53
"Mertone"* WB-4 Precoat for Reproduction Papers	Inorganic	53
SIZING AGENTS, PAPER		
"Mersize"* Paper Sizing Agent	Organic	53
SWEETENERS		
Saccharin, U.S.P. (Also known as saccharin insoluble, and ortho-sulfonbenzimide)	Organic	53
Saccharin, Sodium, U.S.P. (Also known as soluble saccharin and sodium ortho-sulfobenzimide)	Organic	54
TANNING AGENTS		
"Santotan"* KR Basic Chrome Sulfate	Inorganic	54
Zinc Oxide, Technical	Inorganic	54
SURFACE ACTIVE AGENTS, DETERGENTS and ACL PRODUCTS		
ANIONIC SURFACE ACTIVE AGENTS		
DDBSA (Dodecylbenzene Sulfonic Acid)	Inorganic	54
DDBSA-94	Inorganic	54
"Santomerse"* Alkyl Aryl Sulfonates	Inorganic	54
NONIONIC SURFACE ACTIVE AGENTS		
"Sterox"* AJ	Inorganic	55
"Sterox"* AJ-100	Inorganic	55
"Sterox"* AP	Inorganic	55
"Sterox"* AP-100	Inorganic	55
"Sterox"* CD	Inorganic	55
"Sterox"* DF	Inorganic	55
"Sterox"* DJ	Inorganic	55
"Sterox"* NJ	Inorganic	55
"Sterox"* NL	Inorganic	55
"Sterox"* SK	Inorganic	55
"Sterox"* No. 6	Inorganic	55
BLEACHING COMPOUNDS		
"ACL"*	Inorganic	55

When product literature is indicated as available, address requests to:

MONSANTO CHEMICAL COMPANY
Department C
800 North Lindbergh Boulevard
St. Louis 66, Missouri

0556998

TOWOLDMON0005779
WATER_PCB-00002289

AGRICULTURAL and FARM CHEMICALS

FEED SUPPLEMENTS

METHIONINE HYDROXY ANALOGUE (MHA)

Calcium salt of DI-alpha-hydroxy-gamma-methylmercapto-butyric acid.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $(CH_3—S—CH_2—CH—COO)_2$ CA
OH

STANDARD FORM: Powder

SPECIFICATIONS: Assay, 90% as calcium salt of MHA; 1% moisture max.; screen analysis, 1% max. on 20 mesh; density 30 lb./cu. ft. (tapped).

PROPERTIES: Nutritionally equivalent to DL-methionine on a gravimetric basis (1.09 lbs. MHA, 90%, eq. to 1.0 lbs. DL-methionine, 98%). Free methionine hydroxy analogue is a metabolite in the animal's utilization of methionine.

USES: As a feed supplement in poultry feed to supply requirement of methionine.

SHIPPING INFORMATION: Rail: Condition powders, regulators or tonics, animal or poultry, NOIBN. Truck: Feed Supplements, not frozen. 50-lb. bags.

UREA, FEED GRADE COATED MICROPRILLS

INORGANIC DIVISION

FORMULA: NH_2CONH_2

STANDARD FORM: Urea microprills with an inorganic material as a coating agent.

ANALYSIS:

Nitrogen (Min.)	42.0%
Moisture (Max.)	0.6%
Biuret (Max.)	1.0%

USES: As a protein source for use in Ruminant feeds

SHIPPING INFORMATION: Urea, Feed Grade (not for human consumption or pharmaceutical use), 80-lb. multiwall paper bags with polyethylene lining. Also in bulk.

FERTILIZERS

NITROGEN SOLUTIONS

NITROGEN FERTILIZER SOLUTIONS

INORGANIC DIVISION

STANDARD FORM: Clear water solution.

ANALYSIS: Varying analysis containing ammonia, ammonium nitrate and water or ammonia, ammonium nitrate, urea and water to suit varying weather and manufacturing conditions.

USES: Formulation of mixed fertilizers and for direct application to the soil.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. Insulated and uninsulated tank cars of 8,000 and 10,000 gal. capacity, and tank trucks of approximately 4,000 gal. capacity.

TRI-UNA-SOL

INORGANIC DIVISION

STANDARD FORM: Clear water solution.

ANALYSIS: Varying analysis of 28, 30 and 32% nitrogen containing urea, ammonium nitrate and water.

USES: Direct application to the soil and formulation of mixed bulk fertilizers.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. Insulated and uninsulated tank cars of 8,000 and 10,000 gal. capacity, and tank trucks of approximately 4,000 gal. capacity.

AMMONIUM NITRATE FERTILIZER PELLETS

INORGANIC DIVISION

FORMULA: NH_4NO_3

STANDARD FORM: Ammonium Nitrate in pelleted form coated with a conditioning agent.

ANALYSIS:

Nitrogen (Min.)	33.5%
Moisture	.5%
Water Insoluble	.3%

SHIPPING INFORMATION: Ammonium Nitrate Fertilizer containing more than 98% ammonium nitrate. Fertilizer compounds (Mfg. Fert.) NOIBN dry in paper, polyethylene bags and in bulk. (Dangerous Placards Applied). Multiwall paper bags with polyethylene lining, packaged in 100-lb. bags, 80-lb. bags and 50-lb. bags. Also shipped in 50-lb. polyethylene bags and in bulk.

AMMONIUM NITRATE FERTILIZER E-2 PELLETS

INORGANIC DIVISION

FORMULA: NH_4NO_3

STANDARD FORM: Ammonium Nitrate in pelleted form uncoated.

ANALYSIS:

Nitrogen (Min.)	33.5%
Moisture	.3%

SHIPPING INFORMATION: Ammonium Nitrate Fertilizer containing more than 90% ammonium nitrate with no organic coating. Fertilizer Compounds (Mfg. Fert.) NOIBN dry in paper, polyethylene bags and in bulk. (Dangerous Placards Applied). Multiwall paper bags with polyethylene lining, packaged in 100-lb. bags, 80-lb. bags, and 50-lb. bags. Also shipped in 50-lb. polyethylene bags and in bulk.

AMMONIUM NITRATE 83% SOLUTION

INORGANIC DIVISION

FORMULA: NH_4NO_3

ANALYSIS: Typical

Ammonium Nitrate	83.8%
Water	16.2%
Chlorides	2ppm
Iron	2ppm

USES: Manufacture of military explosives, Pyrotechnic compositions, insecticides and absorbent for nitrogen oxide as well as fertilizer uses.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. 8,000 and/or 10,000 gal. aluminum steam coiled tank cars.

AMMONIA, AQUA

INORGANIC DIVISION

FORMULA: NH_4OH

MOLECULAR WEIGHT: 35.05

STANDARD FORM: Liquid

PROPERTIES: Pungent, water-white liquid; wt. per gal. 7.48 lbs. (26°Bé.).

USES: A source of nitrogen for plants, either applied directly to the soil or to irrigation water for the formulation of mixed fertilizers, for oxidation in lead chamber sulphuric acid plants, and to supply nitrogen requirements and pH control in yeast culture.

SHIPPING INFORMATION: Ammoniacal Liquor (containing not more than 35% Ammonia (NH_3) by weight). Tank cars or tank trucks.

AMMONIA, ANHYDROUS

INORGANIC DIVISION

FORMULA: NH_3

MOLECULAR WEIGHT: 17.03

0556999

TOWOLDMON0005780
WATER_PCB-00002290

PROPERTIES: Colorless gas, at normal temperatures and pressures, .0597 times as heavy as air; below critical temperature, 271.2°F., readily condenses by application of pressure to a colorless liquid, wt. per gal. 5.33 lbs.; B.P.-28°F.

USES: A source of nitrogen for plant food, either applied direct or for formulation of mixed fertilizers, liquid or dry. Used as nitrogen source by textile, rubber, paper, petroleum industries, among others.

SHIPPING INFORMATION: Anhydrous Ammonia (Dangerous Placards Applied). Tank cars (approx. 26 tons); Tank trucks (approx. 14 tons).

PHOSPHATE FEED SOLUTION

INORGANIC DIVISION

STANDARD FORM: Liquid

PROPERTIES: A special grade of Phosphoric Acid prepared for a phosphate supplement in animal feeds, molasses, and mineral mixes. Phosphorus content—23.7%. Not recommended for other uses.

SHIPPING INFORMATION: Tank cars and tank trucks.

PHOSPHATIC FERTILIZER SOLUTION

INORGANIC DIVISION

STANDARD FORM: Liquid

PROPERTIES: Recommended only for use in manufacture of fertilizers. Because this is a crude product no guarantee of analysis is made except for P_2O_5 content which will vary from 54.5% to 58% P_2O_5 (75-80% acid).

SHIPPING INFORMATION: Tank cars and tank trucks. Phosphatic fertilizer solution.

PHOSPHOLEUM

Also known as Pyro-Phosphoric Acid or Super Phosphoric Acid.

INORGANIC DIVISION

FORMULA: $H_4P_2O_7$

GENERAL INFORMATION: A clear liquid containing approximately 76% P_2O_5 and equivalent to 105% H_3PO_4. It is an azeotropic mixture of orthophosphoric and polyphosphoric acids which on dilution with water hydrolyze to orthophosphoric acid. Sp. Gr., 1.90 approx. at 75°F.; viscosity, 800 centipoises at 75 F.; temperature rise, 60°F. on dilution to 75% H_3PO_4; freezing point, less than minus 50°C.

GRADE: Technical

USES: High analysis liquid fertilizer formulation, metal phosphatizing and aluminum Bright Dip Bath Component.

SHIPPING INFORMATION: Phosphoric Acid. Tank cars and tank trucks.

UREA, FERTILIZER GRADE COATED PELLETS

INORGANIC DIVISION

FORMULA: NH_2CONH_2

STANDARD FORM: Urea in pelleted form coated with an inorganic material as a conditioning agent.

ANALYSIS:

Nitrogen (Min.)	45.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

SHIPPING INFORMATION: Urea having value only for fertilizer purposes (Fertilizer Compound NOBN). 80-lb. multiwall bags with polyethylene lining. Also in bulk.

UREA FERTILIZER GRADE UNCOATED PELLETS

INORGANIC DIVISION

FORMULA: NH_2CONH_2

STANDARD FORM: Urea in pelleted form without coating agent.

ANALYSIS:

Nitrogen (Min.)	46.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

SHIPPING INFORMATION: Urea having value only for fertilizer purposes (Fertilizer Compound NOBN). Multiwall paper bags with polyethylene lining in 80-lb. bags. Also in bulk.

HERBICIDES / WEED KILLERS

HERBICIDAL OIL NO. 1

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

GENERAL INFORMATION: A post-emergence contact herbicide produced by carefully controlled petroleum refining. It is completely volatile and leaves no residue. It is non-corrosive, and its fumes are non-toxic.

USES: A safe and economical herbicide for weed control in cotton and soybeans. Applied as a spray.

SHIPPING INFORMATION: Petroleum Naphtha. Tank cars.

HERBICIDAL OIL NOS. 6 AND 7

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

GENERAL INFORMATION: A non-selective, general contact herbicide produced by carefully controlled refining from a crude oil naturally high in aromatic compounds. It is slowly volatile and leaves no permanently toxic or oily residue when used at recommended rates. Kills only those plants on which it is actually sprayed.

USES: For control of weeds and grasses on railroad rights-of-way, and wherever a general contact herbicide is required. Applied as a spray.

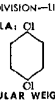
SHIPPING INFORMATION: Petroleum distillate fuel oil not suitable for illuminating purposes. Tank cars.

INSECTICIDES

"SANTOCHLOR" para-DICHLOROBENZENE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 147.01

STANDARD FORM: Crystals

PROPERTIES: White crystals; crystallizing point 52.8°C. min.

GRADES: Standard crystal sizes: No. 0 (approx. ¼ inch pellets)—For peachtree borers and for insecticide and miscellaneous uses. No. 1 (approx. ½ inch nuggets)—For shaker top cans. No. 34 (approx. rice-size granules)—A combination of two uniformly sized crystals. For shaker top cans and for compressing into cakes. No. 814—80% min. between 8 and 16 mesh. Blocking mix - Mixture of sizes under 7 mesh. Fines—Mixture of sizes less than 16 mesh.

USES: As a mothicide, for masking odors, for the control of peachtree borers. When vapors are confined, "Santochlor" is very effective for mildew control.

SHIPPING INFORMATION: Paradichlorobenzol. 200-lb. and 100-lb. fiber drums.

ELECTRONIC CHEMICALS

GALLIUM ARSENIDE—ELECTRONIC GRADE

INORGANIC DIVISION

STANDARD FORM: Polycrystal ingots with semi-circular cross section approximately 3.0 centimeters wide and weighing several hundred grams.

PURITY: Available in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients. Also available doped to various levels, and as single crystal.

(Continued on next page)

TOWOLDMON0005781
WATER_PCB-00002291

USES: Ultra-high purity gallium arsenide for use in the manufacture of electronic semi-conductor devices such as rectifiers, transistors, standard diodes and tunnel diodes.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

INDIUM ARSENIDE—ELECTRONIC GRADE

INORGANIC DIVISION

STANDARD FORM: Polycrystal ingots with rectangular cross section approximately 1.5 x 2.0 centimeters and weighing several hundred grams.

PURITY: Available in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra-high purity indium arsenide for use in the manufacture of electronic semi-conductor devices such as Hall generators, standard diodes and tunnel diodes.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

"O5-45" TYPE III HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

PROPERTIES: A clear, amber liquid with outstanding hydraulic properties over a −65°F. to 400°F. temperature range.

USES: High temperature hydraulics for both airborne and ground environmental application.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 59-gal. drums.

"O5-45" TYPE IV HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

PROPERTIES: A clear, amber liquid with outstanding hydraulic properties over a −65°F. to 550°F. temperature range.

USES: High temperature hydraulic for both airborne and ground environmental applications.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

SILICON METAL—ELECTRONIC GRADE

INORGANIC DIVISION

STANDARD FORM: Single-crystal cylindrical rods. Polycrystal rods or chunks.

PURITY: Less than 0.2 parts per billion base boron content.

GENERAL INFORMATION: Ultra-high purity silicon for use in the manufacture of electronic semi-conductor devices such as diodes, rectifiers and transistors. Available in various electrical resistivity ranges, conductivity types, diameters and lengths according to individual customer requirements.

USES: Single-crystal rods used directly in the manufacture of semi-conductor devices, polycrystal rods used for zone-refining to produce single-crystal form and polycrystalline chunks used for single-crystal growing techniques.

SHIPPING INFORMATION: Silicon Metal, Electronic Grade. Special containers according to form and quantity. Individual rods packaged in polyethylene sleeves with data sheet.

HEAVY CHEMICALS

ALUMINUM SULFATES

ALUMINUM SULFATE COMMERCIAL DRY

INORGANIC DIVISION

FORMULA: $Al_2(SO_4)_3 \cdot 14.5\ H_2O$

MOLECULAR WEIGHT: 603.35

STANDARD FORM: Various granulations.

TYPICAL ANALYSIS: Al_2O_3, 17.0%; Total Fe, 0.10%.

USES: Paper sizing and water treatment.

SHIPPING INFORMATION: Aluminum Sulfate. 100-lb. paper bags.

ALUMINUM SULFATE COMMERCIAL LIQUID

INORGANIC DIVISION

FORMULA: $Al_2(SO_4)_3$

MOLECULAR WEIGHT: 603.35

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Al_2O_3, 8.0%; Total Fe, 0.05%.

USES: Paper sizing and water treatment.

SHIPPING INFORMATION: Aluminum Sulfate. Tank trucks and tank cars.

ALUMINUM SULFATE IRON FREE

INORGANIC DIVISION

FORMULA: $Al_2(SO_4)_3 \cdot 14.5\ H_2O$

MOLECULAR WEIGHT: 603.35

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Al_2O_3, 17.0%; Total Fe, 13 ppm.

USES: Sizing fine papers; manufacture of satin-white and dry colors; tanning white leathers; dyeing operations; manufacture of aluminum stearate.

SHIPPING INFORMATION: Aluminum Sulfate. 100-lb. paper bags.

SODIUM SULFATES

SALT CAKE *Sodium Sulfate Anhydrous, Technical.*

INORGANIC DIVISION

MOLECULAR WEIGHT: 142.06

STANDARD FORM: Powder.

TYPICAL ANALYSIS: The 93-95% grade is typical white salt cake. The 98-99% grade is a special material having a light tan color and Na_2SO_4 content of approximately 99%.

USES: Manufacture of sulfate pulp and glass.

SHIPPING INFORMATION: Salt Cake. Bulk car loads.

SODIUM BISULFATE *Nitre Cake*

INORGANIC DIVISION

FORMULA: $NaHSO_4$

MOLECULAR WEIGHT: 120.07

STANDARD FORM: Globular.

TYPICAL ANALYSIS: 37.6% available H_2SO_4.

USES: Used in viscose rayon spinning baths, dyeing woolen goods; refining nickel ores; manufacture of sulfate pulp; in tanneries for pickling, deliming and making one-bath tan solutions; as an acid scour for household use; as a bowl cleaner in sanitary trade.

SHIPPING INFORMATION: Nitre Cake. 100-lb. bags and 400-lb. drums.

SODIUM SULFITES

SODIUM SULFITE ANHYDROUS TECHNICAL *"Sanfoxite."*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: Na_2SO_3

MOLECULAR WEIGHT: 126.06

0557001

TOWOLDMON0005782
WATER_PCB-00002292

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Tan to slightly pink crystalline powder; assay (Na_2SO_3) 97.7% min.; color of filtrate from 10% solution in water not darker than APHA 70.

PROPERTIES: Will oxidize to sodium sulfate if not kept dry. Normally contains less than 1% sodium chloride; less than 0.1% iron; less than 0.2% insoluble; less than 0.2% organic matter. The balance of impurity is sodium sulfate. The unfiltered water solution has a brown color due to suspended Fe (OH)₃. Normally all of the product will pass through a No. 20 U. S. Standard sieve.

USES: As a reducing agent in oxygen removal from boiler feed water; depressant in ore flotation; manufacture of rubber, paper and cordage. Highly efficient in the semi-chemical pulping of straw and wood for paper manufacture.

SHIPPING INFORMATION: Sodium Sulfite. 100-lb. paper bags and hopper cars.

SODIUM BISULFITE ANHYDROUS

Also known as Sodium Metabisulfite.

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_2S_2O_5$

MOLECULAR WEIGHT: 190.11

STANDARD FORM: Faint yellow, free-flowing crystals.

TYPICAL ANALYSIS: SO_2-66.6%; Na_2SO_4-0.7%; Na_2SO_3-1.25%.

GRADES: U.S.P. purity grade, Photo Grade, and Silage Grade (Meta-Green).

USES: In dye manufacture; as source of SO_2 for reducing sodium bichromate to basic chrome sulfate in tanning; bleaching of vegetable tan extracts; production of hydrosulfite for vat dyeing; antichlor in bleaching ground wood; bleaching dyes out of wooden coloring drums used for dyeing leather; antichlor in pulp bleaching; antichlor in laundries; bleaching of straw, rabbit fur, sugar syrups, blue and glucose; "Meta-Green" grade used in putting up grass silage to prevent bacterial activity, which causes fermentation and decay. Insures a sweet smelling silage of green color and high carotene content and good palatability.

SHIPPING INFORMATION: Sodium Bisulfite—dry.

SULFURIC ACIDS

SULFURIC ACID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_2SO_4

MOLECULAR WEIGHT: 98.08

STANDARD FORM: 60° Be.; 66° Be.; 98% H_2SO_4; all strengths oleum.

SULFURIC ACID PLANTS. Complete manufacturing plants using the contact process and Monsanto Vanadium Catalyst offered by Engineering Sales Department.

USES: Used extensively in steel mills, enameling works, oil refineries, pigment works, by-product gas plants, fertilizer plants, tanneries and many other industries.

SHIPPING INFORMATION: Sulfuric Acid. Tank trucks; tank cars.

BATTERY ACID *Electrolyte.*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Practically colorless liquid; H_2SO_4 93.2% min.; iron 0.005% max.; nitrogen compounds (as HNO_3) 0.001% max.; Sp. Gr., ~ 1.8.

USES: Electrolyte is sulfuric acid, especially adapted to the needs of the storage battery trade.

SHIPPING INFORMATION: Sulfuric Acid. "Corrosive" label required. Tank trucks and tank cars.

VANADIUM SULFURIC ACID CATALYST

ENGINEERING SALES.

GENERAL INFORMATION: Sold in conjunction with complete plants of Monsanto design and also for replacement purposes in any contact plant.

USES: In manufacture of sulfuric acid by contact process. (Not suitable for other purposes).

SHIPPING INFORMATION: Chemicals NOIBN, 50-liter Leverpak.

OTHER HEAVY CHEMICALS

ALUMINUM CHLORIDE SOLUTION 32° B6.

INORGANIC DIVISION

MOLECULAR WEIGHT: 266.7

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Neutral salt, low in iron content; solutions have an acid reaction but contain no free acid. $AlCl_3{\cdot}6H_2O$, 50.3%; Al_2O_3, 10.6%; Fe, 0.005%.

USES: Carbonizing fine wool such as piece goods, raw stock or shoddy, resulting in an exceptionally white, lofty wool; carbonizing colored goods where it has very little stripping action; soap manufacture for treatment of glycerine lyes where chloride of alumina is more desirable than sulfate.

SHIPPING INFORMATION: Aluminum Chloride Liquid. Tank cars; tank trucks.

BONE ASH

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: A very finely divided bone ash used as a mold-wash for coating molds used in casting copper wire, bars, ingots and slabs. A superior mold coating for certain steel and aluminum casting operations. This product is also used in producing high-grade chinaware.

SHIPPING INFORMATION: Bone Ash.

SLAG, CALCIUM SILICATE

INORGANIC DIVISION

STANDARD FORM: Granular solid.

PROPERTIES: CaO, 47.18%; SiO_2, 40.44%; Al_2O_3, 7.62%; Fe_2O_3, 0.20%; F, 2.02%; F, 0.55%; K_2O, 0.97%; Na_2O, 0.44%; MgO, 0.02%; Mn, 0.12%; SO_3, 0.59%; C, 0.10%.

USES: Constituent of glass mix.

SHIPPING INFORMATION: Slag, Bulk.

CARBON DIOXIDE

INORGANIC DIVISION

FORMULA: CO_2

MOLECULAR WEIGHT: 44.0

PROPERTIES: Marketed in liquid form which is colorless and odorless.

USES: As inert gas atmosphere, for fire extinguishers, in carbonated beverages, and for carbon dioxide blasting.

SHIPPING INFORMATION: Carbon Dioxide. Steel cylinders and tank cars.

CAUSTIC POTASH

INORGANIC DIVISION

FORMULA: KOH

MOLECULAR WEIGHT: 56.1

STANDARD FORM: 45% Solution.

GRADES: Available as both technical grade and low chloride grade.

USES: Due to the greater solubility of the salts of Caustic Potash permitting higher solids content in liquid formulations, Caustic Potash has use in formulating liquid soaps and detergents. In the manufacture of many Organic and Inorganic Potassium salts, petroleum refining, and in deterrents.

SHIPPING INFORMATION: Caustic Potash, 8,000 gal. and 4,000 gal. coiled tank cars.

TOWOLDMON0005783
WATER_PCB-00002293

LAMPBLACK

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder.

PROPERTIES:

Grade Black	% Free Carbon	*Oil/ *Black Oil Absorption	Tinting Strength*	Under Tone	Top Tone
*1	96.57	1.14	230	Blue	Black
AA	87.97	1.05	225	Blue-Brown	Brown-Black
*2	90.42	1.20	208	Blue-Gray	Gray-Black
*8	91.46	1.54	205	Blue	Brown-Black
S-100	93.08	1.37	170	Blue	Black
BTA	93.62	1.42	160	Blue	Blue-Black
R-5	93.92	1.34	140	Blue	Blue-Black
*10	99.29	1.25	100	Blue-Gray	Gray
*100	99.10	1.26	105	Blue-Gray	Gray

*NOTE: The figures in the column TINTING STRENGTH are relative values using No. 10 Lampblack as a standard. For example: A value of 225 for tinting strength of AA Lampblack means that this black is 2¼ times as intense as No. 10 Lampblack.

USES: Pigment in paints, varnishes, enamels, inks, leather finishes, stencils, crayons, polishes; in pressed forms as electrodes, carbon brushes and molded carbon products.

SHIPPING INFORMATION: Lampblack NOIBN when wt. per cu. ft. is under 17-lbs.; Lampblack Compressed when wt. per cu. ft. is 17-lbs. or over. Paper bags and cartons.

MURIATIC ACID *Hydrochloric Acid**

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: HCl

MOLECULAR WEIGHT: 36.47

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: 18° Be., 27.9% HCL; 20° Be., 31.5% HCl; 22° Be., 35.2% HCl.

USES: Used extensively in the starch, glucose, gelatin, steel galvanizing, paper, leather and glass industries.

*HYDROCHLORIC ACID PLANTS. Complete plants offered by Engineering Sales Department to electrolyze by-product HCl and produce pure chlorine and hydrogen.

NITRIC ACID

INORGANIC DIVISION

FORMULA: HNO_3

MOLECULAR WEIGHT: 63.01

STANDARD FORM: 36° Be., 38° Be., 40° Be., and 42° Be.

TYPICAL ANALYSIS: % HNO_3: 36° Be., 52.3%; 38° Be., 56.5%; 40° Be., 61.4%; 42° Be., 67.2%; Strong acid 95-98%. Sp. Gr. will not vary more than .05° terms of Be.. H_2SO_4, 0.05% max.

USES: Manufacture of insecticides, dyestuffs, drugs, pharmaceuticals, explosives, photoengraving, nitrates and nitro products.

SHIPPING INFORMATION: Nitric Acid, Corrosive liquid (white label required). Tank trucks; 50-ton tank cars.

MIXED ACID *Nitrating Acid*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS:

	80-15	45-53
Nitric Acid (HNO_3)	80.0 %	45.0 %
Sulfuric Acid (H_2SO_4)	15.0 %	53.0 %
Oxides of Nitrogen (N_2O_3)	0.25%	0.25%

USES: *Nitrating in the chemical industry, particularly in the* manufacture of explosives and dyestuffs. Special mixtures can be furnished to meet individual requirements.

SHIPPING INFORMATION: Nitrating Acid, Corrosive liquid (white label required). 110-gal. drums; 75 and 50-ton tank cars.

SULFUR DIOXIDE, LIQUID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: SO_2

MOLECULAR WEIGHT: 64.07

STANDARD FORM: Liquid.

SPECIFICATIONS: Colorless; non-volatile residue 0.0025% max.; moisture 0.005% max.

USES: In leather tanning, oil refining, refrigeration, air conditioning, sugar refineries; antichlor in textiles; hydrosulfite in textiles; diluent in manufacture of sulfuric acids; manufacture of sulfuryl chloride; fruit preservation; wine making; manufacture of gelatin and corn products.

SHIPPING INFORMATION: Sulfur Dioxide. Tank cars and 1-ton containers.

SULFUR TRIOXIDE, STABILIZED LIQUID *"Trionol"*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: SO_3

MOLECULAR WEIGHT: 80.1

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Appearance, colorless to pale yellow liquid which may be partially frozen in cold weather. Essentially free of solids or turbidity after subsequent thawing. Assay 99.5% SO_3 min.; boiling point, 44.8°C.; freezing point, 16.8°C.; density at 20°C., 1.922 g./ml.

USES: Primarily as a sulfonating or sulfating agent in production of detergents, petroleum sulfonates, drug intermediates and other organic chemicals.

SHIPPING INFORMATION: Sulfur Trioxide Stabilized, Acid NOIBN, Liquid. Tank cars and 750-lb. drums.

ORGANIC CHEMICALS

ANISIDINES

para-ANISIDINE

Also known as para-methoxy-aniline and para-aminoanisole.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: OCH_3



NH_2

MOLECULAR WEIGHT: 123.15

STANDARD FORM: Cast solid.

SPECIFICATIONS: Brownish crystalline mass when produced but darkens on aging; crystallizing point 57.2°C. min.; distillation range: first drop 240.0°C. min.; 95% 2.0°C. max.; decomposition point 243.0°C. max. Solution in HCl complete.

USES: A component of various azo dyestuffs; intermediate in chemical synthesis. CAUTION: This product is toxic. Avoid breathing its vapors. Avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 450-lb. galv. steel drums.

CHLOROANILINES

meta-CHLOROANILINE

Also known as meta-amino-chlorobenzene and 3-chloro-aminobenzene.

ORGANIC DIVISION

FORMULA: NH_2



Cl

MOLECULAR WEIGHT: 127.57

0557003

TOWOLDMON0005784
WATER_PCB-00002294

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, light-yellow liquid when produced, darkens with age; crystallizing point −10°C. approx.; distillation range: first drop 228.5°C. min.; 95% (1-96 ml) 1.0°C. max. and to include 230.0±0.2°C.

USES: An intermediate in the manufacture of azo dyestuffs, herbicides, tranquilizers, anti-malarials and diuretic medicinals. CAUTION: This product is toxic. Avoid breathing its vapor and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 550-lb. galv. drums.

ortho-CHLOROANILINE

Also known as ortho-amino-chlorobenzene and 2-chloroamino-benzene

ORGANIC DIVISION—

FORMULA:



MOLECULAR WEIGHT: 127.57

STANDARD FORM: Liquid.

SPECIFICATIONS: Amber liquid that discolors readily in air; crystallizing point −2.3°C. min. Distillation range: first drop 208.0°C. min.; 95% (1-96 ml) 1.0°C. max.; dry point 210.0°C. max. Solution in HCl very slight opalescence max.

USES: An intermediate in the production of dyestuffs and insecticides. CAUTION: This product is toxic. Avoid breathing its vapor and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 550-lb. steel drums.

para-CHLOROANILINE

Also known as para-amino-chlorobenzene and 4-chloro-aminobenzene

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 127.57

STANDARD FORM: Cast solid.

SPECIFICATIONS: Yellow-white solid; crystallizing point 69.5°C. min. Distillation range: first drop 229.0°C. min.; 95% (1-96 ml) 1.5°C. max.; dry point 233.0°C. max. Solution in HCl very slight opalescence max.

USES: Dyestuffs intermediate. CAUTION: This product is toxic. Avoid breathing its vapor and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 500-lb. steel drums.

CHLOROPHENOLS

ortho-CHLOROPHENOL

Also known as ortho-hydroxy-chlorobenzene and 2-chloro-hydroxybenzene

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 128.56

STANDARD FORM: Liquid.

SPECIFICATIONS: Yellow-to-brown liquid; monochlorophenol (from Cl content) 98.0% min. Distillation range: first drop 173.0°C. min.; 95% (1-96 ml) 2.0 C. max.; dry point 178.0°C. max.

USES: An intermediate for the production of alizarin dyes, pyrocatechol, tertiary-butylcatechol, etc. CAUTION: This product is toxic. Avoid breathing its vapors and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 500-lb. steel drums.

para-CHLOROPHENOL

Also known as para-hydroxy-chlorobenzene and 4-chloro-hydroxybenzene

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 128.56

STANDARD FORM: Cast solid.

SPECIFICATIONS: White to light yellow crystalline mass; crystallizing point 43°C. min.; Sp. Gr. 1255-1.261 at 45.0°/15.5°C.

USES: An intermediate in the manufacture of Quinizarin Violet, Celliton Fast Red, Violet BN, Indanthrene Brown BRH and Alizarin Cyanine Green dyes; poultry-feed supplement to prevent coccidiosis (Givaudan Patent); and germicides, miticides and pharmaceuticals. CAUTION: Care should be exercised in handling this product. Avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 550-lb. galv. drums.

2, 4-DICHLOROPHENOL, TECHNICAL

Also known as 2,4-dichloro-hydroxybenzene.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 163.01

STANDARD FORM: Cast Solid.

SPECIFICATIONS: Yellow-to-brown crystalline mass; crystallizing point 41.5°C. min.; distillation range: first drop 214.2°C. min.; 95% (1-96 ml) 3.0°C. max.

USES: An intermediate in the production of dyestuffs, herbicides, germicides and fungicides. CAUTION: Care should be exercised in handling this material. Avoid skin contact and breathing its vapor.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 500-lb. (approx.) steel drums.

CYCLOHEXYL COMPOUNDS

CYCLOHEXYLAMINE

Also known as hexahydroaniline.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 99.17

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 0.869-0.873 at 15.5°/15.5°C. Distillation range: first drop 132.0°C. min.; 95% (1-96 ml) 4.0°C. max.; dry point 137.0°C. max.

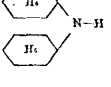
USES: Dyestuff intermediate; petroleum additive; corrosion inhibitor in boiler systems, petroleum oils, greases, glycol and methanol antifreezes; organic synthesis; synthetic sweeteners.

SHIPPING INFORMATION: Chemical NOIBN. 375-gal. galv. drums.

DICYCLOHEXYLAMINE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



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0557004

TOWOLDMON0005785
WATER_PCB-00002295

MOLECULAR WEIGHT: 181.31

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 0.913-0.919 at 15.5°/15.5 C. Distillation range: first drop 255.0°C. min.; 95% (1.90 ml) 4.0 C. max.; dry point 258.0°C. max.

USES: As a corrosion inhibitor (see Cyclohexylamine) and in production of dicyclohexyl ammonium nitrate used as a vapor-phase rust inhibitor, Shell Oil Company patent), rust-preventative oil additives, dyes and dry-cleaning soaps.

SHIPPING INFORMATION: Chemical NOIBN, 410-lb. steel drums.

NITRO-CHLOROBENZENES

ortho-NITROCHLOROBENZENE

Also known as ortho-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: Cl, NO_2

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Cast solid.

SPECIFICATIONS: Green-yellow crystalline mass; crystallizing point 31.7°C.

USES: An intermediate in the synthesis of o-aminophenol (dyestuffs intermediate and photographic developer), dichlorobenzidine (chrome-dyestuffs intermediate), and many other organic intermediate chemicals; and a solvent in synthetic-petroleum processes. CAUTION: This material is toxic. Avoid breathing its vapors. Avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 600-lb. steel drums; tank cars.

para-NITROCHLOROBENZENE

Also known as para-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: Cl, NO_2

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Flakes.

SPECIFICATIONS: Light yellow flakes or crystalline mass; crystallizing point 82.3°C. min.

USES: In the manufacture of disodium-benzene-meta-disulfonate; para-aminophenol; 2-chloro-5-nitrobenzene sulfonic acid; 2,6-dichloro-4-nitroaniline; and 5-amino-2-aniline benzene sulfonic acid; pharmaceutical acetophenetidin; "Diasone" an agent for treatment of Hansen's disease (Abbott patent); and a variety of anti-oxidants and gum inhibitors. CAUTION: This product is toxic. Avoid breathing its vapors and avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 325-lb. fiber drums.

PHENETIDINES

ortho-PHENETIDINE

Also known as ortho-amino-phenylethyl ether, ortho-aminophenetole and 2-amino-ethoxybenzene.

ORGANIC DIVISION

FORMULA: OC_2H_5, NH_2

MOLECULAR WEIGHT: 137.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Dark red liquid; crystallizing point −4.0°C. min. Distillation range: first drop 231.0°C. min.; 95% (1-96 ml) 2.0 C. max.; dry point 234.0°C. max.; solubility in HCl complete.

USES: An intermediate in the production of dyestuffs. CAUTION: This product is toxic. Avoid breathing its vapors and contact with skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN. "Poison" label required. 475-lb. steel drums.

para-PHENETIDINE

Also known as para-aminophenyl-ethyl ether, para-aminophenetole and 4-amino-ethoxybenzene.

ORGANIC DIVISION

FORMULA: OC_2H_5, NH_2

MOLECULAR WEIGHT: 137.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow liquid; crystallizing point 4.0°C. min.; distillation range: first drop 248.0°C. min.; 95% (1-96 ml) 2.0 C. max.; dry point 251.0°C. max.; solution in HCl opalescent max.

USES: An intermediate in the production of dyestuffs and pharmaceuticals. CAUTION: This product is toxic. Avoid breathing its vapors and avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN. "Poison" label required. 480-lb. steel drums.

PHTHALIC ANHYDRIDES

PHTHALIC ANHYDRIDE

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 148.11

STANDARD FORM: White flakes or fused mass.

SPECIFICATIONS: Solubility in benzene (1:20) clear. Assay 99.5% min.; C.P. 130.8°C. min.

USES: An intermediate in the production of alkyd and polyester resins; dyestuffs; perfume bases; alcohol denaturants; pharmaceuticals; and plasticizers such as octyl phthalate, dibutyl phthalate, dimethyl phthalate, diethyl phthalate and phthalyl glycollates.

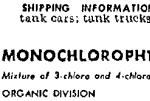
SHIPPING INFORMATION: Phthalic Anhydride. 80-lb. bags; tank cars; tank trucks.

MONOCHLOROPHTHALIC ANHYDRIDE

Mixture of 3-chloro and 4-chloro isomers.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 182.56

STANDARD FORM: Flakes.

SPECIFICATIONS: Appearance practically white flakes; assay 98.5 to 103.0%; free chlorides 0.01% max.; crystallizing point 59.5 to 64.5°C.

0557005

TOWOLDMON0005786
WATER_PCB-00002296

USES: An intermediate in the production of protective coatings, esters, dyestuffs and fungicides.

SHIPPING INFORMATION: Chemical NOIBN, 200-lb. fiber drums.

SULFONATES

METHYL TOLUENESULFONATE

A mixture of ortho and para isomers.

ORGANIC DIVISION

FORMULA: SO_2OCH_3



MOLECULAR WEIGHT: 186.22

STANDARD FORM: Liquid.

SPECIFICATIONS: Light-amber to light brown liquid; assay 99% min.; chlorides 0.025% max.; moisture 0.25% max.; Sp. Gr. at 25/25 C., 1.229-1.237.

USES: Esterification catalyst in manufacture of alkyd resins and other organic esters; methylating agent in production of dyes, photographic chemicals, and pharmaceutical intermediates.

SHIPPING INFORMATION: Chemical NOIBN, 560-lb. steel drums.

SODIUM meta-NITROBENZENE SULFONATE, TECHNICAL

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 225.15

STANDARD FORM: Wet powder.

SPECIFICATIONS: Acidity 7% max. as H_2SO_4; water 21% max.; assay 70% min.; sulfates 2% max. as Na_2SO_4.

USES: An electroplating-bath additive; an intermediate in the manufacture of dyestuffs; a mild oxidant in synthetic-fiber dye baths.

SHIPPING INFORMATION: Chemical NOIBN, 250-lb. polyethylene-lined fiber drums.

SULFONIC ACIDS

CHLOROSULFONIC ACID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $ClSO_3H$

MOLECULAR WEIGHT: 116.53

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Heavy mobile liquid; assay 99.3% $ClSO_3H$; Fe 3 ppm.

USES: In chlorosulfonation reactions. CAUTION: Chlorosulfonic acid reacts violently with water forming hydrochloric and sulfuric acids.

SHIPPING INFORMATION: Chlorosulfonic Acid, Corrosive liquid white label required, 5-gal. steel and stainless steel drums; 8-lb. bottles similar; 80-lb. cases of two; tank cars and tank trucks.

PHENOLSULFONIC ACID

65 ± 1% *para isomer; remainder ortho isomer.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: OH



MOLECULAR WEIGHT: 174.17

STANDARD FORM: Liquid or crystalline mass. (65% aqueous solution)

PROPERTIES: Light brown-to-black liquid or crystalline mass depending on temperature; assay 65% min.

SPECIFICATIONS: Assay 65.0–67.5%; free phenol 2.0% max.; free sulfuric acid 3.0% max.; Sp. Gr. at 15.5°/15.5°C. 1.345–1.365.

USES: Ferrostan process for tin plating (U. S. Steel Co. patent); manufacture of pharmaceuticals, dyestuffs, tanning agents, and other chemical intermediates.

SHIPPING INFORMATION: Acid NOIBN liquid, 600-lb. steel drums.

TOLUENESULFONIC ACID, TECHNICAL

Mixture of about 80% para and 20% ortho isomers.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: CH_3



MOLECULAR WEIGHT: 172.20

STANDARD FORM: Liquid or semi-crystalline solid.

SPECIFICATIONS: Semi-crystalline solid having a yellow to brownish color. Toluenesulfonic acid 94.0% min.; H_2SO_4 1.5% max.; toluene 0.2% max.

USES: Acid catalyst in production of alkyd resins, phenol-formaldehydes resins and phthalate esters; and in other organic syntheses; production of dyes, acid-resistant cements, cresols, herbicides, epoxy-resin varnishes and tung-oil coatings; and refining of toluene.

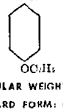
SHIPPING INFORMATION: Chemical NOIBN, 100-lb. steel drums.

PHARMACEUTICALS

ACETOPHENETIDIN U.S.P. *Also known as phenacetin.*

ORGANIC DIVISION

FORMULA: $NHCOCH_3$



MOLECULAR WEIGHT: 179.21

STANDARD FORM: Crystalline powder.

SPECIFICATIONS: White crystalline powder; solubility in ethyl alcohol 95°; (1:15) complete; M.P. 135.0°C. min.; ash 0.05% max.; 5% max. powder retained on 100 mesh.

USES: Commonly used pharmaceutical product, primarily as an anti-pyretic. Prescribed alone or in combination with aspirin and caffeine.

SHIPPING INFORMATION: Chemical NOIBN, 200 lb. and 100-lb. fiber drums.

ACETYLSALICYLIC ACID U.S.P. *Aspirin.*

ORGANIC DIVISION

FORMULA:



(Continued on next page)

0557006

TOWOLDMON0005787
WATER_PCB-00002297

MOLECULAR WEIGHT: 180.15

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White crystals; assay 99.5% min.; solubility in ethyl alcohol 95°: 1:5 complete; solubility in 10% Na_2CO_3 1:20 complete; ash 0.05% max.; conforms to U.S.P. test for heavy metals, carbonizable impurities, chloride, sulfate and free salicylic acid.

GRADES: 20 mesh; 40 mesh; 80 mesh.

MESH: (All tests made on U. S. standard screens.)

Retained on —	20-Mesh	40-Mesh	80-Mesh
20-mesh screen	Trace max.		
30-mesh screen	10.0% max.		
40-mesh screen		Trace max.	
45-mesh screen	60.0% max.		
50-mesh screen		30.0% max.	
60-mesh screen			Trace max.
80-mesh screen			2.0% max.
100-mesh screen	80.0% min.		
140-mesh screen		85% min.	

USES: Acetylsalicylic Acid is analgesic and antipyretic. It is used for the treatment of acute and chronic rheumatic states, and for headache, neuralgia and influenza.

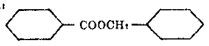
SHIPPING INFORMATION: Acetylsalicylic Acid, 250-lb. and 100-lb. fiber drums.

BENZYL ESTERS

BENZYL BENZOATE, U.S.P.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 212.24

STANDARD FORM: Liquid.

SPECIFICATIONS: Essentially colorless liquid; crystallizing point 18.8°C. min.; refractive index 1.568-1.570 at 20°C.; total chlorine 0.03% max.; assay 99.0% min.; Sp. Gr. 25°/25°C. 1.117-1.120.

PROPERTIES: High-boiling ester having a pleasant odor.

USES: A miticide (acaricide); fixative in perfumes; preparation of delousing and insect-repellent formulations; medicinally in the treatment of scabies.

SHIPPING INFORMATION: Insect Repellent NOIBN, 500-lb. drums.

SODIUM BENZOATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: COONa



MOLECULAR WEIGHT: 144.11

STANDARD FORM: Powder.

SPECIFICATIONS: U.S.P. Grade: Thin white flakes or white powder; solubility in water (10:100 at 25°C.) complete; solubility in 90% ethyl alcohol (1:50 at 25°C.) complete; 0.30 ml N/10 NaOH to 0.20 ml N/10 HCl per 3.0 grams; moisture 0.50% max.; assay 99.0% min.; chlorides (as NaCl) 0.10% max.

Technical Grade: White or slightly tinted powder; assay 90.0% min. (dry basis); solution in water (10:18) essentially complete but slightly inferior to U.S.P. quality; heavy metals 20 ppm; moisture 0.5%.

GRADES: U.S.P. and Technical.

USES: U.S.P. Grade: For preserving foods, tobacco and medicinal preparations.

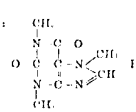
Technical Grades: As an industrial preservative and rust inhibitor.

SHIPPING INFORMATION: Sodium Benzoate, 100-lb., 50-lb. and 25-lb. fiber drums.

CAFFEINE, U.S.P.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 212.21 (anhydrous, 194.19)

STANDARD FORM: Crystalline powder.

SPECIFICATIONS: White powder. Loss on drying at 80°C.: anhydrous powder 0.25% max.; hydrated powder 5.75-8.50%; M.P. 236°C. min.; meets U.S.P. test for carbonizable impurities.

GRADES: Anhydrous powder or hydrated powder.

USES: Used in pharmaceutical preparations for increased wakefulness, to stimulate mental activity and for diuretic activity. Prevalent alone or in combination with aspirin and acetophenetidin.

SHIPPING INFORMATION: Chemical NOIBN, 100-lb. fiber drums.

METHAPYRILENES

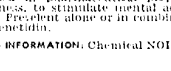
METHAPYRILENE HYDROCHLORIDE

Thenylpyramine Hydrochloride

N,N-dimethyl-N'-2-pyridyl-N'-2-thenylethylene-diamine hydrochloride.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 297.85

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White or yellow-white crystals; assay 99.2% min.; ash 0.05% max.; moisture 0.1% max.; M.P. 161.5°C. min. to start; 1.0% max. retained on 40 mesh.

GRADES: Thenylpyramine can also be supplied in the form of the fumarate salt, which is preferred in certain applications.

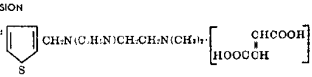
USES: In pharmaceutical preparations for antihistaminic activity or for sleep inducing (non-prescription).

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. and 25-lb. fiber drums; 5-lb. fiberpaks.

METHAPYRILENE FUMARATE *Thenylpyramine Fumarate.*

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 870.98

STANDARD FORM: Powder.

SPECIFICATIONS: White crystalline powder; ash 0.05% max.; assay 99.0% min.; moisture 0.5% max.; M.P. 133°C. min.

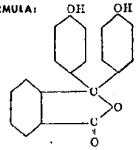
USES: In pharmaceutical and antihistaminic preparations.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. and 25-lb. fiber drums; 5-lb. fiberpaks.

PHENOLPHTHALEIN, U.S.P.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 318.31

0557007

TOWOLDMON0005788
WATER_PCB-00002298

STANDARD FORM: Crystals.

SPECIFICATIONS: White crystals; M.P. 250.0°C. min.; solubility in alcohol 1:15 complete; acidity 1 ml N/1000 NaOH 2 cm. max.; ash 0.1% max.; arsenic 0.001% max.; conforms to U.S.P. test for fluorine and heavy metals; trace max. retained on 100 mesh.

USES: Pharmaceutical preparations as a gentle irritant purgative.

SHIPPING INFORMATION: Chemicals NOIBN, 250-lb. and 100-lb. fiber drums.

PHENOLPHTHALEIN, YELLOW, NOT U.S.P.

ORGANIC DIVISION

STANDARD FORM: Powder.

SPECIFICATIONS: Yellow powder; loss on drying 0.50% max.; ash 0.10% max.; solution in ethyl alcohol 95% (1:15) complete.

USES: Pharmaceutical preparations as a gentle irritant purgative.

SHIPPING INFORMATION: Chemicals NOIBN, 150-lb. and 100-lb. fiber drums.

SALICYLATE

SALICYLATE, METHYL, U.S.P.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 152.14

STANDARD FORM: Water-white liquid.

SPECIFICATIONS: Clear, colorless liquid; assay 98.0% min.; Sp. Gr. 1.180-1.185 at 25°/25°C.; conforms to U.S.P. test for heavy metals and acidity; refractive index at 20°C. 1.5350-1.5380.

USES: Pharmaceutical product; disinfectant; flavoring agent in foodstuffs and beverages; odorant in printing inks and insecticides.

SHIPPING INFORMATION: Methyl Salicylate (Essential Oil NOIBN), 500-lb. and 50-lb. drums.

SALICYLATE, SODIUM, U.S.P.

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 160.11

STANDARD FORM: Powder or crystals.

SPECIFICATIONS: White powder or crystals; assay 99.5% min.; conforms to U.S.P. test for heavy metals and carbonizable impurities; loss on drying at 105°C. 0.5%; powder trace max. retained on 60 mesh, 1.0% on 80 mesh, 2.0% on 100 mesh; crystals 20% max. on 30 mesh, 80% max. on 80 mesh.

USES: Pharmaceutical product as an antipyretic and analgesic. Its principal use is in the treatment of acute rheumatic fever.

SHIPPING INFORMATION: Chemical NOIBN, 200-lb. and 100-lb. fiber drums.

OTHER TO

"ACRYLONITRILE"

PLASTICS DIVISION—LITERATURE AVAILABLE

FORMULA: $CH_2{:}CHCN$

MOLECULAR WEIGHT: 53.05

STANDARD FORM: Liquid.

SPECIFICATIONS: Form, clear liquid; color, water white, not over 15 APHA platinum-cobalt scale; distillation range, 74.0-79.5°C. (at 760 mm); refractive index nD 25°C., 1.3880-1.3895; water, 0.6-1.0%; inhibitor, 35-45 ppm (Monsanto MQ); acidity not greater than 0.02% (calculated as acetic acid); aldehydes not greater than 100 ppm (calculated as acetaldehyde); divinylacetylene not greater than 15 ppm; hydrogen cyanide not greater than 5 ppm; iron (soluble) not greater than 0.2 ppm; methyl vinyl ketone not greater than 0.10%; peroxides not greater than 5 ppm (calculated as hydrogen peroxide); non-volatile matter not greater than 0.05%; stability not less than 4 hours (exposed to oxygen at 100 pounds per square inch and 100°C.).

PROPERTIES: A bi-functional hydrocarbon, it is stable under ordinary conditions, yet can be made to react with a wide variety of other materials. Will copolymerize with most commercial vinyl monomers, will join chemically with a variety of natural or synthetic resin-formers.

USES: Production of synthetic textile fibers, nitrile synthetic rubber, copolymers, and chemical intermediates.

INDUSTRIAL USERS: Chemical, Rubber, Textile.

SHIPPING INFORMATION: Tank cars, drums (650 lbs.), tank trucks, Rail & Truck: Chemicals NOI

ADIPIC ACID

ORGANIC DIVISION

FORMULA: $HOOC(CH_2)_4COOH$

MOLECULAR WEIGHT: 146.14

STANDARD FORM: White powder.

SPECIFICATIONS: Assay 99.6% min.; M.P. 151.0°C. min.; ash 20 ppm max.; color (20 grams in 100 ml methanol) APHA 25 max.; water 0.2% max.; iron 2 ppm max.

USES: A resin intermediate in the surface-coating and polyester industries where it is used for viscosity control and to impart softness and flexibility to the cured resins. Other fields for which adipic acid serves as an intermediate include: low-temperature flexibilizing plasticizers for vinyls, cellulosics and rubber; hot-melt and thermos-tting adhesives; yarn sizings and textile finishes; and synthetic lubricating oils and greases. Saturated polyesters made by processing adipic acid with diols or triols are the basic resins for making isocyanate materials such as polyurethane foams, coatings, adhesives and elastomers.

SHIPPING INFORMATION: Acid, NOIBN, dry (Adipic Acid), 50-lb. bags.

BENZOIC ACID

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: COOH



MOLECULAR WEIGHT: 122.12

STANDARD FORM: Fine powder, flakes or crystalline needles.

SPECIFICATIONS: U.S.P. Grade: White crystalline needles or fine powder; assay 99.5% min.; solution in alcohol (1:2.5) and in 10% sodium carbonate (1:6) clear and colorless; meets U.S.P. test for carbonizable impurities; 2% max. powder retained on 60 mesh. Technical Grade: White to yellow-white flakes or powder; assay 99.0% min.; solution in 10% Na_2CO_3 (1:6) complete. Crystallizing point: 121.5°C. min.

GRADES: U.S.P. and Technical.

USES: U.S.P. grade used in medicinal preparations; preservative in foodstuffs.
Technical grade used in the manufacture of benzoates and benzoyl compounds; intermediate in the manufacture of dyes; mordant in calico printing; modifying agent in alkyd resins; color stabilizer in baking varnishes; dispersing agent in pigment grinding.

SHIPPING INFORMATION: U.S.P., 100-lb. fiber drums. Technical Grade: 200-lb. fiber drums. U.S.P. Grade; Food Preserving Compound NOIBN. Technical Grade: Dye Intermediate NOIBN.

BENZYL CHLORIDE *Also known as alpha-chlorotoluene.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_6H_5CH_2Cl$



MOLECULAR WEIGHT: 126.58

(Continued on next page)

0557008

TOWOLDMON0005789
WATER_PCB-00002299

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear to slightly turbid, colorless to yellow liquid; Sp. Gr. 1.105-1.110 at 15.5°/15.5°C. Boiling range at 760 mm 2°C. max. including 179.4°C.

USES: A highly reactive aralkyl halide used in the production of dyestuffs; perfume bases such as benzyl alcohol, acetate and other esters; plasticizers; resins; wetting agents; germicides; rubber accelerators; gasoline gum inhibitors; benzyl benzoate; and pharmaceuticals. CAUTION: The product irritates the skin and eyes; avoid skin contact and breathing its vapors. Benzyl Chloride is highly reactive with metals and their derivatives, especially iron, and due care must be exercised in handling, storage and processing of Benzyl Chloride.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 475-lb. nickel drums; 2000-gal. 2-compartment nickel tank trucks.

BENZYL CHLORIDE, STABILIZED

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_6H_5CH_2Cl$



MOLECULAR WEIGHT: 126.58

STANDARD FORM: Liquid.

SPECIFICATIONS (for material recovered from stabilized solution): Colorless to yellow liquid; Sp. Gr. 1.105-1.110 at 15.5°/15.5°C.

PROPERTIES: This form of benzyl chloride is stabilized by the addition of 23 lbs. of 10% sodium carbonate solution to 450 lbs. of the chloride. The wet material is a milky-white emulsion from which a layer of water may separate at either the bottom or top, depending upon the temperature and the concentration of Na_2CO_3. The concentration of Na_2CO_3 slowly decreases on standing.

USES: A highly reactive aralkyl halide used in the production of the following: dyestuffs; perfume bases such as benzyl alcohol, acetate and other esters; plasticizers; resins; wetting agents; germicides; rubber accelerators; gasoline gum inhibitors; benzyl benzoate; and pharmaceuticals. CAUTION: This product irritates the skin and eyes; avoid skin contact and breathing its vapors. Benzyl Chloride is highly reactive with metals and their derivatives, especially iron, and care must be exercised in handling, storage and processing.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 475-lb. steel drums.

BIPHENYL *Also known as diphenyl and phenylbenzene*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_6H_5—C_6H_5$

MOLECULAR WEIGHT: 154.20

STANDARD FORM: Crystalline solid.

PROPERTIES: Faint yellow crystals; freezing point 68.7-69.0°C.

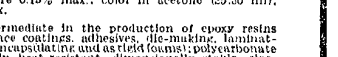
USES: Biphenyl is used as a wrapping-paper impregnate to reduce citrus-fruit spoilage; a dye carrier and accelerator for synthetic fibers; in the manufacture of ceramics; a low-pressure, high-temperature, non-corrosive heat-transfer medium; and a raw material in the manufacture of a great variety of products, since it is easily chlorinated, sulfonated, nitrated and hydrogenerated.

SHIPPING INFORMATION: Biphenyl, 100-lb. bags; 225-lb. bbls.; 100-lb. fiber drums.

BISPHENOL A

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 228.28

STANDARD FORM: White flakes.

SPECIFICATIONS: Off-white flakes; crystallizing point 154°C. min.; ash 0.02% max.; iron 1.5 ppm max.; free phenol 0.2% max.; moisture 0.15% max.; color in acetone (25:30 ml); 225 APHA max.

USES: An intermediate in the production of epoxy resins (used in surface coatings, adhesives, die-making, laminating, potting, encapsulating and as reinforcing); polycarbonate resins (used in heat-resistant, dimensionally stable, electrically-insulating films, moldings and fibers); oil-soluble phenolic resins; and as an oxidant for oils, greases and vinyl compositions.

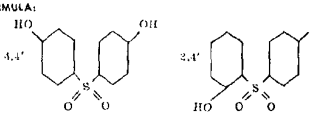
SHIPPING INFORMATION: Chemicals NOIBN, 50-lb. bags.

DIHYDROXY DIPHENYL SULFONE

Also known as sulfonyl bis phenol

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



STANDARD FORM: Fine powder.

TYPICAL ANALYSIS: Dihydroxy Diphenyl Sulfone

PURITY

69-73% of 4,4' ISOMER
31-21% of 2,4' ISOMER

SPECIFICATIONS: Crystallizing point 230-231°C., min.; moisture 0.5% max.

PROPERTIES: Readily nitrated and sulfonated and converted to esters, ethers, etc. Can be chlorinated but less readily than phenol.

USES: Electroplating bath addition agent (U. S. Steel "Ferrostan" patent); base for phenolic resins; intermediate in organic synthesis, and antioxidant in polyvinyl chloride resin manufacture.

SHIPPING INFORMATION: Chemical NOIBN, 200-lb. fiber drums.

DODECYLBENZENE *Alkyl Benzene*

INORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 246

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Clear liquid; residue less than 0.005 per cent of volume; color 11 APHA; Sp. Gr. 60°F./60°F. 0.872; refractive index 1.4886; bromine number 0.06; unsulfonatable 0.5%.

USES: A refined alkyl benzene designed primarily for use in manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 390-lb. net wt. black iron nonreturnable drums; 8,000 and 4,000- gal. tank cars.

FORMALDEHYDE

PLASTICS DIVISION

FORMULA: HCOH

STANDARD FORM: A 37% aqueous solution inhibited with methanol.

SPECIFICATIONS: Clear and free of foreign sediment; color not greater than 5 APHA; Sp. Gr. 1.0900-1.1130 (depending on methanol content); assay 37.0% by weight, minimum; acidity no greater than 0.5 equivalents per million (.003% as formic acid); iron no greater than 1 part per million; methanol 0 to 4% (methanol-free) and 8 to 9% (inhibited).

USES: A preservative, disinfectant and chemical intermediate used in the preparation of melamine and phenolic resins.

INDUSTRIAL USERS: Chemical manufacturers.

SHIPPING INFORMATION: Tank trucks. Rail & Truck: Formaldehyde, Liquid.

FUMARIC ACID

ORGANIC DIVISION

FORMULA: CHOOH
HOOCH

MOLECULAR WEIGHT: 116.07

STANDARD FORM: Fine, white, granular crystals.

SPECIFICATIONS: Assay 99.6% min.; ash 0.01% max.; color 5% in alcohol APHA 10 max.; iron 3 ppm max.; moisture 0.25% max.

USES: A resin intermediate in surface coatings, printing ink and polyester resins. Its high melting point results in higher-softening-point resins of these types: modified phthalic alkyds, fumaric alkyds, upgraded drying oils and adducts with rosin and terpenes. A gelatin-dessert acidulant. Used in paper size and in gasoline additives.

SHIPPING INFORMATION: Acid NOIBN Dry, 250-lb. fiber drums and 50-lb. bags.

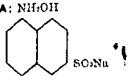
0557009

TOWOLDMON0005790
WATER_PCB-00002300

H ACID *8-Amino-1-naphthol-3, 6-Sodium Acid Disulfonate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: NH_2OH



MOLECULAR WEIGHT: 341.29

STANDARD FORM: Powder.

SPECIFICATIONS: Gray powder; 81-88% monosodium salt.

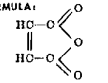
USES: As a principal intermediate in the manufacture of dyestuffs such as fast reds, violet azos and blue azo dyes; in the preparation of diazo photoprint paper and prints; as an intermediate for general diazo and coupling process in dyestuff manufacture.

SHIPPING INFORMATION: Dye Intermediate NOIBN, 100-lb. bags.

MALEIC ANHYDRIDE

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 98.06

STANDARD FORM: Briquettes, fused mass.

SPECIFICATIONS: White briquettes or fused mass, crystallizing point (as produced) 52.5°C. min.; water solution (4 gms. in 10 ml); clear and colorless; assay 99.5% min.; color of melt 20 APHA max.

USES: Used alone or in combination with other acids in the manufacture of alkyd and polyester resins; a versatile intermediate for chemical synthesis. Also used for production of paper and textile sizes, agricultural chemicals and ester comonomers for internal plasticization.

SHIPPING INFORMATION: Maleic Anhydrides. 50-lb. bags; 250-lb. fiber drums; tank cars.

METHANOL

PLASTICS DIVISION—LITERATURE AVAILABLE

FORMULA: CH_3OH

MOLECULAR WEIGHT: 32.04

STANDARD FORM: Liquid.

USES: Methanol is used for the manufacture of formaldehyde, as an antifreeze; as a solvent; a denaturant; and as a chemical intermediate.

INDUSTRIAL USERS: Chemicals, Petroleum.

SHIPPING INFORMATION: Tank cars, tank trucks; drums (350-lbs.) Rail & Truck: Methanol, Liquid.

METHYL SALICYLATE U.S.P. *Synthetic.*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Colorless liquid; assay, 98.0% min.; color APHA 10 max.; odor, characteristic; refractive index at 20°C., 1.535 to 1.538; Sp. Gr. at 25°/25°C., 1.180 to 1.185; heavy metals, 20 ppm max.; meets all requirements of U.S.P.

USES: Widely used in syrups; insecticides; mouth washes; perfumes; pharmaceuticals; also in medicated gummed tape and paper; as an odor intensifier in odorless, printing and copying inks; pastes and glues; and as a flavoring agent in food, candy, lozenges, chewing gum and root beer.

SHIPPING INFORMATION: Methyl Salicylate (Essential Oil NOIBN) 500-lb. drums—returnable; 500 and 50-lb. drums—non-returnable.

ortho-NITROANILINE *Also known as ortho-aminonitro-benzene.*

ORGANIC DIVISION

FORMULA: NH_2



MOLECULAR WEIGHT: 138.12

STANDARD FORM: Flakes.

SPECIFICATIONS: Yellow-to-orange flakes; crystallizing point 69.7°C. min.

PROPERTIES: Tends to form lumps on standing. Milling to desired fineness just before use is recommended. Addition of 0.5% tricalcium phosphate reduces the caking tendency.

USES: Manufacture of lakes and toners (dyes) such as ONA Black, ONA Orange and Hansa Yellow 5G; synthesis of coccidiostats, photographic anti-fogging agents and benzotriazoles (a rust inhibitor patented by Proctor and Gamble) CAUTION: This product is toxic. Avoid breathing its dust and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required, 175-lb. fiber drums; steel tank cars.

para-NITROPHENOL *Also known as para-hydroxy-nitrobenzene.*

ORGANIC DIVISION

FORMULA: OH



MOLECULAR WEIGHT: 139.11

STANDARD FORM: Granules.

SPECIFICATIONS: Brown granular mass M.P. (dry basis) 112.0°C. min.; assay 99.0% min.; water-insoluble material 0.20% max.; methanol-insoluble material 0.20% max.

USES: An intermediate in the production of dyestuffs from para-aminophenol, photographic chemicals such as para-aminophenol and methyl para-aminophenol and parathion insecticides; fungicide to prevent mold growth on chrome-tanned leather. CAUTION: This product is toxic. Avoid breathing its dust or vapors and avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 200-lb. fiber drums.

para-TOLUENESULFONAMIDE

Also known as para-toluene-sulfonic acid amide and para-sulfonamidotoluene.

ORGANIC DIVISION

FORMULA: CH_3



MOLECULAR WEIGHT: 171.22

STANDARD FORM: Crystalline powder. (A refined powder also available)

SPECIFICATIONS: White, crystalline powder; crystallizing point (dried material) 136.9°C. min.; moisture 0.5% max.

USES: In the preparation of antiseptics and pharmaceuticals, plasticizers and resins (as a base), and in the preparation of dyestuffs; and as a fungicide for protective coatings.

SHIPPING INFORMATION: Chemicals NOIBN, 225-lb. and 275-lb. fiber drums (refined).

para-TOLUENESULFONYL CHLORIDE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: CH_3



MOLECULAR WEIGHT: 190.65

STANDARD FORM: Crystals.

(Continued on next page)

0557010

TOWOLDMON0005791
WATER_PCB-00002301

SPECIFICATIONS: White to light yellow crystals; assay 98% min.; crystallizing point 65.5 C. min. (dry basis).

USES: As an intermediate in preparation of dyestuffs such as Brilliant Sulfon Red, Polar Red, Polar Yellow, azo and triphenylmethane dyes; tanning materials; pharmaceuticals; acid resistant cements; antioxidants; disinfectants; and photographic chemicals.

SHIPPING INFORMATION: Chemicals NOIBN, 300-lb. fiber drums.

PHENOL *Also known as carbolic acid and hydroxybenzene.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: OH



MOLECULAR WEIGHT: 94.11

STANDARD FORM: Solid or liquid.

SPECIFICATIONS: Crystalline solid, U.S.P.: White crystalline solid; melt, colorless mobile liquid; solution in water (1:15) clear and colorless; crystallizing point 40.0°C. min. Distillation range: first drop 180.0°C. min.; 100° first drop to dry point) 2.0°C. max.; 50% to dry point 0.2°C. max. Liquids: Colorless mobile liquids; assay: liquid 85%: 85.0-86.0%; liquid 90%: 90.0-91.0%; liquid 92%: 92.0-93.0%.

GRADES: Crystalline solid, U.S.P.; liquid 85%; liquid 90%; liquid 92%.

USES: An intermediate in the production of molding resins, varnishes, enamels, lacquers, paints, plywood adhesives, explosives, tanning materials, pharmaceuticals, medicinals, antiseptics, germicides, preservatives, deodorants, soaps, emulsifying fluids, vermin exterminators, insecticides, oil additives, rubber compounds, photographic chemicals, and dyestuffs; a disinfectant; a selective solvent in lubricant production; and in textile printing. CAUTION: This product is toxic. Avoid breathing its vapors and contact with the skin.

SHIPPING INFORMATION: Phenol, "Poison" label required. Tank cars; tank trucks; 475-lb. steel drums; 200-lb. tins.

PHTHALYL CHLORIDE *Phthaloyl Chloride.*

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 203.03

STANDARD FORM: Liquid.

SPECIFICATIONS: Yellowish liquid; assay 95.0% min.; crystallizing point 9.0°C. min.

USES: Manufacture of plasticizers and resins, general organic synthesis.

SHIPPING INFORMATION: Chemicals NOIBN, Corrosive liquid (white label required), 605-lb. nickel drums.

SALICYLIC ACID *ortho-Hydroxy-benzoic Acid.*

ORGANIC DIVISION

FORMULA:



MOLECULAR WEIGHT: 138.12

STANDARD FORM: Needles or powder.

SPECIFICATIONS: U.S.P. Grade: White needles or powder; assay 99.5% min.; M.P. 158.0°C. min.; conforms to U.S.P. test for carbonizable substances; ash 0.05% max.; powder 0.4% max. retained on 100 mesh. "N" Grade: Light tan powder; assay 99.5% min.; M.P. 158.0°C. at start.

GRADES: U.S.P. and technical.

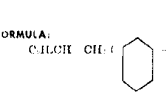
USES: Manufacture of medicinals and dyestuffs; industrial preservative; intermediate in many organic syntheses.

SHIPPING INFORMATION: Salicylic Acid, 300-lb. and 100-lb. fiber drums.

STYRENE MONOMER

PLASTICS DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 104.14

STANDARD FORM: Liquid inhibited with TBC.

SPECIFICATIONS: Color (APHA Platinum-Cobalt Scale) not over 15 units; free from suspended matter and sediment; assay 99.2-99.6%, min.; viscosity 0.87 cps. max. at 25°C.; Sp. Gr. 0.9078-0.9057 at 25°/25°C.; refractive index not less no 25°C. 1.5441; tertiary butyl catechol 10 ppm. min., 15 ppm. max.; aldehydes (benzaldehyde) 0.02% max.; peroxide (diethyl peroxide) 0.01% max.; chlorine 0.01%; sulfur 0.01% max.; polymer content not greater than 0.20%.

PROPERTIES: An aromatic hydrocarbon with an aliphatic side chain containing a double bond which permits polymerization, copolymerization and other reactions. A colorless material that polymerizes and copolymerizes with other light-colored materials to yield clear or light-colored products.

USES: Production of styrene molding compounds, synthetic rubber, copolymers, ion exchange resins, polyesters, styrene modified oils and alkyds for surface coatings.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Chemicals, Rubber.

SHIPPING INFORMATION: Tank trucks, drums (410 lbs.). Rail: Styrene Liquid.

TRIDECYLBENZENE *Alkyl Benzene*

INORGANIC DIVISION

MOLECULAR WEIGHT: 260

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Clear liquid; residue less than .005 per cent by volume; color 8 APHA; Sp. Gr. 60°F./60°F., 0.873; refractive index 1.4876; bromine number 0.1; less than 0.4% unsulfonatable.

USES: A refined alkyl benzene designed for use in the manufacture of synthetic detergents. Exhibits extremely stable foam in presence of greasy soils, and often eliminates the need for foam stabilizers.

SHIPPING INFORMATION: Petroleum Oil, NOIBN, 390-lb. net wt. black iron nonreturnable drums; 8,000 and 4,000-gal. tank cars.

VINYL CHLORIDE MONOMER

PLASTICS DIVISION—LITERATURE AVAILABLE

FORMULA: Z_nO $CH_2=CHCL$

MOLECULAR WEIGHT: 81.38 62.50

STANDARD FORM: Liquified gas shipped either inhibitor free or inhibited with phenol.

PROPERTIES: A reactive monomer having a double bond which permits polymerization, copolymerization and other reactions.

USES: Production of polyvinyl chloride resins, compounds, copolymers and chemical intermediates.

INDUSTRIAL USERS: Chemical manufacturers.

SHIPPING INFORMATION: Tank cars, cylinders (200 lbs.), Rail & Truck: Vinyl Chloride Monomer "Dangerous" Placards Apply.

PHOSPHORUS and PHOSPHORUS DERIVATIVES

AMMONIUM PHOSPHATES

AMMONIUM PHOSPHATE, MONO

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $NH_4H_2PO_4$

0557011

TOWOLDMON0005792
WATER_PCB-00002302

MOLECULAR WEIGHT: 115.07

STANDARD FORM: Crystalline or powdered material.

PROPERTIES: A brilliant white crystalline or powdered material; stable in air; soluble in hot and cold water; pH of 1% solution 4.7.

GRADES: Food (meets all U. S. Pure Food Law requirements).

USES: Flameproofing paper, wood, textiles; prevents afterglow in matches; for special medicinal purposes; nutrient solutions; manufacture of yeast, vinegar, yeast foods, bread improvers; acidulent in dye bath.

SHIPPING INFORMATION: Phosphate of Ammonia. 100-lb. bags; 350 and 100-lb. fiber drums.

AMMONIUM PHOSPHATE, DI

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $(NH_4)_2HPO_4$

MOLECULAR WEIGHT: 132.068

STANDARD FORM: Crystalline or powdered material.

PROPERTIES: Brilliant white crystalline or powdered material; stable in air; very soluble in water; pH value of 1% solution 7.55; above 70°C. aqueous solutions lose ammonia readily.

DISSOCIATION PRESSURE: According to Britzke and Dumajew (quoted in Handbuch der anorganische Chemie, Ammoniak, p. 430) and Warren (JACS 49, 1904, 1927):

Temp. °C.	98	111	125	135	147
NH_3 in mm. Hg.	3.2	10.7	26.0	55.2	123.4

GRADES: Food (meets all U. S. Pure Food Law requirements).

USES: Fire retardant; yeast food by yeast producers and breweries; as bread improvers, to control pH of soda crackers; catalyst for urea-formaldehyde resins; chrome dyeing of wool; source of N and P_2O_5 for soluble fertilizers.

SHIPPING INFORMATION: Phosphate of Ammonia. 100-lb. bags; 350 and 100-lb. fiber drums.

ETHYL AMMONIUM PHOSPHATE

INORGANIC DIVISION

TYPICAL ANALYSIS: 6% solution of Ethyl Acid Phosphate neutralized with ammonia 33°; P_2O_5; Sp. Gr. @ 25°C., 1.21 or 10.1 lbs. per gal.

SHIPPING INFORMATION: 135-lb. and 500-lb. drums.

TRIETHYLAMMONIUM PHOSPHATE

INORGANIC DIVISION

GENERAL INFORMATION: An additive for non-aqueous materials for stabilizing corrosive and iron-sensitive liquids such as lacquers in metal containers.

SHIPPING INFORMATION: 30-lb. and 450-lb. drums.

CALCIUM PHOSPHATES

H. T. MONOCALCIUM PHOSPHATE *Spray Dried.*

INORGANIC DIVISION

STANDARD FORM: Powder to granular.

PROPERTIES: A free-flowing, hood form of MCP; soluble in water, giving an acid reaction.

GRADES: Regular for phosphated and self-rising flour and baking powder. Granular for baking powder. All grades meet U. S. Pure Food Law requirements. Special grades will be supplied on request.

USES: Leavening agent in biscuits and crackers and acid leavening agent in pancakes; sole acid agent or mixed with sodium aluminum sulfate or sodium acid pyrophosphate in baking powders; in making self-rising, phosphated plain flour and prepared flours, to control pH of solution in malt. Used as ingredient in manufacture of glass.

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags; 350-lb. drums.

"PY-RAN" ANHYDROUS MONOCALCIUM PHOSPHATE

INORGANIC DIVISION

FORMULA: $CaH_2P_2O_7$ or CaH_2PO_3

MOLECULAR WEIGHT: 234.17

PROPERTIES: An anhydrous monocalcium phosphate used as an acid component for leavening agents in self-rising flours and corn meal, also baking powders and prepared mixes. Conforms with all Federal and State Pure Food Laws.

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags.

DICALCIUM PHOSPHATE ANHYDROUS

INORGANIC DIVISION

FORMULA: $CaHPO_4$

MOLECULAR WEIGHT: 136.07

STANDARD FORM: Finely divided powder.

TYPICAL ANALYSIS: Total P_2O_5-51.3% total CaO. Conforms with all state and federal food laws.

PROPERTIES: White, tasteless, finely divided powder.

USES: Primarily as a polishing agent in tooth pastes and powders, and as a mineral supplement in foods and cereals.

SHIPPING INFORMATION: 50-lb. bags; 350 and 100-lb. drums.

DICALCIUM PHOSPHATE, DIHYDRATE

INORGANIC DIVISION

FORMULA: $CaHPO_4 \cdot 2H_2O$

MOLECULAR WEIGHT: 172.10

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Phosphorus 18.1%; calcium 23.7%.

PROPERTIES: White tasteless crystalline powder; soluble in dilute citric acid solution; very slightly soluble in water; insoluble in alcohol and glycerin. The stabilized dentifrice grade is prepared specially for use in dentifrices and does not set-up hard when used to formulate tooth paste.

GRADES: Regular food grade; stabilized dentifrice grade—accepted by American Dental Association; U.S.P.—conforms with U.S.P. XIII.

USES: Medicinal; mineral supplement for foods and cereals; polishing ingredient in tooth pastes and powders.

SHIPPING INFORMATION: Calcium Phosphate. 60 and 100-lb. bags; 100 and 225-lb. fiber drums.

DICALCIUM PHOSPHATE, FEED GRADE

INORGANIC DIVISION

FORMULA: $CaHPO_4$

STANDARD FORM: Granules.

TYPICAL ANALYSIS:

	Regular 18½%	Hi-Strength 21%
P	18.7%	21.8%
Ca	29.7%	27.8%
As_2O_3	0.2ppm	0.2ppm
Pb	1.0ppm	1.0ppm
F	0.01%	0.01%
Moisture	2.5%	3.0%

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags; bulk box and hopper cars.

TRICALCIUM PHOSPHATE

INORGANIC DIVISION

FORMULA: $3Ca_3(PO_4)_2 \cdot Ca(OH)_2$

STANDARD FORM: Powder.

PROPERTIES: White amorphous powder odorless and tasteless; practically insoluble in water. Complies with all federal and state food laws. Conforms with specifications listed in National Formulary and accepted by the Council on Dental Therapeutics of the American Dental Association.

GRADES: Dentifrice; conditioner (salt, sugar, etc.); and medicinal. (All material conforms to requirements of the U. S. Pure Food Laws.)

USES: A mineral supplement in foods to supply calcium and phosphorus; base or polishing agent in tooth powder; ingredient in making milk glasses; antacid; conditioner to prevent caking in salt, sugar, talc and other powdered material. As suspension agent in polystyrene manufacture.

SHIPPING INFORMATION: Calcium Phosphate. 60-lb. bags; 150-lb. fiber drums.

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WATER_PCB-00002303

CALCIUM PYROPHOSPHATE

INORGANIC DIVISION

FORMULA: $Ca_2P_2O_7$

MOLECULAR WEIGHT: 254.20

STANDARD FORM: Powder.

PROPERTIES: Finely subdivided powder; contains CaO, 31.8%; P_2O_5, 55.9%.

USES: Food fortification and vitamin tablets as a mineral supplement.

SHIPPING INFORMATION: Calcium Phosphate, 100-lb. bags; 400-lb. bbls.; 100-lb. drums.

SODIUM PHOSPHATES

MONOSODIUM PHOSPHATE

INORGANIC DIVISION

FORMULA: NaH_2PO_4

MOLECULAR WEIGHT: 119.99

STANDARD FORM: Powder.

PROPERTIES: Contains not less than 98% P_2O_5; pH value of 1% solution 4.6.

GRADES: Food; commercial.

USES: For conditioning boiler water and in electroplating.

SHIPPING INFORMATION: Sodium Phosphate, 100-lb. bags; 350 and 100-lb. drums.

DISODIUM PHOSPHATE, ANHYDROUS

INORGANIC DIVISION

FORMULA: Na_2HPO_4

MOLECULAR WEIGHT: 141.98

STANDARD FORM: Powder.

PROPERTIES: Soluble in water; insoluble in alcohol; on exposure to air will absorb 2-7 mols H_2O depending on humidity and temperature; loses molecular water at 240°C. forming tetrasodium pyrophosphate; pH of 1% solution 8.8 at 25°C. One lb. anhydrous product equivalent to 2.5 lbs. crystalline (dodecahydrate).

GRADES: Food (Granular and Powdered); Medicinal, U.S.P.

USES: For boiler water treatment; in making glazes for potteries, porcelains and chinaware; as an emulsifier in making process cheese; in various chemical processes; in manufacture of dyestuffs such as Schnitzler's green; in the preparation of enamels; in tinning and soldering; in leather tanning; as a bath ingredient in galvanoplastic work; in the manufacture of pigments such as cobalt phosphate; in the weighting of silk and impregnating of textiles in dyeing and calico printing; in the adjustment of condensed milk; medicinal.

SHIPPING INFORMATION: Disodium Phosphate, 100-lb. bags; 350 and 100-lb. drums.

DISODIUM PHOSPHATE, DUOHYDRATE

INORGANIC DIVISION

FORMULA: $Na_2HPO_4 \cdot 2H_2O$

MOLECULAR WEIGHT: 178.0

STANDARD FORM: Crystalline powder.

PROPERTIES: Soluble in water, insoluble in alcohol; equivalent to 82% of sodium phosphate, di, anhydrous (see preceding product for further information on properties.)

GRADES: Food (conforms with Federal and State Pure Food Laws).

USES: Especially recommended for use in preventing coagulation during concentration of milk and as an emulsifying agent in processing cheese.

SHIPPING INFORMATION: Disodium Phosphate, 100-lb. bags.

TRISODIUM PHOSPHATE, ANHYDROUS

INORGANIC DIVISION

FORMULA: Na_3PO_4

MOLECULAR WEIGHT: 161

STANDARD FORM: Granular, nearly white crystals.

TYPICAL ANALYSIS: Assay, Na_3PO_4—97.9%. Loss on ignition at 550°C.—1.0%.

USES: The same as ordinary Trisodium Phosphate but where higher concentration or less bulk is desired, one pound is equivalent to 2.33 pounds of the crystalline grade.

SHIPPING INFORMATION: Trisodium Phosphate, 100-lb. bags; 350 and 100-lb. drums.

TRISODIUM PHOSPHATE, CRYSTALLINE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_3PO_4 \cdot 12H_2O$

MOLECULAR WEIGHT: 380.16

STANDARD FORM: Crystalline material.

SPECIFICATIONS: White crystalline material, uniformly sized; quickly soluble in water giving an alkaline reaction; pH of 1% solution 11.8.

USES: Principally in cleaners and detergents for both household and industrial use; in fruit cleaning to remove insecticide sprays and inhibit growth of fruit mold; in water treatment for softening and conditioning water.

SHIPPING INFORMATION: Trisodium Phosphate, 100-lb. bags; 325 and 100-lb. drums.

TETRASODIUM PYROPHOSPHATE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_4P_2O_7$

MOLECULAR WEIGHT: 265.95

STANDARD FORM: Crystals or granules.

PROPERTIES: White crystalline material or white granular powder; pH of 1% solution 10.2; solubility: 6 parts in 100 parts of water at 15°C., 40 parts in 100 parts of water at 100°C.

GRADES: Anhydrous.

USES: As a soap builder; conditioning oil drilling wells; in bleaching, especially for straw, and as an ink eradicator; in manufacture of iron pyrophosphate and other pyrophosphates; household and industrial cleaner and detergent; in dye bath for putting certain types of dye in complete solution; electroplating; metal cleaning; electrolytic separation of various metals; as emulsifier in process cheese manufacture; degumming textiles; stabilizing hydrogen peroxide baths; reagent for de-inking newsprint.

SHIPPING INFORMATION: Sodium Phosphate, Regular—100-lb. paper bags; 300-lb. and 100-lb. drums; Powdered—100-lb. paper bags; 350-lb. and 100-lb. drums.

SODIUM TRIPOLYPHOSPHATE

INORGANIC DIVISION

FORMULA: $Na_5P_3O_{10}$

MOLECULAR WEIGHT: 367.93

STANDARD FORM: Granules or powder.

PROPERTIES: White granular material or white powder; water-soluble with excellent water-softening and detergent properties; pH 9.5 of 1% solution. A calcium sequestering agent and also has a high binding power for most of the metals of Group II and Group IV.

USES: Soap builder; detergent and water softener; conditioning oil drilling muds; eliminates scum and soap curds in hard water.

SHIPPING INFORMATION: Phosphate of Soda, 100-lb. bags; 350 and 100-lb. drums.

SODIUM ACID PYROPHOSPHATE

INORGANIC DIVISION

FORMULA: $Na_2H_2P_2O_7$

MOLECULAR WEIGHT: 221.97

STANDARD FORM: Powder.

PROPERTIES: White powder, soluble in water; min. neutralizing value 74; pH of 1% solution 4.2.

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GRADES: Food and Industrial. Food Grade meets all U. S. P. 13 State Pure Food Law requirements.

USES: As baking acid for prepared flours, doughnut flours; in manufacture of baking powders and baking creams; in oil well drilling muds.

SHIPPING INFORMATION: Sodium Phosphate. 100-lb. bags; 325 and 1100-lb. drums.

SODIUM HEXAMETAPHOSPHATE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: An amorphous glass of composition equivalent to $Na_2O \cdot P_2O_5$.

AVERAGE MOLECULAR WEIGHT: 1490

STANDARD FORMS: Glass platelets, granules and powder.

TYPICAL ANALYSIS: 32.5% total Na_2O; 67.0% total P_2O_5; pH 1% solution, 6.9; less than 1.0 ppm Pb; less than 1.0 ppm F; 1.4 ppm As_2O_3; trace SO_4; 0.010% iron.

PROPERTIES: Infinitely soluble in water. Bulk density—glass platelets, 77.5 lbs./cu. ft.; granules, 99.5 lbs./cu. ft.; powder, 62 lbs./cu. ft.

USES: Water softener; in treatment of boiler water; in dishwashing compositions and detergents; deflocculating agent; textile and food processing.

SHIPPING INFORMATION: Sodium Phosphate, NOIBN. 100-lb. net multiwall paper bags; 100-lb. net burlap bags.

"OILFOS" GLASSY SODIUM PHOSPHATE

INORGANIC DIVISION

STANDARD FORM: Dry powder.

PROPERTIES: "Oilfos" is used exclusively for controlling viscosity of oil well drilling muds.

SHIPPING INFORMATION: Phosphate of Soda. 100-lb. net paper bags, triotex bars.

"SQ" PHOSPHATE

INORGANIC DIVISION

STANDARD FORM: Dry powder.

TYPICAL ANALYSIS: P_2O_5 63.0%; Na_2O 36.0%; pH 1% solution 7.9.

PROPERTIES: "SQ" Phosphate is a glassy poly phosphate with high calcium sequestering properties. It is used in formulating industrial cleaning compounds such as dishwashing and dairy cleaners.

SHIPPING INFORMATION: Phosphate of soda. 100-lb. net paper bags or triotex bars.

OTHER PHOSPHORUS AND PHOSPHORUS DERIVATIVES

ALKYL ACID PHOSPHATES

INORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS:

Phosphoric Acid Ester	P_2O_5 %	Sp. Gr. @ 25° C.	Lbs. per Gal.	Acid No. Mg KOH/g
Amyl	40	1.66	9.1	362
n-Butyl	40	1.14	9.4	396
Ethyl	51	1.26	10.2	523
n-Propyl	45	1.21	10.1	455

USES: Additions to paint and varnish compositions to improve adhesion to metal surfaces; as catalyst in urea resin formulations; as lubricating agents for resins and oils.

SHIPPING INFORMATION: Acids, Liquid, NOIBN. Amyl: 135-lb. and 500-lb. drums; n-Butyl: 135-lb. and 500-lb. drums. Ethyl: 150-lb. and 500-lb. drums. n-Propyl: 140-lb. and 500-lb. drums.

"ALKOPHOS" *Aluminum Acid Phosphates.*

INORGANIC DIVISION

STANDARD FORM: Liquid.

PROPERTIES:

	Alkophos O	Alkophos OE
P_2O_5	33.1%	36.0%
Al_2O_3	8.6%	11.0%
Sp. Gr. 25°/15.5°C.	1.47	1.60

USES: Coating for electrical steel transformer and motor laminations; binder for high temperature insulation brick and other refractories; high temperature water insoluble binder or adhesive.

SHIPPING INFORMATION: Aluminum Phosphorus. 175-lb. and 650-lb. drums.

FERROPHOSPHORUS *Iron Phosphide.*

INORGANIC DIVISION

STANDARD FORM: Chill cast lumps, egg size, ½ inch or less.

TYPICAL ANALYSIS: A gray alloy of iron and phosphorus which fractures easily; contains 23-25% phosphorus.

USES: Used in iron and steel castings to increase fluidity; in sheet steel to prevent sticking of sheets in final rolling; in wire to give stiffness and better surface for drawing; paint pigment.

SHIPPING INFORMATION: Ferrophosphorus. Bulk; 500-lb. bbls.

MONOPOTASSIUM PHOSPHATE *Potassium Phosphate.*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: KH_2PO_4

MOLECULAR WEIGHT: 136.09

STANDARD FORM: White crystals.

TYPICAL ANALYSIS: P_2O_5, 51.69%; K_2O, 34.31%; ignition loss 13.24%; SO_4 none; pH 4.6.

USES: To control pH of culture media in penicillin manufacture; special medicinal purposes; soluble fertilizers.

SHIPPING INFORMATION: Potassium Phosphate. 350 and 150-lb. net drums; 100-lb. bags.

PHOSPHORIC ACID *Orthophosphoric Acid.*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_3PO_4

MOLECULAR WEIGHT: 98.00

GRADES: U.S.P.; food, meets all U. S. Pure Food Law requirements; commercial, clear, water-white liquid.

SPECIFICATIONS: Clear, water-white liquid miscible with water in all proportions; 75%, 80% and 85% H_3PO_4.

PHOSPHORIC ACID PLANTS. Complete, wet phosphoric acid manufacturing plants using the Procon process offered by Engineering Sales Department.

USES: To increase translucency and improve color of porcelains and as a vitrifying agent and flux; manufacture of sodium phosphates, ammonium phosphates, calcium phosphates and other phosphates; production of albumin derivatives; drying agent in the synthesis of various intermediate chemicals and dyes; process engraving and litho trades; penetrant to aid in the absorption of the gum on envelopes; the manufacture of gelatin; substitute for tartaric and citric acids in jelly, preserves and soft drinks; opacifier in glass manufacture; manufacture of certain pharmaceutical chemicals and dental cements; glycerophosphate manufacture and purification of hydrogen peroxide; for bleaching the finish on rope and twine; coagulant of rubber latex; manufacture of rustproofing compounds; silage preservation; defecating and clarifying agent in sugar; for brightening the color of silk; dyeing of cotton; calico printing; water softening and correction of alkalinity; bright polishing of aluminum; electro polishing of stainless and carbon steels; steel pickling; manufacture of special bricks; petroleum catalyst; aluminum bright dip bath component.

SHIPPING INFORMATION: Phosphoric Acid, 200 and 700-lb. stainless steel drums; 700-lb. lacquer lined drums; tank cars and tank trucks.

PHOSPHORUS, ELEMENTAL

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: Light yellow, wax-like semi-transparent solid; burns spontaneously in air to form P_2O_5; M.P. 44.1°C.; very soluble in carbon bisulfide; insoluble in water.

GRADES: Monsanto process of manufacture provides over 99.9% purity.

(Continued on next page)

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WATER_PCB-00002305

USES: Manufacture of phosphorus alloys, phosphoric oxychloride, phosphorus compounds, phosphoric acid, rodent poisons, flares, smoke screens, etc.

SHIPPING INFORMATION: Phosphorus Yellow, toxic and inflammable (yellow label required). 25-lb. drums; tank cars.

PHOSPHORUS OXYCHLORIDE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $POCl_3$

MOLECULAR WEIGHT: 153.35

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Water-white liquid; assay 99.75%; $POCl_3$; Sp. Gr. 15.5°C., 15.5°C., 1.685; free Cl_2 trace; PCl_3 0.12%; distillation range °C.: first drop 106.7, 1-96 ml 1.0, dry point 107.9.

USES: A chlorinating agent and catalyst in the preparation of various intermediates, dyestuffs, medicinals; reagent in the preparation of acetic anhydride and organic phosphates.

CAUTION: Care must be exercised in handling this product. Avoid breathing its vapors. Avoid contact with the skin. It reacts with water with explosive violence.

SHIPPING INFORMATION: Phosphorus Oxychloride, Corrosive liquid (white label required). 725-lb. nickel drums; 4,000 and 8,000-gal. nickel tank cars.

PHOSPHORUS PENTASULFIDE

INORGANIC DIVISION

FORMULA: P_2S_{10}

MOLECULAR WEIGHT: 444.58

STANDARD FORM: Light greenish yellow granular powder.

PROPERTIES: Monsanto is unique in offering both highly reactive and low reactive grades distilled for highest purity.

USES: Manufacture of lubricating oil additives; thiophosphate insecticides; thiophosphate salts for ore flotation; also as a catalyst in production of blown asphalt; and as an intermediate in organic synthesis.

SHIPPING INFORMATION: Chemicals NOIBN. 150 and 325-lb. drums.

PHOSPHORUS PENTOXIDE

INORGANIC DIVISION

FORMULA: P_2O_5

MOLECULAR WEIGHT: 141.96

STANDARD FORM: White microcrystalline powder.

PROPERTIES:
Vapor Pressures: (after J. C. Southard and R. A. Nelson—JACS, 59,911-1937-)
p = vapor pressure in cm. of mercury
T = absolute Temperature
A (low temperature form)
B (high temperature form)
L (liquid)
$Log_{10}p = 9.792 - (5900/T)$
$Log_{10}p = 11.113 - (7930/T)$
$Log_{10}p = 6.802 - (4320/T)$
Atmospheric sublimation temperature: 358.9°C.
Heat of vaporization:
A—22,800 calories per gm. molecule
B—30,200 calories per gm. molecule
L—19,700 calories per gm. molecule
Heat of fusion: 16,500 calories per gm. molecule
Probable molecular formula of vapor: P_4O_{10}

TYPICAL ANALYSIS: P_2O_5—99.5%; lower oxides .01% as P_2O_5; color 60% water solution 50 APHA.

USES: As a desiccant; in the production of alkyl phosphates; a catalyst in air blown asphalt; in the manufacture of fluorophosphates; in the making of phosphorus insecticides; and in the production of oil additives.

SHIPPING INFORMATION: Phosphoric Anhydride. (Flammable—yellow label required). 400 and 60-lb. drums.

PHOSPHORUS TRICHLORIDE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: PCl_3

MOLECULAR WEIGHT: 137.35

TYPICAL ANALYSIS: Water-white liquid; assay 99.75%; PCl_3; Sp. Gr. 15.5°C., 15.5°C., 1.585; distillation range °C.: first drop 74.6, 1-96 ml 0.9, dry point 76.0.

USES: A chlorinating agent and catalyst in the preparation of various intermediates in dyestuffs; reagent in the preparation of acetic anhydride, organic phosphates, germicides and medicinals; manufacture of phosphorus oxychloride and phosphorus pentachloride; in producing iridescent metallic deposits.

CAUTION: Care must be exercised in handling this product. Reacts with water. Avoid breathing its vapors. Avoid contact with the skin.

SHIPPING INFORMATION: Phosphorus Chloride, "Corrosive liquid" label required. 675-lb. approx. nickel drums; 4,000 and 8,000-gal. nickel tank cars.

TETRAPOTASSIUM PYROPHOSPHATE

Potassium Phosphates.

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $K_4P_2O_7$

MOLECULAR WEIGHT: 330.34

STANDARD FORM: Powder.

PROPERTIES: White powder, hygroscopic in air; pH value in 1% solution 10.4 at 25°C.; solubility 190 gms. in 100 gms. water at 25°C.

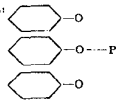
USES: In textile oils and soaps to increase emulsifying values and to prevent formation of insoluble hard water soaps; clarifying agent; to improve cleansing action of soaps.

SHIPPING INFORMATION: Washing Compound Dry. 350 and 150-lb. drums.

TRIPHENYL PHOSPHITE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 310.28

SPECIFICATIONS: Light yellow solid or oily liquid; Sp. Gr. 1.179 to 1.183; free phenol 0.8% max.; hydrolyzable chlorine 0.01% max.; color APHA 150 max.; refractive index at 25°C. 1.587 to 1.590.

PROPERTIES: A crystalline solid at slightly below room temperature; at higher temperatures is an oily liquid weighing about 9.85 lbs. per gal.

USES: A color improver and metal scavenger in alkyd resin production. Also used as a stabilizer in polyvinyl chloride compounds. Monsanto's patent No. 2572571 covers this and resellers and users must be licensed.

SHIPPING INFORMATION: Chemicals NOIBN. 55 and 5-gal. drums.

TRIPOTASSIUM PHOSPHATE *Potassium Phosphates.*

INORGANIC DIVISION

FORMULA: K_3PO_4

MOLECULAR WEIGHT: 212.27

STANDARD FORM: Powder.

PROPERTIES: White crystalline powder soluble in water; insoluble in alcohol; very hygroscopic.

GRADES: Hydrated.

USES: Used in synthetic (cold) rubber manufacturing.

SHIPPING INFORMATION: Potassium Phosphate. 300-lb. net fiber drums.

FOR PHOSPHATE FERTILIZERS,
See "Agricultural and Farm Chemicals"

FOR PHOSPHATE PLASTICIZERS,
See "Plastics / Resins / Plasticizers."

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PETROLEUM PRODUCTS and CHEMICALS

LION PETROLEUM PRODUCTS/CHEMICALS

GASOLINES

LION PREMIUM GASOLINE WITH "LIONITE"

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: This high-octane premium gasoline is refined through advanced processing methods at the Lion Refinery, El Dorado, Ark. Equipment employed is of modern design, including a Model IV fluid-type catalytic cracking unit, a Thermofor catalytic cracking unit, a vapor recovery and polymerization unit, alkylation unit, chemical treating plant and other related equipment. "Lionite", a petroleum-type additive, is employed to impart special properties in the finished product.

USES: Automotive fuel.

SHIPPING INFORMATION: Lion Premium Gasoline with "Lionite" is marketed only through Lion service stations.

LION REGULAR GASOLINE WITH "LIONITE"

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: This high-octane regular gasoline is refined through advanced processing methods at the Lion Refinery, El Dorado, Ark. Equipment employed is of modern design, including a Model IV fluid-type catalytic cracking unit, a Thermofor catalytic cracking unit, a vapor recovery and polymerization unit, alkylation unit, chemical treating plant and other related equipment. "Lionite", a petroleum-type additive, is employed to impart special properties. While the octane rating of Lion Regular Gasoline is not as high as for Lion Premium Gasoline, this product is outstanding in octane for regular grade gasolines.

USES: Automotive fuel.

SHIPPING INFORMATION: Lion Regular Gasoline with "Lionite" is marketed only through Lion service stations.

PREMIUM GASOLINE *Unbranded*

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Premium gasoline, refined to high standards of quality and performance, is available in grades ranging from 95 to 99-octane ratings.

USES: Automotive fuel.

SHIPPING INFORMATION: Gasoline (Dangerous placards applied). Railroad tank car, transport trucks, barges, and pipe line.

REGULAR GASOLINE *Unbranded*

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Regular gasoline, refined to excellent standards of quality and performance, is available in 85 to 93-octane ratings.

USES: Automotive fuel.

SHIPPING INFORMATION: Gasoline (Dangerous placards applied). Railroad tank car, transport trucks, barges, and pipe line.

OILS

LION ALL-PURPOSE GEAR LUBRICANT

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: An exceptional, premium quality, extreme pressure gear oil. It is specially fortified with carefully selected additives to provide longer gear life under the most severe operations. It is recommended for gear sets of hypoid, spiral bevel and spur gear types. Meets MIL-L-2105 specifications.

SAE GRADES: 80, 90, 140 and 250.

SHIPPING INFORMATION: Lubricating Oil. 427-lb. and 120-lb. drums and 40-lb. pails.

LION AZALEA OILS

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A fine line of carefully refined turbine grade oils. They are of the finest quality, and all contain rust inhibitors, oxidation inhibitors and anti-foam agents. This broad line of oils makes it possible to select just the proper oil for a specific use. Lion Azalea Oils are used in hydraulic systems, high speed spindles, electric motor bearings, steam turbines, speed reducers, etc.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; and 5-gal. cans.

LION BAIZE OILS

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Made from a high quality, naphthenic crude and fully refined. They have high film strength and good stability, together with heat resisting properties. These oils are recommended for speed governors on engines, ring oiled bearings, electric motors and generators; gas, gasoline and diesel engines employing either air or mechanical injections, and other instances where products having the Baize properties are recommended. Lion Baize oils contain oxidation inhibitors and anti-foam agents.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; and 5-gal. cans.

BLACO

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Black oil with high film strength for use on chains and open gears.

SHIPPING INFORMATION: 54-gal. drums. Petroleum residual fuel oil.

LION CODA OILS

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: These are fully processed, straight mineral oils and are usually designated as "engine oils." They are used under a wide range of conditions such as those found to exist with centrifuge machines, cream separators and spindles. They are also used on ring oiled bearings, chain-oiled or hand-oiled bearings, machine tools, woodworking machinery, rock product machinery and conveying equipment.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; 5-gal. cans.

LION CYLINDER OIL *Mineral and Compounded.*

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: For lubrication of steam cylinders and valves, steam niggers and bearings. A filtered, steam refined cylinder oil which gives excellent results with medium pressure steam. A good general purpose oil for saw-mill use. It comes in a 5% compound for average saturated steam pressures (150 to 175-lb.) and an 8% compound for excessively wet steam.

GRADES: 1300, 1308, 1400, 1405, 1408, 1605 and 1608.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums.

LION GEAR LUBRICANT MINERAL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A "regular" type, or straight mineral, gear oil made from an exclusive high quality base of fully refined lubricating oil. This lubricant is used in transmissions, differentials, and other gear sets when a "regular" type gear oil or straight mineral oil is recommended. It is not recommended for extreme pressure or severe service conditions.

SHIPPING INFORMATION: Lubricating Oil. 427-lb., 120-lb. drums, 40-lb. pails.

LION NATURALUBE AUTOMATIC TRANSMISSION FLUID

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A superior quality, fully guaranteed automatic transmission fluid, approved by Armour Research Foundation for use in all transmissions and applications requiring Type "A" Suffix "A".

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums, 15-gal. drums, 24/1 quart cans.

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LION ROCK DRILL LUBRICANT

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: An oil which withstands high pressures for use in lubricating rock crushers and rock drills.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums.

LION STEERING GEAR LUBRICANT

LION OIL DIVISION

STANDARD FORM: Semi-fluid.

GENERAL INFORMATION: A semi-fluid lubricant made from an exclusive high-quality base. It is recommended for use in steering gears of newer model automobiles and meets G.M. #531536 and Ford M-4758 approvals for steering gear lubricants.

SHIPPING INFORMATION: Lubricating Grease. 55-gal. drums; 40-lb. pails.

GREASES AND LUBRICATION

LION AC TRACK ROLLER GREASE

LION OIL DIVISION

STANDARD FORM: Semi-fluid.

GENERAL INFORMATION: A stringy, tacky lubricant of a semi-fluid consistency which is suitable for lubricating the roller bearings and seals in track wheels, track idlers and support rollers. Exceeds specifications established by Allis-Chalmers Manufacturing Company.

SHIPPING INFORMATION: Lubricating Grease. 35-lb. pails.

LION BARIUM 4-In-1 GREASE

LION OIL DIVISION

STANDARD FORM: Short-fiber grease.

GENERAL INFORMATION: An all-purpose, barium-type lubricant for use on wheel bearings, chassis, universal joints and water pumps. It is highly water-resistant, and stable up to approximately 350°F. This lubricant has the necessary cohesiveness and adhesiveness to stay in place in universal joints. It is pumpable in temperatures as low as 40°F., and has the property of almost complete freedom from drippage. NLGI Grade 2.

SHIPPING INFORMATION: Lubricating Grease. 400-lb., 120-lb. drums, 35-lb. pails.

LION CHASSIS GREASE "S" AND "W"

LION OIL DIVISION

STANDARD FORM: Buttery.

GENERAL INFORMATION: A lubricant for use in the general lubrication of chassis parts not requiring a special grease. It is manufactured from viscous, high-quality oils and a special calcium base. It is highly adhesive, tacky and water-proof. This product is made in both summer and winter grades.

SHIPPING INFORMATION: Lubricating Grease. 400-lb., 120-lb. drums, 35-lb. pails and 5-lb. containers.

LION COTTON PICKER SPINDLE GREASE

LION OIL DIVISION

STANDARD FORM: Semi-fluid.

GENERAL INFORMATION: A special heat-resistant lubricant produced especially for cotton picker spindles. It has an extremely low pour point, and will also provide superb lubrication at high temperatures.

SHIPPING INFORMATION: Lubricating Grease. 400-lb., 120-lb. drums, 35-lb. pails and containers.

LION LAVA COMPOUND

LION OIL DIVISION

STANDARD FORM: Varies from liquid to semi-liquid.

GENERAL INFORMATION: An adhesive compound for use on gears, cams and chains where a tacky substance is required.

NLGI GRADES: Numbers 1, 2, 3, and 4.

SHIPPING INFORMATION: Lubricating Grease. 400-lb., 120-lb. drums and 35-lb. pails.

LION MULTI-PURPOSE A. F. GREASE

LION OIL DIVISION

STANDARD FORM: Buttery.

GENERAL INFORMATION: A lithium base, multi-purpose grease for use on anti-friction bearings. It pumps readily even at winter temperatures, resists water washing and stands up in severest service. Maximum continuous usable temperatures 350°F.

NLGI GRADES: #1 and #2.

SHIPPING INFORMATION: Lubricating Grease. 400-lb. and 120-lb. drums, 35-lb. pails.

LION PREMIUM WHEEL BEARING AND UNIVERSAL JOINT GREASE

LION OIL DIVISION

STANDARD FORM: Fibrous.

GENERAL INFORMATION: A soda-base grease for use in wheel bearings and universal joints. It provides high resistance to heat, pressure and moisture, and does not tend to melt and run out on brake linings.

NLGI GRADE: #3.

SHIPPING INFORMATION: Lubricating Grease. 120-lb. drums, 35-lb. pails and 5-lb. containers.

AROMATIC OILS

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: An unsaturated hydrocarbon raw material used in manufacturing petroleum resins and aromatics.

SHIPPING INFORMATION: Petroleum Naphtha and/or Aromatic Concentrates. Railroad tank cars and tank trucks.

BURNER OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Used in oil-fired residential heating units. Made in Grades No. 2 and No. 3.

SHIPPING INFORMATION: Petroleum Distillate Fuel Oil, not suitable for illuminating purposes. Railroad tank cars, transport trucks and barges, and pipe lines.

BUTANE-PROPANE MIXTURE

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A liquefied petroleum gas used for home heating and as a motor fuel in engines especially equipped to use this fuel.

SHIPPING INFORMATION: Liquefied Petroleum Gas. (Dangerous placards applied). Railroad tank cars and transport trucks.

DIESEL FUEL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A product of petroleum refining for use as fuel in diesel engines.

SHIPPING INFORMATION: Petroleum Distillate Fuel Oil, not suitable for illuminating purposes. Railroad tank cars, transport trucks and barges, and pipe lines.

ETHYLENE

LION OIL DIVISION

STANDARD FORM: Gas.

GENERAL INFORMATION: An unsaturated hydrocarbon which is a basic raw material for the production of plastics, many chemicals and chemical intermediates.

SHIPPING INFORMATION: Ethylene Gas (Compressed Gas). Pipe Line and Railroad Tank Cars.

HERBICIDAL OIL NO. 1

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A post-emergence contact herbicide produced by carefully controlled petroleum refining. It is completely volatile and leaves no residue. It is non-corrosive and its fumes are non-toxic.

USES: A safe and economical herbicide for weed control in cotton and soybeans. Applied as a spray.

SHIPPING INFORMATION: Naphtha. Tank cars.

HERBICIDAL OILS NOS. 6 & 7

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A non-selective, general contact herbicide produced by carefully controlled refining from a crude oil naturally high in aromatic compounds. It is slowly volatile and leaves no permanently toxic or oily residue when used at recommended rates. Kills only those plants on which it is actually sprayed.

USES: For control of weeds and grasses on railroad rights-of-way, and wherever a general contact herbicide is required. Applied as a spray.

SHIPPING INFORMATION: Petroleum Distillate Fuel Oil, not suitable for illuminating purposes. Tank cars.

INK OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A lightweight oil for mixing with inks in printing.

SHIPPING INFORMATION: Petroleum Distillate Fuel Oil, not suitable for illuminating purposes. 54-gal. drums.

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KEROSENE

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A product of petroleum refining for use as fuel in oil-burning stoves and lamps, and in various internal combustion engines.

SHIPPING INFORMATION: Refined Oil, Illuminating, and/or Kerosene, Railroad tank cars, transport trucks or barges, and pipe line.

PROPANE

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A liquefied petroleum gas used for home heating.

SHIPPING INFORMATION: Liquefied Petroleum Gas. (Dangerous placards applied). Railroad tank cars and transport trucks.

PROPYLENE

LION OIL DIVISION

STANDARD FORM: Liquid under pressure.

GENERAL INFORMATION: An unsaturated hydrocarbon raw material for production of polypropylene, acrylonitrile, alcohol and many other chemicals and chemical intermediates. Supplied in high purity (95%) and low purity (40%).

SHIPPING INFORMATION: Liquefied Petroleum Gas. (Dangerous placards applied). Railroad tank cars and transport trucks.

PROPYLENE TETRAMER

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Olefinic C11 to C13 hydrocarbon mixture produced from polymerization of Propylene used principally in the manufacture of Dodecylbenzene, a detergent raw material.

SHIPPING INFORMATION: Petroleum Propylene Tetramer. Railroad tank cars, tank trucks and barges.

RESIDUAL FUEL OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A fuel oil for use in firing furnaces and boilers on locomotives, steamships and in industrial plants.

SHIPPING INFORMATION: Petroleum Residual Fuel Oil. Tank cars, tank trucks, and barges.

TRACTOR DISTILLATE

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A product of petroleum refining for general use as a fuel in internal combustion engines on tractors.

SHIPPING INFORMATION: Petroleum Distillate Fuel Oil, not suitable for illuminating purposes. (Dangerous placards applied). Tank cars and tank trucks.

POWER MOTOR OILS

NATURALUBE MOTOR OIL

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A motor oil reinforced with special additives for use in internal combustion engines where operating conditions are more severe than in light duty. This oil has high oxidation stability and contains properties which tend to prevent bearing corrosion. Meets requirements for API Classification ML-SM.

SAE GRADES: 10 through 50 inclusive.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. and 30-gal. drums; 5-gal. cans; cases: 24 1-quart cans.

LION NATURALUBE D. H. D. OIL

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A motor oil with the oxidation stability, corrosion preventive properties and detergent-dispersant characteristics necessary for use in both high-speed diesel and gasoline engines under heavy duty service conditions. Exceeds U. S. Ordnance Specification MIL-L-2104A (S-1) and requirements for API Classifications MS-DG-DM.

SAE GRADES: 10 through 50, inclusive.

SHIPPING INFORMATION: Lubricating Oil. 55-gal., 30-gal. and 15-gal. drums; 5-gal. cans.

LION NATURALUBE D. H. D.—SUPER DUTY OIL

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A motor oil for diesel and heavy duty use to meet specification requirements under the most demanding conditions, especially in engines using high sulfur requirements for Caterpillar Series 3 lubricants and for API Classifications DM-DS. Meets U. S. Ordnance Specification MIL-L-45199.

SAE GRADES: 10 through 40 inclusive.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; and 5-gal. cans.

LION NATURALUBE H. D. MOTOR OIL

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A newly developed motor oil to meet the exacting requirements for top performance of modern high compression automobile engines. Its ability to remove power-destroying engine deposits keeps in check the engine's octane requirement increase, and reduces knock and pre-ignition. Its anti-acid properties protect engines against acid wear, and its high natural film strength protects against friction wear. Its oxidation stability and detergent-dispersant characteristics, together with the characteristics described above, make it highly desirable for use under heavy duty service conditions of modern driving. Meets requirements for API Classifications MM-MS-DG-DM and U.S. Ordnance Specification MIL-L-2104A (S-1).

SAE GRADES: 10 through 50 inclusive.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; 5-gal. cans; cases: 24/1-quart cans.

LION NATURALUBE MULTI-TEMP MOTOR OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A superior all-weather oil for automobile engines providing an extra safety margin for protection under extremes of temperature, climate and other operating conditions. Naturalube Multi-Temp exceeds MIL-L-2104A(S-1) performance level and is especially recommended for modern high-compression engines. It also meets MS test sequences as established by automotive manufacturers. It has a high Viscosity Index and it is highly desirable for use under heavy duty service conditions in modern automobiles. Meets API Classification MS-DG-DM.

SAE GRADES: 10W-30 and 20W-40.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums, 24/1-quart cans.

LION NATURALUBE OUTBOARD MOTOR OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A specially-selected straight run mineral oil produced without chemical detergent additives and designed as a superior lubricant for two-cycle engines. It may be used for outboards, chain saws, power lawn mowers, power generators, air-cooled motors, motor scooters and motor bikes. Its natural detergent action makes it a highly recommended oil for use in two-cycle engines.

SHIPPING INFORMATION: Lubricating Oil. 48/8-oz. cans. 55-gal. drums, 24/1-quart cans.

TIGER MOTOR OIL

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A straight mineral motor oil for lubrication of engines in light duty service. Meets requirements for API Classifications ML-MM.

SAE GRADES: 10 through 50, inclusive.

SHIPPING INFORMATION: Lubricating Oil. 55-gal. drums; cases: 24/1-quart cans.

LION NOKORODE PRODUCTS

BRUSH CEMENT

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A brush-applied heavy asphalt cutback for sealing laps and joints on coverings for insulations, and as a brush-applied vapor seal.

SHIPPING INFORMATION: Roofing Cement. 5-gal. pails; 55-gal. drums.

CAR CEMENT

LION OIL DIVISION— LITERATURE AVAILABLE

GENERAL INFORMATION: A sealing compound for use in sealing joints and minor openings, the underframe, and the roof of railroad cars. This cement air-dries to a coating which seals out moisture, chemicals and fumes to prevent corrosion.

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SHIPPING INFORMATION: Roofing Cement. 5-gal. pails; 55-gal. drums.

CHASSIS BLACK

LION OIL DIVISION

GENERAL INFORMATION: Lion Nokorode Chassis Black is an asphalt base coating supplied as a concentrate. Before using it should be diluted by adding approximately 60 parts by volume mineral spirits to 100 parts by volume Chassis Black. The resulting material will give a tough, durable coating which will air dry in 4 to 10 minutes. The drying time will depend on the degree of dilution and the grade of mineral spirits used. Mineral spirits with a boiling range of 240 to 315°F. is preferred.

TYPICAL PROPERTIES OF CHASSIS BLACK AS RECEIVED:

Flash, Tag open cup, °F.	75 +
Viscosity, Saybolt Furol @ 122°F.	86
Solids, weight %	54
Pounds per gallon at 60°F., approx.	7.4

TYPICAL PROPERTIES AFTER DILUTION:

Viscosity, Saybolt Universal sec. @ 77°F.	115
Solids, weight %	35
Consistency	Spray or Brush
Dry time, minutes	4 to 10
Pounds per gallon at 60°F., approx.	6.9

USES: Applied to paint frames, radiators, springs, axles and flat metal parts of automobiles, buses, etc., to give them a pleasing appearance and prevent corrosion.

SHIPPING INFORMATION: Liquid Petroleum Asphalt. 5-gal. pails; 55-gal. drums; bulk quantities.

COACH BUILDERS SOUND DEADENER

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A semi-liquid material composed of selected asphalts, petroleum solvents, fillers and additives. Developed especially for use on side, roof and floor panels of large commercial and passenger vehicles where the panels are subject to more flexing than is usual in automobiles or cabinets. Application prevents noises caused by vibration, and corrosion preventive properties protect metal surfaces.

SHIPPING INFORMATION: Vehicle Body Sealer or Sound Deadener. 5-gal. pails; 55-gal. drums.

COACH BUILDERS UNDERCOATING

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A semi-liquid material which dries to form a tough film. When applied to the underbody of commercial and passenger vehicles, it protects against moisture conditions, chemicals, and prevents points of corrosion from being started by abrasion due to flying gravel. Adds years to the life of the vehicle and reduces maintenance costs. Much more flexible for large units than regular underbody coating.

SHIPPING INFORMATION: Vehicle Body Sealer or Sound Deadener. 5-gal. pails; 55-gal. drums.

CONSTRUCTION ASPHALTS

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Hot applied asphalt for hot setting, bonding and vapor sealing of low temperature insulations.

GRADES: Grade B, 145-155°F. softening point; Grade C, 180-200°F. softening point.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 100-lb. cartons.

CORK UNDERCOATING

LION OIL DIVISION

GENERAL INFORMATION: An asphalt base, mastic composition containing a high volume content of screened ground cork and a small amount of long fiber asbestos. Applied with spray equipment, Lion Cork Undercoating cures to a tough and abrasion resisting film with excellent insulating, rust preventing and sound deadening properties. Cork Undercoating reduces heat loss and protects from corrosion and weathering elements. It further acts as a sound deadener. Upon curing the film becomes fire resistant and does not support combustion. A ⅛-inch application reduces heat loss or gain by 40%.

USES: Primarily for coating the underbody of automobiles and trucks. It may be used where a combination of insulation, rust protection and sound-deadening effects are desired.

SHIPPING INFORMATION: Vehicle Body Sealer or Sound Deadener. 54-gal. drums and 5-gal. pails.

D-41 PRIMER

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A primer for surfaces prior to the application of Lion Nokorode Construction Asphalts. Meets government and ASTM specifications.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 55-gal. drums; 5-gal. pails.

E KOTE

LION OIL DIVISION

GENERAL INFORMATION: A hot applied asphaltic coating for water-front and underwater service. Made from an asphalt base and mineral filler which gives excellent protection to metal surfaces under severe conditions of service. Recommended for application to tanks, penstocks, steel piers, metal surfaces in dock constructions, and general water-front application.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 100-lb. cartons.

9G54A

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A low viscosity, oil-base rust preventive of the non-drying type. Protection of a thin film, usually by dipping, gives excellent protection to metal surfaces against other conditions of high humidity and other atmospheric corrosive influences. Having a low viscosity, economy of a high coverage is obtained. Added to this, addition the protection is greater than usually found in heavy bodied slushing oils. The thin coating does not interfere with handling, assembly or inspection.

USES: Application of the thin film of 9G54A during the assembly of metal parts is desirable for protection during shipment and in storage. Also it is an ideal economical coating for application and protection of metal sheet and strips and wire.

SHIPPING INFORMATION: Petroleum Oil, NOIBN. 5-gal. pails; 55-gal. drums.

GOVERNMENT RUST PREVENTATIVES

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Various types of materials manufactured to meet exacting Government standards. These materials have been tested and approved by the Government laboratories as meeting their specifications and Certificates of Compliance are supplied covering same.

Following is a list giving the Lion Nokorode designation and the Government Specification for which it is approved:

Lion Nokorode Designation	Government Specification
2-126, Grade 1	USA 2-126, Grade I
2-126, Grade 2	USA 2-126, Grade 2
C081	MIL-C-11796A, Class 1
C091	MIL-C-11796, Class 2
063	MIL-C-11796A, Class 3
081	MIL-C-6708, Type I
731	MIL-C-16173A, Grade 1
732	MIL-C-16173A, Grade 2
733A	MIL-C-16173A, Grade 3
Grate Top Coating	JAN-P-102—MIL-C-102A
Army Cote 827	AXS-1827 (Amendment 1)
Army Cote 827	Fed. Spec. TT-C-520
E-011	MIL-C-3254, Type 2
602D	52-MA-602D Type D
052	MIL-C-15035D Type II

SHIPPING INFORMATION: 5-gal. pails; 55-gal. drums.

INDUSTRIAL SOUND DEADENER

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Semi-liquid compound used on many types of fabricated sheet metal panels, such as are used in cabinets, to prevent vibration noises and eliminate "tinniness" of thin-gauge panels. Used for stamped bath tubs, kitchen sinks, etc.

SHIPPING INFORMATION: Vehicle Body Sealer or Sound Deadener. 5-gal. pails; 55-gal. drums.

K KOTE

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: An asphalt base, mastic composition containing a high volume content of screened ground cork and a small amount of long fiber asbestos. Applied with spray equipment or trowel K Kote cures to a tough and abrasion-resisting film with excellent insulating and weather-and-vapor barrier properties. K Kote, usually applied by spray, has a pleasing appearance with the cork particles uniformly distributed throughout to decrease the thermal conductivity of the film. A ¼" film of K Kote compared to a bare steel surface can reduce the loss of heat up to 85%. Yet the film acts as a weather and vapor barrier to protect underlying surfaces from condensation corrosion and weathering elements; and sound deadening value is given to ducts, walls, etc. Upon curing the film becomes fire resistant and does not support combustion.

TYPICAL PROPERTIES AND PERFORMANCE:

	Standard or Spray	Industrial or Trowel
Pounds per gal. at 60°F. approx. after aged	6.4	6.6
Flash Point, Tag Open Cup, °F.	100 +	100 +
Solids of wt. %	60	61
Approx. solids by volume, %	68	72
Dry to touch, ¼" spray coat, min.	45	45
Dry thru, ¼" spray coat, hours	24	24
Approx. volume of cork in cured film, %	55	57
Lineal shrinkage, %	16	15
Resistance to abrasion by sand blast	Excellent	Excellent
Outdoor weathering performance	Excellent	Excellent
Flow of cured ¼" film on metal panel, vertical at 325°F.	None	None
Temperature range of coating	−40 to 300°F.	−40 to 300°F.

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USES: All surfaces where a combination of insulation, vapor and weather protection, and sound-deadening values are of benefit, can be economically covered in one application.

SHIPPING INFORMATION: Roofing Cement. 4.6-gal. pails; 51-gal. drums.

LOW TEMP

...N OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A catalytic asphalt base (U. S. Patent No. 2,450,756) formulation containing selected oils and mineral fillers for use as a bedding and joint compound for low temperature insulation. It cures to a black, non-tacky but permanently soft compound with a film shrinkage in thickness of approx. 14%. Low Temp is an excellent seal to decrease transmission of vapors through joints and layers of insulation to prevent build-up of destructive moisture beneath the insulation. Plasticity of the coating is retained at low temperatures. This is an excellent protective coating to prevent corrosion of surfaces by industrial atmospheres, but due to its softness, Low Temp is not recommended as an outside coating excepting where exposed at joints and seams. This material can be applied by stiff brush or trowel within a temperature range of 60°/110°F, and can be sprayed with industrial type of mastic spray equipment. Compound has satisfactory behavior over the wide temperature range from minus 100°F. to plus 200°F.

TYPICAL PROPERTIES AND PERFORMANCE:

Pounds per gal. at 60°F., approx.	10.4
Solids by wt., %	87
Flash, Pensky-Martens Closed Tester, °F.	100+
Dry to touch, ⅛" film, days	2
Dry firm, ⅛" film	Non-drying, remains soft and plastic.
Film Shrinkage	14%
Outdoor weathering performance	Satisfactory, but due to softness not recommended as outside coating.
Salt fog resistance ⅛" film, complete protection of steel panels, min. hrs.	500

SHIPPING INFORMATION: Roofing Cement. 5-gal. pails; 55-gal. drums.

82S

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: This is a heavy-duty rust preventive grease coating consisting of a firm microwax base containing suitable inhibitors to impart high film adhesion to metal surfaces. This material is of such consistency that it can be readily applied by swabbing at ordinary temperatures. After solvent evaporation, a firm, flexible and non-drying semi-transparent film remains to give a high degree of protection against corrosive influences.

USES: Some suggested applications are on metal tanks, hoppers, stored equipment, farm equipment, pipes, bridges, barges and rigging.

SHIPPING INFORMATION: Petroleum Oil, NOIBN. 5-gal. pails; 55-gal. drums.

SEAM AND BACKING CEMENT

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A trowel-applied, mineral-filled asphalt base backing cement for use on masonry and concrete walls in construction of cold chambers and for filling joints, seams, and laps.

SHIPPING INFORMATION: Roofing Cement. 50-lb. pails; 550-lb. drums.

SEAL KOTE

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Solvent cutbacks of a selected asphalt base containing the proper proportions of asbestos, and other mineral fillers to cure to a highly weatherproof, tough and adherent film upon the evaporation of the solvent. Seal Kotes are applied by brush or trowel over insulation and to various surfaces, such as metal and masonry areas, to protect from moisture and act as a vapor corrector which, especially in industrial areas is accelerated by various dusts, fumes and fogs of corrosive chemicals. The tough and flexible film is highly impermeable and offers a high degree of protection under conditions of total or intermittent water immersion. Available in brush, spray, heavy and extra-heavy trowel grades.

TYPICAL PROPERTIES AND PERFORMANCE:

	GRADE			
	Light (Brush)	Medium (Spray or Brush)	Heavy (Trowel or Caulking)	Extra-Heavy (Trowel or Pressure Caulking)
Application temperature	50-120°F.	Spray 50-120°F. Brush 80-120°F.	50-100°F.	50-120°F.
Flash, Pensky-Martens, °F., Min.	100	100	100	100
Solids, % Min.	65	68	75	80
Lineal Shrinkage	20	20	15	12
Flow of cured film at 325°F.	None	None	None	None
Approx. weight, lbs/gal. at 60°F.	7.8	8.2	8.8	10.2
Dry to touch, ⅛" film, hrs. max.	2.0	2.0	2.0	2.0
Dry firm, ⅛" film, hrs. max.	24	24	24	24
Salt fog resistance, ⅛" film, complete protection of steel panel, hrs., min.	500	500	500	500
Vapor transmission, wet cup, grams per 100 sq. in. per 24 hrs., ⅛" film, 0-50% RH.	0.01	0.01	0.01	0.01
Fire resistance of cured film, 6 in. Bunsen flame applied for 3 minutes	Excellent. No falling of asphalt droplets. Fire duration less than one minute after flame is removed.			
Resistance to solution of acid, 60 day immersion of steel panels coated with ⅛" film	No appreciable attack, blistering or hardening of coating or corrosion of panels by 10% HCl, 10% H_2SO_4, and 10%, 30% and 85% solution of phosphoric acid.			
Resistance to solutions of alkalies and salts, 60 day immersion of steel panels coated with ⅛" film	No appreciable attack, blistering or hardening of coating or corrosion of panels by solutions of 10% and 30% NaOH, 45% ammonium nitrate and saturated solution of ammonium sulfate.			

USES: Metal buildings, metal roofs, barges, pontoons, bridge structures, concrete silos, storage tanks, tank cars and industrial piping are but a few of the structures being protected from corrosion and weathering. Also an excellent vapor seal for all types of insulation.

SHIPPING INFORMATION: Roofing Cement. 5-gal. pails; 55-gal. drums.

SEAL PRIME

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A spray or brush applied asphalt-solvent blend. A primer for porous surfaces prior to the application of Lion Nokorode Seal Kotes, Seal Perm, K Kote and Low Temp. Also an excellent black coating with good hiding power.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 5-gal. pails; 55-gal. drums.

SEAL PERM

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: An asphalt plastic recommended as a breathing type of weatherproof barrier over high temperature insulation, walls and other areas. Particular properties of Seal Perm permit moisture vapor from insulation or walls to escape through the cured film, as might be required by normal breathing action or by temperature increase, but liquid water cannot enter. This coating functions as an excellent weather barrier and has highly desirable film properties, forming a tough, strong and abrasion and weather-resistant covering which is light in weight. This coating is not an emulsion, and unlike emulsions, moisture transmitted through the cured film is in vapor form and water soluble salts are not worked to the surface to cause unsightly staining. Seal Perm is available in spray and trowel consistency.

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TOWOLDMON0005801
WATER_PCB-00002311

TYPICAL PROPERTIES AND PERFORMANCE:

	Trowel	Spray
Flash, Pensky-Martens, °F.	105 F.	105 F.
Pounds per gal. at 60 F., approx.	7.45	8.0
Solids by weight, %	63+	58+
Volume Drainage on curing, %	34-36	30
Sag of sprayed or trowel ¼" film	None	None
Dry to touch ¼" film, minutes	30 to 45	30
Resistance to abrasion by sandblast	Good	Excellent
Outdoor weathering performance	Excellent	Excellent
Flow of cured film at 325°F.	None	None
Permeability at 77 F., wet cup, sprayed film:		
Permeability value, g/hr/cm/mm. Hg.		3-10'
Grams/100 sq. in./24 hrs., ½" wet film, 0-50% R.H., 90°F.		0.50
Perms, ½" wet film, 0-50% R.H., 90°F.		0.66

USES: Particularly recommended for weatherproofing insulation placed on vessels or pipes with a surface temperature above 212°F.

SHIPPING INFORMATION: Roofing Cement. 55-gal. drums; 5-gal. pails.

SIGN KOTE

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: An asphalt base coating for application to the unprotected back of metal signs. Sign Kote prevents corrosion of the metal and can greatly extend the life of the sign by protecting it against the effects of fumes and fogs which contain various corrosive chemicals. Dries to a tough, black, semi-glossy film. Applied by brush.

SHIPPING INFORMATION: Roofing Cement. 5-gal. pails; 55-gal. drums.

UNDER CAR SEALER AND SILENCER

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: A compound of selected asphalts, petroleum solvents, fillers and additives which forms a tough, protective, sound deadening film when applied to the underbody of automobiles. This dense coating offers protection against rust, muffles noise, protects against abrasion caused by flying gravel, and seals out dust. When properly applied by spray to the underbody, fenders, and hood of the automobile it lasts for the life of the car. Produced by Lion Oil Company under U. S. Patent No. 2,393,774.

SHIPPING INFORMATION: Vehicle body sealer or sound deadener. 5-gal. pails; 54-gal. drums.

NO. 2002 UNDERCOATING AND SOUND DEADENER

LION OIL DIVISION

GENERAL INFORMATION: A compound of asphalts, petroleum solvents, fillers and additives designed to protect the underbody of automobiles. This coating offers protection against rust, muffles noise and seals out dust. It is applied to automobile underbodies, fenders and hoods by spray. It has a high sound-deadening value; therefore is suitable for dampening in body construction or industrial uses. Manufactured under U. S. Patent No. 2,393,774.

SHIPPING INFORMATION: Vehicle body sealer or sound deadener. 5-gal. pails; 54-gal. drums.

VEHICLE

LION OIL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: An asphalt base vehicle to be aluminized to obtain a finish with excellent weathering and vapor seal properties for all types of surfaces and weather and vapor barriers.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 5-gal. pails; 55-gal. drums.

LION ASPHALT PRODUCTS

ACID-PROOF ASPHALT COATING

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Used as an inside coating for brass shell casings for protection against corrosion and also for industrial uses where resistance to mild acids is required. Meets Joint Army-Navy Specification JAN-P-450, Types I and II.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 55-gal. drums.

ASBESTOS ASPHALT ROOF COATING

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Asbestos roof coating is a mixture of high-grade petroleum asphalt, cut to proper consistency with petroleum solvent, to which selected asbestos fiber has been added. The asphalt from which this product is made does not contain coal tar, free carbon or cracked residues. The material is in liquid form and requires no heating.

USES: This material is recommended as a heavy-duty finish for added protection on smooth-surface roll roofing or built-up roofs; for preserving metal roofs; and for renewing old, dry, smooth-surface roll roofing. The high asbestos content permits the sealing of small cracks, joints, seams and nail holes. Higher resistance to the drying-out action of the sun assures maximum economy for unlimited service life. Best results are obtained in weatherproofing exposed vertical areas, concrete surfaces exposed to moisture, and in waterproofing structures both above and below grade.

SHIPPING INFORMATION: Roofing Cement. 55-gal. drums; 5-gal. pails; 1-gal. pails (6 in case).

ASBESTOS ROOF COATING *Non Federal.*

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A mixture of high grade petroleum asphalt, petroleum solvent to which selected asbestos (rock) fiber has been added. The asphalt from which this product is made does not contain coal tar, free carbon or cracked residues. The material is in liquid form and requires no heating. This coating product is carefully formulated to give it a self-healing property.

USES: This material is recommended as a heavy duty finish for added protection on smooth surface roll roofing or built-up roofs; for preserving metal roofs and for renewing old, dry, smooth-surface roll roofing on which there will be no foot or other traffic. The high asbestos content permits the sealing of small cracks, joints, seams and nail holes. It has high resistance to the drying-out action of the sun.

SHIPPING INFORMATION: Roofing Cement. 55-gal. drums and 5-gal. pails.

ASPHALT ALUMINUM VEHICLE

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: After the addition of aluminum pigment, Lion Asphalt Aluminum Vehicle is applied to obtain a highly weather resistant, tightly adhering protective film. It has been examined by leading pigment manufacturers and approved by them as a quality product for use with their pigments.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 55-gal. drums; 5-gal. pails.

ASPHALT PLASTIC CEMENT

LION OIL DIVISION

STANDARD FORM: Heavy liquid.

GENERAL INFORMATION: This material is carefully compounded from high-grade petroleum asphalt, naphthas, especially treated mineral fillers, and asbestos fibers. It adheres tightly to metal, felt, wood, glass and concrete surfaces. It also has the property of being able to cover and adhere to wet or dry metal and saturated roofing-felt surfaces. Manufactured under U.S. Patent No. 2,393,774

USES: This material is recommended for repair of breaks, cracks and holes in all types of roofs, and for sealing and waterproofing around chimneys, skylights, valleys, vent pipes and base and cap flashings. It also is useful for sealing the walls of settlings, and for dampproofing interior and exterior walls, both above and below grade, where heavy film thickness is desirable for maximum protection. Important farm uses include the repair of watering tanks and as a pruning cement.

SHIPPING INFORMATION: Roofing Cement. 500-lb. drums; 50-lb. pails; 10-lb. pails (6 in case); 5-lb. pails (12 in case); 2½-lb. pails (18 in case); 1-lb. pails (36 in case).

ASPHALT ROOF COATING

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A liquid material prepared from a high-grade asphalt with a petroleum solvent. It is easier to handle than the solid type because it is already prepared and ready for application by brush or spray. No heating, thinning, special equipment or skilled labor is necessary. Lion Asphalt Roof Coating does not contain coal tar, free carbon or cracked residues. It resists brittleness and cracking in cold weather and maintains firm body in hot weather.

USES: This product is recommended for added protection as a surface finish on smooth-surfaced roll roofing or on built-up roofs; for preserving metal roofs; for renewing old, dry, smooth-surfaced roll roofing.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 55-gal. drums; 5-gal. pails; 1-gal. pails (6 in case).

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WATER_PCB-00002312

BLIND NAILING CEMENT

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A compound of high grade petroleum asphalt, petroleum solvent and selected asbestos (rock) fiber. It eliminates the need of nailing the lower edge of roll roofing and avoids the leak hazard created by nail holes. The completed job provides a roof with much longer life. Important additional uses of this extremely durable and adhesive material include the cementing of patches when damaged roofs are being repaired.

USES: This cement is especially recommended for use in applying selvage-edge roll roofing. It also is highly recommended for applying felt which has not been saturated.

SHIPPING INFORMATION: Roofing Cement, 55-gal. drums; 5-gal. pails; 1-gal. pails.

CODE 2 PRIMER

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A primer especially developed for application to steel before coating with E-120 asphalt.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish), 5-gal. and 55-gal. drums.

COLAY PAVING ASPHALT

LION OIL DIVISION—LITERATURE AVAILABLE

Developed by Lion Oil Company)

STANDARD FORM: Solid.

GENERAL INFORMATION: Colay Paving Asphalt is especially designed for use in preparing a ready-mixed paving, patching and resurfacing material, marketed by contractors as Colay Asphaltic Paving Material. It is designed to furnish high-type pavement surfacing and low-cost pavement maintenance to localities which do not have access to an asphalt mixing plant.

Lion Oil Company does not sell the ready-mixed Colay Asphaltic Paving Material. Lion sells Colay Paving Asphalt which is used in a special process developed by Lion Oil Company to produce the ready-mixed Colay Asphaltic Paving Material. In this process, Colay Paving Asphalt is combined with crushed limestone or slag, blended sands and mineral filler at centrally located mixing plants to produce Colay Asphaltic Paving Material which requires no job-site preparation. All moisture is removed from the aggregate, which is then screened into separate sizes for proper proportioning by weight before coating. Colay Paving Asphalt is added to the proportioned mixture and the combined materials then go through a process which thoroughly coats all the aggregate with asphalt.

Colay Paving Asphalt is produced from an especially selected asphaltic base crude oil. Upon request, natural latex may be added to Colay Paving Asphalt at the refinery. Valuable properties are excellent resistance to weathering, high ductility and strong adhesives. The natural high tendency to resist displacement by water has been increased. Stockpiled mixes have been water flooded for prolonged periods without sign of distress. Colay contains no petroleum solvents and therefore is unlike other materials which depend on the evaporation of their cure-retarding agents to reach a satisfactory "set" condition.

SPECIFICATIONS: Colay Mix No. 1 is designed for use as a sealing and wearing course on old bituminous surfaces which have only minor irregularities, but which are cracked to the extent that water can seep into the base. Mix No. 2 is designed for use on old pavement which is in need of a leveling course as well as a sealing and wearing surface. Mix No. 3 is designed for construction of a surface course on a new or reshaped base. Precise specifications will depend upon special requirements, aggregate to be used, and other variable factors.

USES: Colay Paving Asphalt is used in preparing ready-mixed Colay Asphaltic Paving Material to provide an asphaltic concrete street and highway pavement, for surfacing playgrounds and parking areas, and for similar purposes.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). Tank cars.

COLD PROCESS LAP CEMENT

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: This quick-setting liquid asphalt is especially compounded for use as an adhesive in construction of built-up roofing with coal-tar pitch felts.

USES: Cold Process Cement eliminates the necessity of using nails on the lower edge of roll roofing when applied shingle style. Only the upper edge of the roofing should be nailed. Not to be used on non-saturated felt.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish), 55-gal. drums; 5-gal. pails and 1-gal. pails (6 in case).

CORKBOARD ERECTION ASPHALT

LION OIL DIVISION

STANDARD FORM: Solid.

GENERAL INFORMATION: An asphalt compound used in applying cork insulation to structures such as cold storage vaults, etc. Odorless when cold. Melting point: 185-200°F.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish), 100-lb. fiber cartons.

CRATE-TOP COATING

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: A mixture of asbestos, asphalt, and solvent for packaging and packing materials for overseas shipment. Provides protection against water and moisture, and retains plastic conditions over a wide range of temperatures. Manufactured to meet Military Specification MIL-C-102A.

SHIPPING INFORMATION: Roofing Cement, 5-gal. metal pails and 55-gal. metal drums.

D-80 JOINT COMPOUND

LION OIL DIVISION

STANDARD FORM: Solid.

GENERAL INFORMATION: A compound developed by Lion for use as a superior, hot-poured, concrete joint compound.

SHIPPING INFORMATION: Paving joints, roadway expansion, asphalt base, 400-lb. metal drums.

DEAD LEVEL ROOFING ASPHALTS

LION OIL DIVISION

STANDARD FORM: Solid.

GENERAL INFORMATION: A roofing asphalt developed especially for use on flat roofs with poor drainage.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish), 400-lb. metal drums and 100-lb. fiber cartons.

DRY-KILN MASTIC

LION OIL DIVISION

STANDARD FORM: Heavy liquid.

GENERAL INFORMATION: Used for coating interior of dry kilns to reduce heat loss and to protect wood, mortar and metal surfaces against corrosion incident to the curing of lumber.

SHIPPING INFORMATION: Roofing Cement, 500-lb. metal drums

E-120 ASPHALT

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid, liquefied by heating.

GENERAL INFORMATION: Lion E-120 Asphalt is a blend of asphaltic resins and hydrocarbons containing natural wax combinations and a 425 mesh filler, providing a compound with low moisture absorption, high electrical resistivity and strong mechanical properties. This material lends itself for application to pipes, tanks. Once the asphalt is set, the film is firm and tough to withstand handling under normal construction conditions; and yet retain the flexibility required at lower atmospheric temperatures. This asphalt does not produce fumes irritating to workmen and application temperatures may be carried up to 525°F. without danger of breakdown or decomposition of the asphalt.

TYPICAL PROPERTIES:

Weight, lbs./gal. at 60°F.	9.95
Flash Point, C.O.C., above °F.	575
Softening point (R&B) °F.,	240
Penetration at 77°F., 100 g/5 sec.	8
Penetration at 32°F., 200 g/60 sec.	5
Penetration at 115°F., 50 g/5 sec.	14
Penetration at 150 F., 50 g/5 sec.	34
Ash (Mineral Filler), % by weight	19
Settlement ratio, max.	1.02
High temperature sag test at 160°F., 24 hrs., inches	None
Peel test, 60° to 160°F.	None
Break test at 77°F., 1" Mandrill	None
Water absorption, 36 weeks, % by wt.	0.9
Resistivity, Ohm-cm., above	1×10^{16}
Voltage breakdown, volts/mil, above	1000
Low temperature crack test at −20°F.	None

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish), 150-lb. fiber cartons.

FLUX OILS

LION OIL DIVISION

STANDARD FORM: Semi-solid.

GENERAL INFORMATION: Used in the manufacture of coatings and saturants, and solid roofing asphalts by oxidation.

SHIPPING INFORMATION: Petroleum fuel oil, residual. Tank cars.

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TOWOLDMON0005803
WATER_PCB-00002313

MEMBRANE LINING

LION OIL DIVISION—LITERATURE AVAILABLE

(Manufactured Under U. S. Patent No. 2,450,756.)

STANDARD FORM: Solid—liquefied by heating.

GENERAL INFORMATION: This hot application (400°F.) asphalt was originated and developed by Lion Oil Company under patent No. 2,450,756, catalytically blown asphalt, using phosphorous pentoxide as the catalyst.

TYPICAL PROPERTIES:

Flash point C.O.C., min.	425°F.
Softening point (R&B)	175° to 200°F.
Penetration at 77°F., 100 g., 5 sec.	50-60
Penetration at 32°F., 200 g., 60 sec., min.	30
Penetration at 115°F., 50 g., 5 sec., max.	120
Ductility at 77°F., 5 cm. per minute, min.	3.5 cm
Loss at 325°F., 5 hours, max.	1.0%
Penetration after loss on heating, 77°F., 100 g., 5 sec., % of original, min.	60.0%
Bitumen (soluble in carbon tetrachloride), min.	97.0%

USES: This asphalt is used to produce a thick, tough, waterproof membrane, formed by spraying the hot asphalt on the earth's surface. It has been applied to hundreds of miles of canals and reservoirs for seepage control, and the product has shown unusual characteristics of durability as well as a toughness and flexibility which makes it unexcelled for this purpose. Not only is this type of construction probably one of the most efficient ever developed for the control of seepage, but it is the most economical, both in initial cost and in length of service.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 400-lb. metal drums; tank cars and tank trucks.

METAL COATING NO. 3

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid, manufactured in four grades: light, medium, heavy and extra heavy.

GENERAL INFORMATION: A black, semi-glossy, dense, highly impermeable, adhesive film designed to protect metals from corrosive influences. The composition contains high-grade petroleum asphalt, asbestos fiber, specially treated mineral fillers, and a small content of solvent to permit ready application at ordinary atmospheric temperatures. Films of Coating No. 3 offer lasting protection, do not crack and peel on exposure to weather, and have high resistance to abrasion and impact.

SPECIFICATIONS:

Requirement	Light (Brush)	*Medium (Spray)	Heavy (Trowel)	Extra Heavy (Trowel)
Weight—lbs. per gal. at 60°F.	7.8	8.3	8.8	10.2
Solids content, %	65	68	75	80
Mineral filler (Ash), %	15	20	25	30
Flash point, Pensky-Martens, °F.	102	102	102	102
Cracking or disbonding at 20°F.	None	None	None	None
Time to dry to touch, 1/16" film, hrs.	1.5	1.5	1.5	1.5
Time to dry firm, 1/16" film, max. hrs.	24	24	24	24
Lineal shrinkage, %	18	15	12	10
Flow of coating at 325°F., inches	0.0	0.0	0.0	0.0
Corrosion of steel, copper, aluminum	None	None	None	None
Salt spray test, 1/16" film, protection of steel panel, min., hrs.	500	500	500	500
Outdoor weathering performance	Excellent			
Fire resistance of cured film, 6" Bunsen flame applied for 3 min.	Excellent. No falling asphalt droplets. Fire duration less than one minute after flame removed.			
Vapor transmission, wet cup, grains per sq. ft. per hr., 1/4" film, 0-50% R.H. at 90°F.	0.01	0.01	0.02	0.03

*Can also be brushed at temperatures of 75°F. or above. (Made under the process of U. S. Patent No. 2,393,774.)

USES: This product is used on pipes and tanks to be buried underground and as a protective film on bridges, butane tanks, metal culverts, gas holders, metal roofs, gutters, hoppers, pipes, pontoons, railings and, in general, all metal surfaces where a touch film is needed to protect from corrosion and rust. Sound deadening properties also are provided, as when used on the interior of hulls of metal boats.

SHIPPING INFORMATION: Roofing Cement. 55-gal. drums; 5-gal. pails.

PAPER LAMINANT

LION OIL DIVISION

GENERAL INFORMATION: Used in manufacturing laminated waterproof paper bags.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). Tank cars.

PAVING ASPHALTS

LION OIL DIVISION

GENERAL INFORMATION: Asphalt cements and slow-curing, medium-curing, and rapid-curing asphaltic paving materials of all grades can be supplied. The base asphalts are steam and vacuum-reduced from crude oils of highest quality.

SPECIFICATIONS: Products are available to comply with requirements of most federal, ASTM, state, county and municipal specifications.

USES: Products cover the entire range of asphaltic materials required in construction, from asphalt cements for heavy-duty highways to seal and maintenance cutbacks and slow-curing oils for dust palliatives. Joint compounds are marketed for sealing concrete highways, undersealing asphalt for sub-sealing, and asphaltic center stripe cutback for center-line marking.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). Tank cars, trucks, 400-lb. drums; 55-gal. drums; depending upon the product type and shipping distance.

POLE COMPOUND

LION OIL DIVISION

STANDARD FORM: Heavy liquid.

GENERAL INFORMATION: For use in filling crevices and holes in utility line poles. Protects wood by sealing out moisture.

SHIPPING INFORMATION: Roofing Cement. 5-gal. metal pails.

ROAD OIL NO. 2 *Dust Palliative Oil*

LION OIL DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: An oil developed by Lion for use as a low-cost, dust-laying oil for roads and streets.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 55-gal. drums; tank cars and tank trucks.

SOLID ROOFING ASPHALT

LION OIL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: A solid—liquefied by heating.

GENERAL INFORMATION: A firm, adhesive waterproofing bitumen, designed for use as a hot application material. It is made by a combination of vacuum distillation and oxidation and contains no undesirable materials such as are produced by the cracking process. It is non-corrosive and does not contain free carbon, coal tar, or cracked residues. Careful processing minimizes the possibility of breakdown of the petroleum products completely preserving the characteristics of strength and toughness.

SPECIFICATIONS: This product is prepared in four grades; 115/130° melt; 140/160° melt; 160/180° melt and 180/200° melt. Lion Solid Roofing Asphalts, depending upon grade, comply with the following specifications: AASHO M115-52, Type A; ASTM D-449-49, Type A; Federal SS-A-666 Am. 1, Type I, Class A; ASTM D-449-49, Type C. Lion Solid Roofing Asphalt also can be supplied within a softening point range of 150/165°F. to comply with SS-A-666 Am. 1, Type II, Grade 1, Class A, and within a softening point range of 165/190°F. to comply with SS-A-666, Am. 1, Type II, Grade 2, Class A.

USES: Lion Solid Roofing Asphalt is used as a hot application material for built-up roofs of various specifications.

SHIPPING INFORMATION: Petroleum Asphalt (other than paint, stain or varnish). 400-lb. metal drums, 100-lb. fiber cartons.

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WATER_PCB-00002314

PETROLEUM ADDITIVES

"SANTOLENE C" FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Viscosity @ 100°F. 259 SUS. Flash Point, °F. 170. Sp. Gr. 60°/60°F. 0.884.

USES: Corrosion and rust inhibitor in light petroleum distillates resulting in significant reduction of rusting and corrosion of pipelines and other petroleum product transmission equipment.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

"SANTOLENE F" FUEL OIL ADDITIVE

ORGANIC DIVISION

STANDARD FORM: Liquid.

PROPERTIES: An oily liquid having the following typical properties: Saybolt Universal viscosity 75 seconds at 210°F.; Sp. Gr., 0.98 at 60°/60°F.; sulfur 1.9%; barium 7.5%.

USES: Sludge inhibitor for fuel oils to prevent burner screen clogging and reduce rusting. Concentrations as low as 0.02% have been used satisfactorily.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

"SANTOLENE F-C" FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An oily liquid having the following typical properties: Sp. Gr. 60°/60°F. 1.02; color ASTM diluted 7; barium 10%; sulfur 2%.

USES: Functions as a dispersant in burner fuel oils to prevent screen clogging and reduce rusting. Concentrations as low as .002% have been satisfactory.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 54-gal. black iron drums.

"SANTOLENE H-LV" FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Liquid having the following typical properties: Viscosity at 100 F. 8.03 cs., Flush Point, 235°F.; Sp. Gr. 60°/60 F. 8.36.

USES: Sludge inhibitor for fuel oils to prevent burner screen and filter clogging and to reduce rusting. Concentrations as low as 25#/1000 barrels have been used.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums.

"SANTOLENE J" FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber colored liquid having the following typical properties: Viscosity of 1.30 centistokes at 210 F.; Flash Point 200 F.; Specific Gravity at 60 /60 F. of 0.810.

USES: Fuel oil stabilizing agent designed to prevent color degradation and sediment formation and reduce rusting in fuel oils. A concentration of 25 pounds per 1000 barrels is satisfactory for most base oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums; tank cars.

"SANTOLUBE 70" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An oily viscous liquid having the following typical properties: Sp. Gr. 0.926 at 60°/60°F.; Saybolt Universal viscosity 240 seconds at 210°F.

USES: Rust inhibitor for turbine oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. steel drums.

"SANTOLUBE 203-C" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A more concentrated (10% Barium) form of Santolube 203A and 203B. Saybolt Universal viscosity of 450 seconds at 100°F.; Barium concentration 10%; Specific Gravity 60°/60°F. of 0.981.

USES: A detergent-dispersant additive designed primarily for use in motor oils. When used with suitable anti-oxidants and corrosion inhibitors, alone and with a phenate (Santolube 333), it is recommended for compounding Heavy Duty Oils of the MIL-L-2104A type. Also recommended for Supplement I and Series III formulations.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums and tank cars.

"SANTOLUBE 333" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid with the following typical properties: Viscosity at 210°F. of 11.0 centistokes; Flash Point 300°F.; Sp. Gr. 60°/60°F. of 1.01; Barium Concentration of 10%.

USES: A detergent-dispersant additive designed primarily for use in Heavy Duty Motor Oils. Recommended for use with Santolube 203C and suitable corrosion inhibitor (Santolube 393) for compounding MIL-L-2104A and Supplement I and Series III oils.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

"SANTOLUBE 392" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Flash Point 330°F.; phosphorus 7.3%; sulfur 15.2%; zinc 6.3%; viscosity at 100°F. 1260 SUS. at 210°F. 60 SUS; Sp. Gr. at 60°/60°F. 1.104.

USES: An effective inhibitor and motor oil anti-oxidant for upgrading the quality of straight base oils when used alone and which is also used in combination with detergent-dispersant additives (e.g., Santolubes 203-C, 333, 401, 410) to meet operating conditions imposed by passenger cars, trucks, tractors and other equipment powered by petroleum fuels.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums or tank cars.

"SANTOLUBE 393" OIL ADDITIVE (ZINC DIALKYL DITHIOPHOSPHATE)

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid with the following typical properties: Viscosity at 100 F. of 150 centistokes; Flash Point 260°F.; Sp. Gr. 60°/60°F. of 1.120.

USES: An effective and versatile anti-oxidant and bearing corrosion inhibitor for lubricating oils. Finds wide application in compounding Premium and Heavy Duty Motor Oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums; tank cars.

"SANTOLUBE 394-C" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber, viscous liquid with the following approximate properties: viscosity 15 to 25 cts. at 210 F.; Sp. Gr. 1.02 at 60°/60 F.; phosphorus 4.7%; sulfur 13.1%.

USES: An effective and versatile anti-oxidant and bearing corrosion inhibitor for engine lubricating oils. Finds wide application in compounding Premium and Heavy Duty Motor Oils.

SHIPPING INFORMATION: Petroleum Oils NOIBN. 55-gal. steel drums; tank cars.

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"SANTOLUBE 395-X" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber liquid with the following typical characteristics: Viscosity 12 to 14 cs. at 210°F.; Sp. Gr. 1.005 at 60°/60°F.; phosphorus 3.7%; sulfur 11%; barium 1.1%.

USES: An oxidation and bearing corrosion inhibitor for crankcase oils designed to meet Premium Motor Oil requirements.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. steel drums; tank cars.

"SANTOLUBE 401" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid having the following typical properties: Viscosity @ 100°F. 1132 SUS, @ 210°F. 114.3 SUS; barium 8.4%; sulfur 3.35%; zinc 0.80%; Sp. Gr. 60°/60°F. 1.0151.

USES: A detergent-dispersant-inhibitor additive which when used alone and in combination with inhibitor (Santolube 392 or 393) permits the compounding of single and cross-graded motor oils of the MIL-L-2104A, and Supplement I types.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. black iron drums; tank cars.

"SANTOLUBE 410" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid having the following typical properties: Viscosity at 100°F. 1350 SUS, at 210°F. 148 SUS; flash point 380°F.; barium 9.50%; sulfur 1.82%.

USES: A detergent-dispersant additive which is used at varying concentrations to formulate motor oils meeting the performance requirements of the Military and the automotive industries. This product is always used with a suitable inhibitor (Santolube 392 or Santolube 393).

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. black iron drums; tank cars.

"SANTOPOID 22" GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid with the following typical properties: Viscosity 435 SUS at 100°F.; Flash Point 300°F.; Sp. Gr. 1.120 at 60°/60°F.

TYPICAL ANALYSIS: Sulfur 12.6%, Chlorine 16.5%, Phosphorus 3.3%, Zinc 3.5%.

USES: A multipurpose gear oil additive. MIL-L-2105 type gear oils may be compounded using 5-6%. Gear oils which pass the L-37 high torque test and the Buick 10-A high speed shock test may be formulated using 10-15%.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. black iron drums.

"SANTOPOID 22-RI" GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam-inhibited, dark, oily liquid having superior rust preventive properties and having the following typical properties: Sp. Gr. 60°/60°F. 1.135+; flash point 300°F.; sulfur 13.3%; phosphorus 4.0%; chlorine 14.5%; zinc 3.7%.

USES: Used in compounding gear lubricants as defined by the American Petroleum Institute as GL-4 type service. Also used in compounding gear lubricants complying with MIL-L-002105A Ordinance (this specification will be called MIL-L-2105B when it receives full acceptance by the armed services as anticipated).

SHIPPING INFORMATION: Chemicals NOIBN, 54-gal. black iron drums; tank cars.

"SANTOPOID 23-RI" GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam-inhibited, dark liquid having superior rust preventive properties and the following typical properties: Pour Point +15°F.; Flash point 300°F.; Sp. Gr. 60°/60°F. 1.150; cs. at 100°F. 720 SUS; sulfur 13.4%; chlorine 14.0%; phosphorus 1.1%; zinc 3.7%.

USES: To compound multipurpose Hypoid lubricants providing adequate performance in automotive axles equipped with limited-slip mechanisms, and as well to formulate gear lubricants conforming with MIL-L-002105A Ordinance (this specification will be called MIL-L-2105B when it receives full acceptance by the armed services as anticipated).

SHIPPING INFORMATION: Chemicals NOIBN, 54-gal. black iron drums; tank cars.

"SANTOPOID 33" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam inhibited, dark, oily, viscous liquid with the following typical properties: Sp. Gr. 1.13 at 60°/60°F.; Flash Point 250°F.; Saybolt Universal viscosity 60 at 210°F.; sulfur 8.5%; chlorine 26.0%; phosphorus 0.56%.

USES: Recommended for compounding gear lubricants formerly known as Military Specification MIL-L-2105 quality.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. steel drums; tank cars.

"SANTOPOID 35" GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam inhibited, dark, oily, viscous liquid with the following typical properties: Sp. Gr. 60° 60°F. approx. 1.15; flash point 250°F.; viscosity @ 210°F. 87 SUS; sulfur 8.4%; chlorine 26%; phosphorus 0.54%.

USES: Used for compounding gear lubricants of former MIL-L-2105 quality.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. black iron drums; tank cars.

"SANTOPOID S" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A dark, oily, viscous liquid, chemically a chlornaphtha xanthate; Sp. Gr. approximately 1.19 at 60°/60°F.; Flash Point 250°F.; viscosity 64 cts. at 100°F.; sulfur 11%; chlorine 31%.

USES: "Santopoid S" may be used for compounding extreme pressure lubricants. Lower percentages are used for milder E. P. Products.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. steel drums; tank cars.

"SANTOPOUR C" OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A dark liquid with the following typical properties: Flash Point 360°F.; viscosity 1020 SUS at 210°F.; Sp. Gr. 60°/60°F. 0.910.

USES: An effective and economical pour point depressant for all types of wax-bearing oils. Effective at concentrations as low as 0.02%.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 55-gal. black iron drums; tank cars.

PLASTICS
RESINS
PLASTICIZERS

STYRENE RESINS—PLASTICS

"LUSTREX" SYYRENE

PLASTICS DIVISION—LITERATURE AVAILABLE

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STANDARD FORMS: Monsanto "Lustrex", one of the lightest and most widely used thermo-plastic molding materials, is available for compression molding, injection molding and extrusion in all types of machines and molds. Special formulations available for sheet extrusion and vacuum forming applications. Special formulations for general purpose application: "Lustrex" HI-Flow 55 (improved flow), "Lustrex" HI-Flow 66 (long flow, moderate set-up), "Lustrex" HI-Flow 77 (good flow, fast set-up); medium and high impact strength applications, "Lustrex" HI-Test 42 and "Lustrex" HI-Test 48 (medium impact), "Lustrex" HI-Test 88 (high impact); heat resistance applications: "Lustrex" High-Heat 99 (up to 200°F.), "Lustrex" Hi-Test 80 (heat resistant, high impact).

GENERAL INFORMATION: Other special formulations available for applications requiring ultra-violet light stability (general purpose and impact "Lustrex" perma tone) and dust resistance (general purpose and impact formulations of "Lustrex" Lo-Stat).

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding Compound. Monsanto "Lustrex" is tasteless, odorless and non-toxic with high dimensional stability, hardness, rigidity and dielectric strength. It can be molded to any sharply defined detail and finish. Available in a broad range of transparent, translucent and opaque colors as well as crystal.

USES: A wide range of typical applications includes: Refrigerator parts, toys, packaging, air conditioner cabinets, radios, housewares, wall tile, television components, displays, electrical equipment, lighting fixtures, furniture drawers and phonograph records.

INDUSTRIAL USERS: Automotive, Construction, Electronics, Machinery and Appliances, Packaging, Toys, Housewares, Furniture, Lighting.

SHIPPING INFORMATION: Hopper cars (Dri-Flo) fiberboard containers (1000 lbs.), multiwall bags (50 lbs.), drums (350 lbs.). Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

"LUSTREX" STYRENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Monsanto "Lustrex" styrene is furnished in pellets, either natural or colored.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Extruding and calendering material. Can be extruded as sheeting or as profile shapes for various applications requiring high impact strength.

USES: Monsanto "Lustrex" styrene is widely used for such applications as: Refrigerator door liners, toys, lighting fixtures and games.

INDUSTRIAL USERS: Automotive, Construction, Electronics, Machinery and Appliances, Packaging, Toys, Housewares, Furniture, Lighting.

SHIPPING INFORMATION: Hopper Cars (Dri-Flo), fiberboard containers (1,000 lbs.), multiwall bags (50 lbs.), drums (350 lbs.). Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

"LYTRON"

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resins. Promotes adhesion, stabilizes, hardens and thickens emulsion systems.

USES: Alkali-soluble and water soluble resins used in water and latex coating systems.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive, Chemicals, Machinery and Appliance, Packaging, Pulp and Paper, Rubber, Textiles, Emulsion floor waxes, Detergents.

SHIPPING INFORMATION: Bags. Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

"LYTRON"

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Plasticized or unplasticized latices.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin.

USES: Main vehicles for latex paints and as modifiers in compounding rubber and other latices.

INDUSTRIAL USERS: Drug, Paint, Varnish and Lacquer, Automotive, Chemical, Detergents, Pulp and Paper, Rubber, Textiles.

SHIPPING INFORMATION: Fiber drums (475 lbs.). Rail: Plastics, Synthetic, Liquid NOIBN. Truck: Plastics, Liquid NOI.

"LYTRON"

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Unplasticized polystyrene emulsion used to produce coating and finishes without curing or after-treatment.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Gives woolens, rayon and cottons slip resistant finishes.

USES: Textile resin that furnishes durable finishes and long-life to treated fabric without curing or after-treatment.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: Liquipaks (475 lbs.); liquid bulk. Rail: Plastics, Synthetic Liquid, NOIBN. Truck: Plastics, Liquid, NOI.

"LYTRON" SYNTHETIC

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Water emulsion and powder.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Used as binders or dispersing agents.

USES: "Lytron" emulsions are used as a binder for glass fibers employed in battery separators, filters, etc. In powder form "Lytron" is used to prevent clay balls in foundry sand and waste water clarification systems.

INDUSTRIAL USERS: Chemicals, Construction.

SHIPPING INFORMATION: Steel Drums (475 lbs.), tank cars, tank trucks. Rail: Plastics, Synthetic Liquid, NOIBN. Truck: Plastics, Liquid, NOI.

"SCRIPTITE" *Series 50-52-54 Styrene Copolymers*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Dry white powder.

PROPERTIES AND PERFORMANCE CEARACTERISTICS: Paper coating resin. Outstanding polyelectrolyte resins which improve the surface characteristics and printability of paper products and have good wax hold-out properties. Also used as resin binders in clay coatings.

USES: Paper manufacturing.

INDUSTRIAL USERS: Pulp and Paper Industry.

SHIPPING INFORMATION: "Scriptite" 50—multiwall bags (50 lbs.), Drums (250 lbs.). "Scriptite" 52—drums (200 lbs.). "Scriptite" 54—multiwall bags (50 lbs.) Rail: Plastics, Synthetic Other Than Liquid NOIBN. Truck: Plastics, Powder.

"STYMER" VINYL, STYRENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: "Stymer" LF-25 is vinyl resin, soluble with ammonium hydroxide; "Stymer" S is styrene copolymer resin, soluble in water.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Outstanding as sizing agents for acetate. "Stymer" LF-25 designed as durable size. "Stymer" S is water soluble removable size.

USES: Sizes for filament acetates.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: "Stymer" LF-25—drums (100 lbs.). "Stymer" S—multiwall bags (50 lbs.); drums (250 lbs.). Rail & Truck: Sizing NOIBN.

"OPALON" VINYL CHLORIDE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Free-flowing resins available to formulate opaque, translucent or transparent compounds. Compounds available in granular form for injection and compression molding.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding material. Outstanding heat stability, moldability, short molding cycles and low shrinkage. Resistant to moisture, oxidation, most acids and alkalies, petroleum and many common organic solvents.

(Continued on next page)

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USES: Appliance parts, toys, masks, garters, swim accessories, ornaments, sporting goods, handles, knobs, coil forms, housings, wiring devices, electrical system components, housewares and phonograph records.

INDUSTRIAL USERS: Automotive, Construction, Machinery and Appliance, Rubber, Textiles.

SHIPPING INFORMATION: Sealdbins (approx. 10,000 lbs.), fiberboard containers (2 sizes 1,500 lbs. each), multiwall bags (50 lbs.) and drums (550 lbs.). Resin in airslide cars (100,000 lbs.). R.M.: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Powder.

"OPALON" VINYL CHLORIDE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Resins and compounds produced in several formulations for diversified industrial applications.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Opalon 300, 300 FM, 330 FM resins supplied for calendering and extrusion are especially recommended for dry blending, provide color depth, uniformity, toughness and flexibility at low temperatures. Opalon 500, 505, 510, 510-26 resins for ease of processing. Opalon 430 is a specially developed paste resin for vinyl plastisol compounding supplied as a "stir-in" powder to increase speed and ease of preparation.

USES: Typical applications are phonograph records, cable insulation, rainwear, upholstery, floor tile, coatings (metal, paper, fabrics and glass), foams, sponges, garden hose, slush moldings, and dipping operations.

SHIPPING INFORMATION: Sealdbins (approx. 10,000 lbs.), fiberboard containers (2 sizes 1,500 lbs.); multiwall bags (50 lbs.). resins in airslide cars (40,000 lbs.). Resins: Rail—Plastics, Synthetics, other than liquid NOIBN. Truck—Plastics, Powder, Compounds; Rail—(same as above) Truck—Plastics, Granules.

"SAFLEX" VINYL BUTYRAL

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: A continuous adhesive film supplied in clear, translucent, tinted or graduated color, for the plastic interlayer in laminated safety glass.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Laminating material. Tough and resilient; transparency of a superior quality; excellent adhesion to glass.

USES: "Saflex" is used as a protective interlayer for laminating safety glass in automotive, aircraft, and architectural applications. It can be printed in decorative patterns or used for laminating embedments between layers of glass for room dividers, shower stalls, interior doors and wall panels, exterior doors and table tops. Industrial uses of "Saflex" include light and heat control, ultra-violet excluding and safety applications.

SHIPPING INFORMATION: Standard 15 ga. film supplied in 750 ft. rolls; heavier gauges available in 100 to 500 ft. rolls; shipments made in tubes or on pallets. Rail: Plastics, sheets, not woven, NOIBN. Truck: Plastic film, transparent or translucent other than cellulose, not woven, not printed in sheets, not further processed than cut to size.

"STYMER" VINYL STYRENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: "Stymer" LF-25 is vinyl resin, soluble with ammonium hydroxide; "Stymer" S is styrene copolymer resin, soluble in water.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Outstanding sizing agents for acetates. "Stymer" LF-25 designed as durable size. "Stymer" S is water soluble removable size.

USES: Sizes for filament acetates.

SHIPPING INFORMATION: "Stymer" LF-25—drums (100 lbs.). "Stymer" S—multiwall bags (50 lbs.), drums (250 lbs.). Rail & Truck: Sizing NOIBN.

"ULTRON" VINYL CHLORIDE *Rigid Sheets.*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: "Ultron" rigid vinyl sheets feature high dimensional stability, mechanical strength and toughness, high softening temperature, flame resistance, excellent light stability and chemical resistance. Available in rolls from .007" to .020" and in widths up to 75", also in sheets 21½ × 51½". Matte, calender and high polish finishes are obtainable.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Fabricating material. Self-extinguishing from flammability as determined by Standard Industry tests. "Ultron" sheets can be printed, die-cut, machined, vacuum formed, cemented, hot air welded, electronically sealed, embossed, planished, laminated and corrugated.

USES: Supplied in opaque and translucent formulations, ultron vinyl sheets are ideally suited for printing of silverscreen novelties and display signs. Rigid "Ultron" sheets are applicable in various forming processes and for manufacture of premiums, recording discs.

SHIPPING INFORMATION: Corrugated, strapped rolls (150 lbs.). Rail: Plastics, sheets, not woven NOIBN. Truck: Transparent or translucent material: Plastic film, transparent or translucent other than cellulose, not woven, not printed in sheets, not further processed than cut to size. Opaque: Plastic film or sheeting not woven other than cellulose, other than transparent or translucent.

"ULTRON" VINYL CHLORIDE *Flexible Film and Sheeting.*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Flexible film, embossed or plain, in gauges up to .020" and widths up to 96". Specialty formulated film with "cloth in" properties and varying degrees of flexibility are available for specific industrial and agricultural applications.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Fabricating material. "Ultron" film is noted for its uniformity of gauge and color clarity. Water resistant, abrasion resistant. Available as a substitute for opaque or transparent film which may be printed, embossed or molded. Tasteless, odorless, tough, pliable and long-lasting. "Ultron" film is highly adaptable to various manufacturing techniques such as laminating, heat sealing, and cementing.

USES: Low temperature formulations are used as protective coverings for machinery. Industrial applications include moisture barriers, industrial and electrical tapes. As a laminating material, "Ultron" has proven valuable for sheet building materials, flooring, glass batt insulation, metals, paper and fabrics.

INDUSTRIAL USERS: Agriculture, Automotive, Construction, Machinery and Appliance, Textiles, Furniture, Housewares, Wire and Cable, Luggage.

SHIPPING INFORMATION: Cardboard Box, (150 lbs.) Corruflex paper wrap, (350 lbs.) Rail: Plastics, sheets not woven NOIBN. Truck: Transparent or translucent material: Plastic film, transparent or translucent other than cellulose, not woven, not printed in rolls exceeding 8½" in diameter. Opaque: Plastic film or sheeting not woven, other than cellulose, other than transparent or translucent.

POLYETHYLENE

"MONSANTO" POLYETHYLENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Pelleted molding compounds are available for injection, compression or blow molding over a wide range 0.3—30 melt index. Readily processed by dry blending into a broad range of colors.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding compound. One of the most useful and versatile of all plastics, Monsanto Polyethylene, natural, is chemically inert, non-toxic and odorless. Products molded from Monsanto Polyethylene resins are tough and resilient with a high impact resistance and flexibility over a wide temperature range having an extremely low dielectric constant and low power loss factor.

USES: Some of the typical applications are: Housewares, toys, industrial parts, packaging and packaging components, "squeeze" bottles, vials, molded liners and closures.

MARKETS: Automotive, Appliance, Packaging, Toys, Housewares, Industrial Components.

SHIPPING INFORMATION: Hopper cars; sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types, both 1,500 lbs.), multiwall bags (50 lbs.). Rail—Plastics Synthetic Other than Liquid, NOIBN. Truck—Plastics, Granules.

"MONSANTO" POLYETHYLENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in pellet and compound forms.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Paper and coating resin. Fortifies surface with high gloss and scuff resistance. Heat sealable. Improves printability of wax coatings.

USES: Wax reinforcement for paper and board coatings for packaging.

MARKETS: Packaging.

SHIPPING INFORMATION: Hopper cars; sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types—1,500 lbs.); multiwall bags (50 lbs.).

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"MONSANTO" POLYETHYLENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Comes in pelleted form, natural and black.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Extruding material. Monsanto Polyethylene is a tough, impact-resistant resin, extruded as film and sheeting, wire insulation, piping, tubing and profile shapes. It is chemical-resistant, flexible over wide temperature ranges, non-toxic, odorless, nonpolar, low dielectric and easily processed by dry blending into a wide range of colors.

USES: Packaging films, vapor barrier materials, agriculture films, wire and cable insulation, extrusion coatings, profile shapes, high clarity films, packaging and barrier laminations and coatings.

MARKETS: Automotive, Agriculture, Construction, Packaging, Electronics, Wire and Cable manufacturers.

SHIPPING INFORMATION: Synthetic Resin Granules, Hopper cars, sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types, both 1000 lbs.); multiwall bags (50 lbs.); 10 mil polyethylene bags (50 lbs.) for wire and cable compounds. Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Granules.

PHENOLIC RESINS

"RESINOX" PHENOLIC *Lump and Resin Compound.*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder or lump.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Excellent resistance to high heat, maximum bond strength and good chemical resistance.

USES: Manufacturing of Resinoid grinding wheels, brake linings, pulp moldings and for bonding of foundry sand in the production of shell molds and cores.

INDUSTRIAL USERS: Automotive, Chemicals, Electronics, Jets, Missiles, Machinery and Appliance, Foundry, Abrasives.

SHIPPING INFORMATION: Multiwall bags (50 lbs.); non-returnable fiber drums (200-275 lbs.). Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Powder.

"RESINOX" LIQUID PHENOLIC RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Water emulsions.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Excellent resistance to high heat, maximum bond strength and good chemical resistance.

USES: For impregnating or coating filler materials such as paper, cloth, wood (compreg - veneers), glass and mineral wool fibers. Bonding material for Resinoid grinding wheels. Resin impregnated paper for automotive batteries separators. For glass and rock wool thermal and accoustical insulation. Foundry sand core binder.

INDUSTRIAL USERS: Foundry, Automotive, Chemicals, Construction, Electronics, Jets, Missiles, Machinery and Appliance, Pulp and Paper.

SHIPPING INFORMATION: Steel drums (450-550 lbs.); tank cars; tank trucks. Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

"RESINOX" PHENOLIC VARNISHES

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in alcohol solutions for laminating filler materials: paper, cloth, glass or asbestos. Special high heat resistant formulations are available for use with glass, asbestos and similar fibers for jet and rocket components.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resins. Provides tough, durable heat resistant bonds that also resist acids and weak alkalies.

USES: For impregnating laminate filler materials such as paper, cloth, glass or asbestos. Special high heat resistant formulations are available for jet and rocket components. Used in decorative-laminate coverstock; electrical and mechanical grade laminates for radio, TV and home electrical appliances; as well as reel, ball bearing cages, pulleys, bushings for light and heavy machinery, cars, planes, and glass, oil, chemical and paper mfrs.; and binders for shell molding.

INDUSTRIAL USERS: Foundry, Automotive, Chemicals, Construction, Electronics, Jets, Missiles, Machinery and Appliance, Pulp and Paper, Rubber.

SHIPPING INFORMATION: Steel drums (450-550 lbs.); tank cars; tank trucks. Rail and Truck: Varnish, NOIBN.

"RESINOX"

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Phenolic liquid solutions.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin. Imparts high heat resistance and promotes good chemical resistance.

USES: Baked enamel and industrial finishes for can, drum and tank car linings, special primers and coatings.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive; Chemical, Machinery and Appliance.

SHIPPING INFORMATION: Steel drums (450 lbs.). Rail—Plastics, Synthetic Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

MELAMINE RESINS

"RESIMENE"

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in organic liquid solution.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin. Imparts improved surface hardness, weathering, alkali and chalk resistance. Promotes fast cure and excellent color retention.

USES: Melamine and urea-formaldehyde resins improve baked enamel and industrial finishes on appliances, automobiles and other fabricated metal items.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive, Chemical, Machinery and Appliance.

SHIPPING INFORMATION: Steel drums (450 lbs.). Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

"RESIMENE" MELAMINE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Available in water-alcohol, soluble spray-dry powders.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial resin. Produce laminates displaying strong durable surface that is heat, flame and chemical resistant. Color stability and high electrical arc resistance are additional characteristics.

USES: "Resimene" Melamine powder solutions can be combined with paper, cloth and glass fibers to provide a durable surface for all types of furniture, counter tops, cabinets, walls and industrial electrical components.

INDUSTRIAL USERS: Chemicals, Construction, Electronics, Missiles, Machinery and Appliance, Pulp and Paper.

SHIPPING INFORMATION: Multiwall bags (50 lbs.); fiber drums (200 lbs.). Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, powder.

"RESLOOM" ESSENTIALLY MONOMERIC MELAMINE

PLASTICS DIVISION

STANDARD FORM: Available in powder ("Resloom" HP) or liquid form (M-75, M-80, M-85, E-64 and U-30) as a series of essentially monomeric melamine resins.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile resin. Permanently effective to fabrics made from a wide range of textile fibers.

USES: To impart shrinkage control, wrinkle resistance and textural effects to cotton, rayons, synthetics and wools.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: M-75 thru M-85—500 lb. drums; "Resloom" HP—100 lb. drums; E-64—525 lb. drums; U-30—500 lb. drums liquid bulk except "Resloom" HP, which is in powder form. Powder: Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Powder. Liquid: Rail—Plastics, Synthetic Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

TOWOLDMON0005809
WATER_PCB-00002319

"RESLOOM" E-50

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied as 50% solids cyclic ethylene urea formaldehyde resin in liquid form.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Gives permanent texture-4-effects, dimensional stability and wrinkle resistance to cottons, rayons and other synthetics.

USES: As a wet-set permanent wash and wear finish for textiles.

INDUSTRIAL USES: Textiles.

SHIPPING INFORMATION: Drums (525 lbs.); tank cars, tank trucks. Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

"SCRIPTITE" 33 MELAMINE FORMALDEHYDE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Dry, finely divided powder.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Paper resin. A melamine paper treating resin with superior ease of application and maximum solubility.

USES: A melamine resin formulated to impart exceptional wet strength and printability to paper.

INDUSTRIAL USES: Paper and Pulp Industry.

SHIPPING INFORMATION: Multiwall bags (50 lbs.). Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Powder.

"SCRIPTITE" 40 UREA-FORMALDEHYDE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: A transparent colloidal solution.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Paper coating resin. A urea based paper treating resin with superior ease of application and maximum solubility.

USES: A urea resin formulated to impart exceptional wet strength and printability to paper.

INDUSTRIAL USERS: Paper and Pulp Industry.

SHIPPING INFORMATION: Drums (525 lbs.). Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

CELLULOSIC RESINS—PLASTICS

"VUEPAK" CELLULOSE ACETATE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: "Vuepak" is a crystal clear, rigid acetate that is readily fabricated into boxes and containers of outstanding appearance and sales appeal. Available in continuous, untrimmed, and slit-to-size rolls up to 60" wide and 2000' long, in thicknesses from .005" to .020"; and, in stock size sheets or cut-to-size pieces. "Vuepak" is adaptable to various fabricating methods such as shaping, drawing, folding and scoring.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Fabricating Material. Can be fabricated on automatic machines into square, rectangular, or cylindrical shapes. Combines readily with other packaging materials such as metal, paper, boxboard, foil, etc. May be printed, embossed, stapled, cemented, hot-stamped or metallized.

USES: For rigid "see-through" packaging of products ranging from small hardware items to women's fashion accessories. Also ideally suited for transparent protective sleeves; billfold swing arms; used in lamination of advertisements and promotional material, giving such printed matter permanent display value; filing tabs; diagrammatic drawings; canisters; fabricated parts; and transparent windows.

INDUSTRIAL USERS: Packaging, Stationery, Display Manufacturers, Laminators.

SHIPPING INFORMATION: Fiberboard containers (2 sizes—1,500 lbs.).

ROLLS: Rail & Truck—Cellulose film, not printed, in rolls exceeding 8½" in diameter.

SHEETS & CUT PIECES: Rail & Truck—Cellulose film, not printed, in sheets not further processed than cut-to-size pieces.

SCRAP: Rail—Cellulose film scrap (in packages not machine pressed or in machine pressed bales). Truck—Cellulose derivative plastic scrap other than Pyroxylin other than cellular or expanded.

"MONTAR" SYNTHETIC RESINS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Resin.

PROPERTIES: A series of related tan-to-black resins of the following characteristics:

	Softening Point	Cl	% CaO	% Fe
"Montar" 4	120-130°C.	50-52	5-10	0.3-0.6
"Montar" 5	150-200°C.	51-56	5-10	0.5-1.0
"Montar" 7	180-250°C.	53-58	1-3	0.1-0.2
"Montar" 8	190-210°C.	50-61	2-5	0.2-0.4
"Montar" 9	180-190°C.	—	—	0.2-0.4

USES: Used primarily to impart fire resistance and to reduce cost of resin formulations.

SHIPPING INFORMATION: Coal Tar Resins. Catch-weight drums.

SULFONAMIDE RESINS

"SANTOLITE" MS *80% Industrial Resin.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Light-colored, viscous liquid; free-flowing at temperatures above 20°C.; composition 78.8–81.2% "Santolite" MS, 18.8 to 21.2%.

PROPERTIES: Soft, practically colorless resin made by the condensation of formaldehyde with aromatic sulfonamides.

USES: "Santolite" MS, like "Santolite" MHP, is compatible with both nitrocellulose and cellulose acetate; as a solvent for both, it can be used in any proportion. Forms brittle compositions with both resins but the addition of a plasticizer makes such combinations permanently flexible. Readily miscible with all the common organic solvents and thinners except petroleum hydrocarbons; not miscible with varnish and paint oils. Excellent for water-white lacquers which will not be exposed to extreme weather conditions; possesses exceptional clarity and high gloss.

SHIPPING INFORMATION: Resin Synthetic NOIBN Without Filler. 450-lbs. approx., 55-gal. drums; 45-lbs. approx., 5-gal. drums.

RESIN INTERMEDIATES

DIBUTYL FUMARATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $H\text{-}C\text{-}CO_2(CH_2)_3CH_3$

$CH_3(CH_2)_3O_2C\text{-}C\text{-}H$

MOLECULAR WEIGHT: 248

STANDARD FORM: Liquid.

SPECIFICATIONS: Acidity .020 meq/100 grams max.; Color 75 APHA max.; Crystallizing Point −20.0°C. min.; Moisture (KF in methanol) 0.10% max.; Sp. Gr. 25°/25 C. 0.982-0.986.

USES: Internal plasticizing resin former for copolymerizing with vinyl acetate and vinyl chloride for adhesives, textile, paint and paper coatings. Intermediate for chemical synthesis.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal., 18-gauge steel drums with tight heads, 2-inch and ¾-inch openings in the head. Gross weight: 498 lbs. Also tankcars or tank trucks 2,000-gal. minimum.

DIBUTYL MALEATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $H\text{—}C\text{—}CO_2(CH_2)_3CH_3$

$H\text{—}C\text{—}CO_2(CH_2)_3CH_3$

MOLECULAR WEIGHT: 248

0557029

TOWOLDMON0005810
WATER_PCB-00002320

STANDARD FORM: Liquid.

SPECIFICATIONS: Acidity 0.20 meq/100 grams max.; Color 60 APHA max.; Moisture 10% in methanol) 0.10%, max.; Sp. Gr. 0.992-0.995.

USES: Internal plasthidzing resin former for copolymerizing with vinyl acetate and vinyl chloride for adhesives, textile, paint and paper coatings. Intermediate for chemical synthesis.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal., 18-gauge steel drums with tight heads, 2-inch and ¾-inch openings in the head. Gross weight: 498 lbs. Also tankcars or tank trucks 2,000-gal. minimum.

UREA-FORMALDEHYDE RESINS

UREA, INDUSTRIAL GRADE UNCOATED PELLETS

INORGANIC DIVISION

FORMULA: NH_2CONH_2

STANDARD FORM: Urea pelleted form without coating agent.

ANALYSIS:

Nitrogen (Min.)	46.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

USES: Urea Formaldehyde resins for adhesives, plastics, paper and textiles; chemical intermediate, cosmetics, detergents, explosive stabilizer, paints, dentifrice, fermentation, finishes.

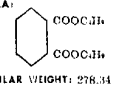
SHIPPING INFORMATION: Urea, 80-lb. multiwall paper bags with polyethylene lining. Also in bulk.

PLASTICIZERS

DIBUTYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 278.34

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 20 max.; odor slight; acidity as phthalic acid) 0.01%, max.; Sp. Gr. 1.0445-1.0465 at 25°/25 C.; refractive index 1.4895-1.4915 at 25°C.; assay (ester content) 99%, min.; sulfur (copper-strip test) negative.

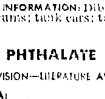
USES: One of the most widely used plasticizers for nitrocellulose and polyvinyl acetate; miscible with all the common organic solvents and with oils; soluble in water only to 0.001% at 30°C.; excellent light stability which permits its use in colorless, white or delicately tinted products. The stability of dibutyl phthalate and its high solvent power for most plastic materials make it one of the most acceptable plasticizers for general use in cellulosics and vinyl acetate.

SHIPPING INFORMATION: Dibutyl Phthalate, 475-lb. steel drums; 40-lb. drums; tank cars; tank trucks.

DIETHYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 222.23

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, water-white oily liquid; color APHA not darker than 10; odor very slightly aromatic; acidity as phthalic acid) 0.01%, max.; Sp. Gr. 1.112-1.117 at 25°/25 C.; refractive index 1.4-1.5 at 25°C.; sulfur (copper-strip test) negative.

PROPERTIES: B.P. 298°C.; wt. per gal. 9.35 lbs.; miscible with all the common organic solvents and diluents.

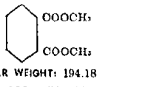
USES: Generally used in mixture with dimethyl phthalate as a plasticizer for cellulose acetate. Also used as a fixative in perfumes. Diethyl phthalate is approved by the FDA as a non-toxic plasticizer for films.

SHIPPING INFORMATION: Diethyl Phthalate, 500-lb. steel drums; 45-lb. drums; tank cars; tank trucks.

DIMETHYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 194.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, water-white oily liquid; color APHA not darker than 10; odor not more than slightly aromatic; acidity (as phthalic acid) 0.01%, max.; Sp. Gr. 1.190±0.001 at 25°/25°C.; refractive index 1.5135±0.003 at 25°C.; sulfur (copper-strip test) negative.

PROPERTIES: A solvent plasticizer for cellulose acetate; miscible with all common organic solvents and with oils (except petroleum oils); solubility in water 0.4% at 32°C.; excellent light stability; B.P. 282°C.; crystallizing point 0°C.; wt. per gal. 10 lbs.

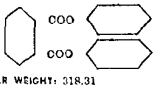
USES: Widely used in cellulose acetate molding compounds and polyvinyl acetate adhesives. Its metor use is primarily in the cellulose acetate field where, as a general rule, it is used in combination with diethyl phthalate or some other plasticizer.

SHIPPING INFORMATION: Dimethyl Phthalate, 550 and 40-lb. steel drums. Tank cars and tank trucks wherever possible.

DIPHENYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 318.31

STANDARD FORM: Fused solid.

SPECIFICATIONS: Essentially white fused solid; free acid (as phthalic acid) 0.30% max.; free phenol 0.20% max.

PROPERTIES: Crystallizing point approx. 69°C.; readily soluble in ketones, esters and chlorinated hydrocarbons; solubility in alcohols, turpentine and linseed oil rather low; approx. 5.0 gm. per 100 cc. of solvent at 25°C.; completely insoluble in water and gives increased water resistance to all compositions in which it is used.

USES: Compatible with nitrocellulose and with the sulfonamide, phenolic, polystyrene and vinyl types of synthetic resins. In nitrocellulose lacquers produces hard coatings that have excellent gloss retention and weather resistance. Mixtures of diphenyl phthalate with either "Santolite" MS—80% or "Santolite" MHP Industrial Resins are excellent plasticizers for nitrocellulose in colorless, flexible, adhesive coatings. Especially recommended for vinyl resins, polystyrene, ethyl cellulose and some of the natural resins such as damar.

SHIPPING INFORMATION: Resin Plasticizer, 400-lb. fiber drums.

DI 2 ETHYL HEXYL ADIPATE (DOA)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $(CH_2)_4(COOCH_2CH(C_2H_5)C_4H_9)_2$

MOLECULAR WEIGHT: 370.56

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 25 max.; odor mild; acidity (as adipic acid) 0.02%, max.; Sp. Gr. 0.924 ±0.003 at 25°/25 C.

USES: A primary plasticizer which imparts excellent low temperature flexibility to polyvinyl chloride resin and synthetic rubbers. Used in conjunction with DOP and/or DOS to make quality vinyl garden hose. Imparts low viscosity to vinyl plastisols for cloth coating, wire coating, etc. Imparts excellent heat and light stability and superior softness to vinyl films and upholstery.

SHIPPING INFORMATION: Resin Plasticizer, 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

0557030

TOWOLDMON0005811
WATER_PCB-00002321

DI-N-OCTYL, N-DECYL ADIPATE (DNODA)

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear oily liquid; color, APHA 50 max.; Sp. Gr. 25°/25°C., 0.912-0.920; refractive index, 25°C., 1.442-1.447; moisture, 0.10% max.; acidity, 0.35 meq/100 gms. max.

PROPERTIES: DNODA is a primary plasticizer for polyvinyl chloride and imparts excellent low temperature flexibility and efficiency along with softness, superior bend and drape, permanence, water resistance, heat and light stability. It has the best balance of properties of all adipates and on a cost performance basis is the first choice of all low temperature flexibilizing plasticizers.

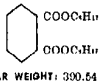
USES: The major use of DNODA is as a low temperature flexibilizer; specialty plasticizer used with basic type esters, such as DOP. It finds widespread use in film, sheeting and coated fabric. It will improve flexibility in garden hose and extrusion compounds and improve low temperature exposure characteristics of electrical jacketing formulae. It is especially useful in vinyl dispersions where its low initial viscosity and excellent shelf life characteristics are most desirable. In addition to being a primary plasticizer for polyvinyl chloride and chloride acetate copolymers, it is compatible and useful with nitrocellulose, ethyl cellulose, chlorinated rubber, GRS and Buna N rubbers. It is also effective with polyvinyl butyral, cellulose acetate butyrate, polystyrene, methacrylate and damar resins.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (415-lb.) and 5-gal. (40-lb.) black iron drums; tank cars, tank trucks wherever possible.

DI (2-ETHYL HEXYL) PHTHALATE (DOP)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 390.54 (Pure compound)

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 25 max.; odor, very slight characteristic; Sp. Gr. 0.980-0.985 at 25°/25°C.; refractive index 1.4845-1.4858 at 25°C.; acidity (as phthalic) 0.01% max.

PROPERTIES: DI (2-Ethyl Hexyl) Phthalate (DOP) is the largest volume plasticizer consumed in polyvinyl chloride resin. It imparts very good low temperature flexibility, low volatility and good heat and light stability to a vinyl composition. It is often used with "Santicizer" 141 to give a composition of improved light stability, resistance to embrittlement and aging, flame resistance and ease of processing. In vinyl electrical compositions, DOP imparts excellent electrical characteristics with good aging properties.

USES: This plasticizer is widely used in plasticizing polyvinyl chloride for electrical insulation. DOP is also compatible with most of the other resins commonly used in the plastics industry. It is an excellent general purpose plasticizer for use in vinyl plastics. It has been widely used in such vinyl applications as shower curtains, aprons, rainwear, upholstery, draperies, garden hose and many others which require good flexibility and aging characteristics.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (415-lb.) and 5-gal. (40-lb.) black iron drums; tank cars, tank trucks wherever possible.

DIISOOCTYL PHTHALATE (DIOP)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 390.55

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 35 max.; odor slight; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 0.980 to 0.985 at 25°/25°C.

USES: General purpose primary plasticizer for polyvinyl chloride. Uses similar to those for DOP. DIOP superior for vinyl organosols and plastisols having lower initial viscosity and lower viscosity build-up on storage than DOP.

SHIPPING INFORMATION: Resin Plasticizer, 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

"DYTROL" *Paint brush conditioner.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear, oily liquid; color, APHA 100 max.; Sp. Gr. 25°/25°C., 0.905-0.911; refractive index at 25°C., 1.501-1.510; moisture, 0.10% max.

PROPERTIES: "Dytrol" is a non-volatile, non-flammable, pleasant smelling liquid that possesses a strong softening action on paints, lacquers, varnishes, etc. It is non-toxic and miscible with most oxidation solvents, thinners and oils.

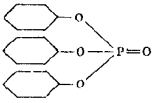
USES: The characteristic of "Dytrol" suggests its use as a preservative for paint brushes. It is also useful as a preconditioner for paint brushes containing dried paint or for removing paint from the skin after a paint job.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (495-lb.) and 5-gal. (45-lb.) steel drums; tank trucks.

TRIPHENYL PHOSPHATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 326.28

STANDARD FORM: Flakes.

SPECIFICATIONS: White flakes, faintly aromatic; M.P. 48.5°C. min. start, permanganate test, no change in 30 minutes; acidity (as H_3PO_4), 0.003%, max.

PROPERTIES: Miscible with the common solvents and thinners and with vegetable oils; solubility in water 0.001% at 31°C., 0.002% at 54°C.; imparts some moisture resistance to cellulose-acetate films. Retentivity in cast cellulose-acetate films nearly 80%; that is, it can be incorporated in the proportion of 8-10 of acetation without separating and blooming. Imparts good flexibility and gives clear, tough compositions without tendency toward tackiness. One of its most valuable properties is that of fire retarding. When used alone on cellulose-acetate films an amount of triphenyl phosphate equal to 20% of the cellulose-acetate weight produces films which will not support combustion.

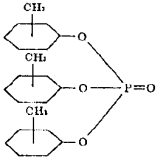
USES: Triphenyl phosphate is primarily used as a flame retardant plasticizer for cellulosics. It also is of interest in heat sealing coatings and adhesives.

SHIPPING INFORMATION: Resin Plasticizer, 225-lb. fiber drums.

TRICRESYL PHOSPHATE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 368.36

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 1.165±0.008 at 25°/25°C.; acidity (as H_3PO_4) 0.01% max.; potassium permanganate test, no change in 30 minutes.

PROPERTIES: High boiling point; relatively non-volatile, evaporation loss less than 0.10% in 100 hours at 100°C. Refractive index is approx. 1.555 and 20°C. Viscosity increases rapidly at temperatures below normal; at approx. −35°C. a solid transparent mass without crystalline structure. Miscible with all the common solvents and thinners, linseed, china wood and castor oils; solubility in water less than 0.002%; at 85°C., imparts good moisture resistance to nitrocellulose films. The ortho isomer which is reputed to be the toxic element in normal tricresyl phosphate, has been virtually eliminated from Tricresyl Phosphate Monsanto, thereby reducing toxicity dangers to a minimum and making the product more suitable for many applications. Elimination of the ortho isomer causes no impairment in plasticizing qualities.

0557031

TOWOLDMON0005812
WATER_PCB-00002322

USES: The standard fire-retarding plasticizer for nitrocellulose and vinyls. Being a solvent for nitrocellulose, it has a high retentivity and can be used in large proportions without danger of sweating or separation. Widely used in vinyl resins, particularly in electrical applications; has good electrical properties and imparts flame resistance to the composition. Compatible with most lacquer resins and gives firm, tough, flexible films of excellent weathering qualities.

SHIPPING INFORMATION: Resin Plasticizer, 5-lb. and 45-lb. steel drums; tank cars, tank trucks wherever possible.

DIISODECYL ADIPATE (DIDA)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $(CH_2)_4(COOC_{10}H_{21})_2$

MOLECULAR WEIGHT: 426.67

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 100 max.; odor mild; acidity as adipic acid 0.01% max.; Sp. Gr. 0.916-0.003 at 25°/25 C.; moisture by KF in methanol 0.10% max.

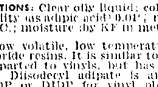
USES: A low volatile, low temperature plasticizer for polyvinyl chloride resins. It is similar to dioctyl adipate in properties imparted to vinyls, but has the advantage of lower volatility. Diisodecyl adipate is an excellent coplasticizer with DIOP or DIDP for vinyl plastisols and organosols. DIDA imparts very low initial viscosity to plastisols and a negligible increase in viscosity on storage.

SHIPPING INFORMATION: Resin Plasticizer, 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

DIISODECYL PHTHALATE (DIDP)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 446.65

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 50 max.; odor slight; acidity as phthalic acid 0.01% max.; Sp. Gr. 0.962-0.964 at 25°/25 C.

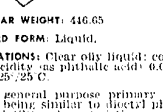
USES: A general purpose primary plasticizer for polyvinyl chloride being similar to dioctyl phthalate (DOP) but with lower volatility characteristics and superior resistance to soapy water extraction. Especially useful for wire compounds, floor tile and vinyl plastisols where it imparts low initial viscosity and very little viscosity build-up on prolonged storage at elevated temperatures (40-50 C.). For the electrical industry Monsanto offers DIDP-X, a special grade of DIDP stabilized with 0.2% Bisphenol A for improved electrical characteristics and retention of physical properties of heat aging.

SHIPPING INFORMATION: Resin Plasticizer, 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

DICYCLOHEXYL PHTHALATE (DCHP)

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 330

STANDARD FORM: White solids.

SPECIFICATIONS: Appearance, white solid; color of melt, by APHA max.; odor, moderate aromatic, slight phthalic; moisture in methanol, 0.1% maximum; melting point, 63 C. minimum; acidity as phthalic acid, 0.01% max.; ester content 99.0% min.

PROPERTIES: Dicyclohexyl Phthalate is an excellent primary plasticizer for ethyl cellulose, polystyrene, acrylics and chlorinated rubber. It is partially compatible with cellulose acetate butyrate, polyvinyl butyral, polyvinyl chloride and incompatible with cellulose acetate.

USES: This plasticizer is widely used as a plasticizer for nitrocellulose lacquers where it contributes toughness, oil resistance, heat sealability and hardness. It is also used in combination with liquid plasticizers for plasticizing polyvinyl acetate to make heat sealing adhesives. Dicyclohexyl Phthalate is a processing aid for polyvinyl chloride semi-rigid and rigid films. It serves as a liquid plasticizer at processing temperature, but has little or no softening or flexibilizing effect at room temperature. This is especially useful in semi-rigid films for floor coverings, wall coverings, automobile floor panels, etc.

SHIPPING INFORMATION: Resin Plasticizer, 350-lb. metal containers.

"MOD-EPOX"

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid (solid below 77°F.).

SPECIFICATIONS: Color, APHA 150 max.; neutralization number (mg. of KOH/gm.), 0.2 max.

PROPERTIES: "Mod-Epox" is a unique modifier for epoxy resins. It reduces the viscosity of liquid epoxy resins, accelerates the cure, improves compressive yield strength, electrical characteristics and adhesive characteristics. It does not adversely affect such important characteristics as hardness, solvent resistance or water resistance. Since "Mod-Epox" is considerably lower in price than the epoxy resins the use of this product results in decreased costs.

USES: "Mod-Epox" is used in the tool and die industry, electronic potting compounds, encapsulations, adhesives, surface coatings, body solder compounds and other applications being developed in epoxy resins.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. (510-lb.) and 5-gal. (45-lb.) galvanized drums.

"SANTONOX"

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid.

SPECIFICATIONS: Appearance, light gray to light tan powder; Ash, 0.1% max.; melting point, 150°C. min.; moisture, 1.0% max.; fineness, 50 mesh (trace, max.).

PROPERTIES: "Santonox" is probably the best antioxidant available for both low and high density polyethylene. It maintains the melt index and recovery of the polyethylene in extrusion operations better than competitive products. It has little or no effect on electrical properties. "Santonox" has a low vapor pressure, which means no loss from the resin into which it is compounded. It is readily soluble in methanol, ethanol or acetone. It is comparatively insoluble in benzene, ether, carbon tetrachloride and water.

USES: "Santonox" is used as an antioxidant for polyethylene. It offers the best price/performance characteristics of all the available antioxidants. "Santonox" is approved by the FDA as an antioxidant for high pressure (low density) polyethylene at 0.05% level for all applications except fatty foods. (Antioxidant for synthetic resins.)

SHIPPING INFORMATION: Chemicals NOIBN, 150-lb. fiber containers.

"SANTONOX" R

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid.

SPECIFICATIONS: Appearance, light colored crystalline material; ash 0.05% max.; melting point, 155°C. min.; heat loss, 1.0% max.

PROPERTIES: "Santonox" R is probably the best antioxidant available for both high and low pressure polyethylene. It offers the same advantages as "Santonox", but, in addition, offers the added advantages of lower color, reduced odor, larger particle size and 10-15% greater efficiency.

USES: "Santonox" R is used as an antioxidant for polyethylene. It has been approved by the FDA as an antioxidant in high pressure (low density) polyethylene at a 0.05% level for all uses except fatty foods.

SHIPPING INFORMATION: Chemicals NOIBN, 150-lb. fiber containers.

"SANTOWAX" R

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid.

SPECIFICATIONS: (Mixed terphenyls) Yellowish-white nonerystalline flaked solid; color (liquid), NPA 4.5 to 4.5; hold points, upper, 137-145 C., lower, 48-61 C.

USES: "Santowax" R is useful as an extender material in certain ad. tic compositions, such as polystyrene. It has also found use in other synthetic resins.

(Continued on next page.)

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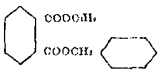
SHIPPING INFORMATION: Coal Tar Resin, 75-lb. bags, 225-lb. fiber drums.

"SANTICIZER" 160 PLASTICIZER

Butyl Benzyl Phthalate

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 312.35

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 40 max.; Sp. Gr. 1.113-1.121 at 25°/25°C.; acidity (as phthalic acid) 0.02% max.

PROPERTIES: A clear oily liquid plasticizer having a slight characteristic odor. Gives good low temperature performance; possesses good heat and light stability and low volatility.

USES: A relatively non-volatile plasticizer for polyvinyl chloride, polyvinyl chloride-acetate, polyvinyl butyral, ethyl cellulose and nitrocellulose. In addition, compatible with cellulose triacetate, polyvinyl formal, cellulose acetate-butyrate, cellulose propionate, polyvinyl acetate and acrylics. Superior to many other commonly used plasticizers in its permanence, oil resistance, flexibility and stability. An excellent vinyl plasticizer where stability and flexibility are desired. Because of its high plasticizing efficiency, it is of outstanding value in increasing output of processing equipment such as extruders and calenders. Used successfully in vinyl organosols which are useful for coatings and films. Very effective in cellulosic lacquers, imparting toughness, flexibility, low moisture-vapor transfer; has good permanence and heat and light stability. An excellent plasticizer for polyvinyl butyral and for low-molecular-weight polystyrene, which is further polymerized later for coating and impregnating work.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. and 5-gal. drums; tank cars; tank trucks.

"SANTICIZER" 213 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Sp. Gr. 1.040-1.045 at 25°/25°C.; acid value, 0.33 meq./100 gms; color APHA 75 max.

PROPERTIES: A clear, oily liquid with unusual properties in PVC, particularly in plastisols.

USES: Low-cost primary plasticizer for polyvinyl chloride. "Santicizer" 213 has the unique ability to reduce "surface tack" of vinyl surfaces. It is of special value in plastisol formulations—contributes low initial viscosity, slow viscosity build-up, and fast fusion in a single plasticizer. "Santicizer" 213 improves mold release in plastisol molded vinyls.

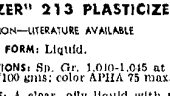
SHIPPING INFORMATION: Resin Plasticizer. Tank cars, tank trucks; 55-gal. and 5-gal. drums.

"SANTICIZER" 602 PLASTICIZER

Isooctyl Isodecyl Phthalate.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 75 max.; odor mild; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 0.967-0.977 at 25°/25°C.

USES: A primary plasticizer for polyvinyl chloride with lower volatility than dioctyl phthalate (DOP). Imparts lower initial viscosity and less viscosity build-up in plastisols than DOP. Has excellent soapy-water-extraction and alkali resistance. Used in vinyl floor tile, film and sheeting.

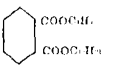
SHIPPING INFORMATION: Resin Plasticizer. Tank cars; tank trucks.

"SANTICIZER" 603 PLASTICIZER

Butyl Decyl Phthalate.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 100 max.; acidity 0.01% max. as phthalic acid; odor, characteristically mild; Sp. Gr. 0.977 to 0.987 at 25°/25°C.

PROPERTIES: A low-cost primary plasticizer that offers an attractive pound volume cost. Its good color and low odor enable the film, sheeting, extrusion and plastisol compounder to effect cost saving with minimum loss of quality.

USES: "Santicizer" 603 is a low-cost primary plasticizer for polyvinyl chloride and copolymer resins. "Santicizer" 603 imparts good low-temperature flexibility and is useful in calendered vinyl products such as film and sheeting for shower curtains, drapes and upholstery. "Santicizer" 603 imparts good viscosity characteristics to vinyl plastisols and organosols and is useful in slush-molding compounds for dolls and formulations for coated fabrics.

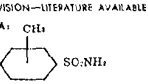
SHIPPING INFORMATION: Resin Plasticizer. Tank cars; tank trucks; 55-gal. and 5-gal. drums.

"SANTICIZER" 9 PLASTICIZER

Mixture of ortho and para Toluenesulfonamides.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 171.21

STANDARD FORM: Fine granules.

SPECIFICATIONS: Appearance, fine white to light cream colored particles; moisture, 1.0% max.; color (33⅓% by weight in acetone) APHA 60 max.

PROPERTIES: Solubility quite low in coal-tar hydrocarbons and negligible in petroleum hydrocarbons; readily soluble in most other solvents, and in hot linseed, chinawood and castor oils; soluble in water only about 1.0% at 34°C., but more soluble in alkali; least soluble Monsanto plasticizer in ethylene dichloride and benzene; solubility in ethylene dichloride approx. 4%, in benzene approx. 1.5%, each at 30°C.

USES: "Santicizer" 9 differs greatly from other plasticizers in its action. Relatively small amounts impart a gloss to polished articles, give smooth working and uniform curing of molded thermosetting products; blends readily with most synthetic resins, does not impart the softening action of liquid plasticizers. Particularly valuable to the makers of molding compositions. In some phenol-aldehyde resins it appears to act not only as a lubricant, but also as a promoter, giving more uniform and thorough curing. In amounts of about 20 parts per 100, has a temporary plasticizing action on protein compounds, such as corn protein and soybean protein. In melamine coatings and laminating resins, "Santicizer" 9 promotes solution stability and compatibility, improves flowout during baking or curing, and increases impact strength and abrasion resistance.

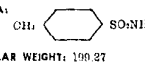
SHIPPING INFORMATION: Resin Plasticizer, 250-lb. fiber drums.

"SANTICIZER" 3 PLASTICIZER

N Ethyl para-Toluene Sulfonamide.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 199.27

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: Practically white crystalline solid; C.P. 58.0°C. min.; acidity (as acetic acid) 0.10% max.; moisture (by KF in methanol) 0.25% max.

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USES: "Santicizer" 3 is a solid, sulfonamide plasticizer. It has limited compatability with commonly used resins but is widely used in combination with other plasticizers. Either in combination or alone it imparts high gloss, toughness and hardness. It sharpens the softening point of some thermoplastics, especially the cellulose esters. Its use makes possible such products as heat-sealing lacquer coatings and adhesives. It is compatible with cellulose acetate to the extent of 50 parts per 100 parts of resin. In addition to its effect on toughness and gloss, it improves the flow of molding compositions and lowers moisture permeability. It is about as compatible with polyvinyl formal as with cellulose acetate and its use improves flow and imparts excellent gloss.

SHIPPING INFORMATION: Resin Plasticizer. 400-lb. steel drums.

"SANTICIZER" 8 PLASTICIZER

Mixture of N-Ethyl-ortho- and para-Toluenesulfonamides.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 199.27

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow, viscous liquid; odor slight, characteristic; unsubstituted amide 9-13%; acidity (as acetic acid) 0.80 meq/100 gms. max.; color of melt 200 APHA max.

PROPERTIES: Readily miscible with all common organic solvents except the petroleum hydrocarbons in which it is only very slightly soluble. In water, soluble to approx. 0.13% at 25°C., 0.21% at 48°C.; solubility in water decreased by presence of ammonia but increased by other alkalies; soluble in castor oil, slightly soluble in chinawood oil; insoluble in linseed oil; retentivity in cellulose acetate approx. 50 parts by weight to 100 of acetate; imparts a high degree of plasticity. A solvent for both nitrocellulose and cellulose acetate.

USES: An excellent plasticizer for cellulose acetate, giving a brilliance and polish not obtainable with other plasticizers. Being practically insoluble in petroleum hydrocarbons, is a valuable plasticizer for coatings designed to withstand gasoline and related products. Has some plasticizing action on such protein compounds as casein, glue, soybean protein and corn protein. May be used alone or in conjunction with other materials such as glycerin or similar compounds; greatly increases the flexibility of shellac with considerable softening effect; also very useful with polyvinyl acetate adhesives. "Santicizer" 8 is one of the best plasticizers known for synthetic polyamides such as nylon and related resins.

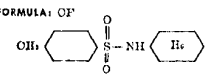
SHIPPING INFORMATION: Resin Plasticizer. 530-lb. and 50-lb. drums.

"SANTICIZER" 1-H PLASTICIZER

N-cyclohexyl para-Toluenesulfonamide.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 253.36

STANDARD FORM: Yellow-brown fused mass.

SPECIFICATIONS: C.P., 83.5°C. min.; moisture 0.15% max.; color of melt APHA 300 max.

PROPERTIES: "Santicizer" 1-H is a solid plasticizer which is relatively light stable and of a low order of toxicity. It is soluble in alcohol, esters, ketones, aromatic hydrocarbons and vegetable oils. It is insoluble in water. It is compatible with a wide variety of resins, including most of the cellulosic and vinyl resins.

USES: "Santicizer" 1-H is used in special crystallizing finishes, paper coatings, textile coatings and adhesives. It is a useful plasticizer in nitrocellulose lacquers, imparting a relatively sharp softening point. It is also used to incorporate incompatible components such as paraffin wax for producing special coating effects such as crackle lacquers. For improved adhesion where flexibility in nitrocellulose is required, it is used in combination with dibutyl phthalate or "Santicizer" 160. It improves the moisture resistance of cellulose acetate and improves flexibility, toughness and heat stability of ethyl cellulose. It is compatible with cumar and imparts good flexibility to shellac and kauri resin.

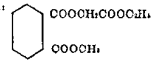
SHIPPING INFORMATION: Resin Plasticizer. 25-lb. fiber drums.

"SANTICIZER" M-17 PLASTICIZER

Methyl Phthalyl Ethyl Glycollate.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 266.24

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 20 max.; Sp. Gr. 1.217–1.227 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; odor, slight characteristic; sulfur (copper-strip test) negative.

PROPERTIES: A solvent for both nitrocellulose and cellulose acetate; imparts a high degree of plasticity undiminished even in extremely thin films exposed to air currents for a long time. Very light-stable and may be used in transparent or tinted articles without danger of yellowing. Readily miscible with other organic solvents; solubility in water 0.09% at 30°C., but imparts a considerable degree of resistance to moisture penetration to both nitrocellulose and cellulose acetate film.

USES: Probably the best cellulose acetate plasticizer available. Dissolves "Santolite" resins, and as both are very resistant to petroleum products and compatible with so many film-forming materials, they make an excellent combination for products requiring gasoline-resistant coatings.

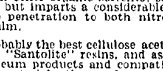
SHIPPING INFORMATION: Resin Plasticizer. 550-lb. steel drums; 5-gal. drums. Tank cars; tank trucks.

"SANTICIZER" E-15 PLASTICIZER

Ethyl Phthalyl Ethyl Glycollate.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 280.27

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 20 max.; Sp. Gr. 1.180-1.185 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; odor slight; sulfur (copper-strip test) negative.

PROPERTIES: Miscible with the common organic solvents except the petroleum hydrocarbons; when heated miscible with vegetable oils but partially separates on cooling; solubility in water 0.0175% at 30°C.

USES: Solvent for both nitrocellulose and cellulose acetate and for most resins. Light-fast; does not evaporate even from the thinnest films. With both cellulose acetate and nitrocellulose gives clear, tough, flexible films which have high resistance to moisture penetration. Highly recommended for use with cellulose acetate. Has been approved by Bureau of Animal Industry as a noxic plasticizer; may be used in cellulose-based lacquers for paper or in foils for food wrapping and packaging.

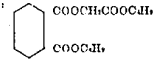
SHIPPING INFORMATION: Resin Plasticizer. 535-lb. steel drums; 5-gal. drums; tank cars, tank wagons.

"SANTICIZER" B-16 PLASTICIZER

Butyl Phthalyl Butyl Glycol

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 336.37

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 45 max.; Sp. Gr. 1.093-1.103 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; essentially odorless; sulfur (copper strip test) negative.

PROPERTIES: A practically colorless liquid plasticizer; B.P. 219°C. at 5 mm.; does not crystallize at temperatures as low as −35°C.; water solubility 0.012%; at 30 C.; extremely light-stable; darkens on heating above 200 C.

USES: A widely used polyvinyl chloride plasticizer where a tasteless and non-toxic combination is required; is complete FDA approved for use in vinyl food containers. Imparts good heat and light stability. Especially useful in beverage tubing.

(Continued on next page)

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food packaging, lo ated sheeting and anatomical restorations. Solvent for nitrocellulose; compatible with most resins, imparting good flexibility. Miscible with castor, linseed and chinawood oils; somewhat retards set formation in the latter on heating. An excellent plasticizer for chlorinated rubber, from 10 to 25 parts per 100 usually required. An excellent quality good plasticizer for polyvinylene. Mixtures of "Santicizer" B-16 and "Santicizer" resins may be used to plasticize casein and corn protein.

SHIPPING INFORMATION: Resin Plasticizer, 500-lb. steel drums; 5-gal. drums; tank cars; tank wagons.

"SANTICIZER" 140 PLASTICIZER

Mixed Cresyl Phenyl Phosphate.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear mobile liquid; color APHA 40 max.; Sp. Gr. 1.201-1.213 at 25°/25°C.; refractive index 1.550-1.570 at 25°C.; acidity (as H_3PO_4) 0.01% max.; moisture (by KF in methanol) 0.15 max.

PROPERTIES: An essentially odorless and colorless liquid plasticizer; B.P. approx. 258°C. at 10 mm.; pour point −37°C. approx.

USES: Quite similar to tricresyl phosphate in that it imparts flame retardance, excellent permanence, and chemical stability and equal heat and light stability; gives better low-temperature flexibility and abrasion resistance; is a stronger solvent and slightly more efficient than tricresyl phosphate. Can be used wherever tricresyl phosphate is used. Improved flexibility imparted by "Santicizer" 140 makes it preferable to tricresyl phosphate in many applications such as vinyl sheeting, lacquers and paper coating. Considerably more compatible than tricresyl phosphate with cellulose acetate. As a liquid, it is much easier to handle so it is often used in cellulose acetate, especially in conjunction with other active plasticizers. Other resins with which it is useful are cellulose nitrate, ethyl cellulose, cellulose acetate-propionate, polyvinyl formal and polyvinyl butyral.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. and 5-gal. drums; tank cars; tank trucks.

"SANTICIZER" 141 PLASTICIZER *Alkyl Aryl Phosphate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 100 max.; odor, slight characteristic; Sp. Gr. 1.089-1.093 at 25°/25°C.; refractive index 1.507-1.510 at 25°C.; acidity (as H_3PO_4) 0.01% max.; moisture (by KF in methanol) 0.10% max.

PROPERTIES: "Santicizer" 141 combines into one compound the non-flammability of tricresyl phosphate, and the efficiency and permanence of other vinyl plasticizers. Imparts superior low-temperature flexibility, improved abrasion and moisture resistance and good electrical properties. Gives excellent resistance to embrittlement and deterioration to polyvinyl-chloride compositions exposed to sunlight.

USES: Excellent for use in polyvinyl chloride films, sheets, extrusions, moldings, organosols and plastisols—in any application where an efficient, permanent, flame-retardant plasticizer is required. Small amounts (5-7 PHR) considerably improve light stability of vinyl compounds. Especially recommended in flexible films for curtains, aprons, rainwear and hospital sheeting and in soft, pliable coatings for tablecloths, upholstery and drapery. Suitable for use in products that touch the human body. "Santicizer" 141 has FDA approval as a nontoxic plasticizer for food packaging.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. and 5-gal. steel drums; tank cars; tank wagons.

"SANTICIZER" 165 *Mixed-alcohol phthalate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear oily liquid; color, APHA 30 max.; acidity, 0.12 meq/100 gms. max.; moisture, 0.12% max.; refractive index at 25°C., 1.484-1.487; Sp. Gr. 25°/25°C., 0.989-0.994.

PROPERTIES: "Santicizer" 165 is a low-cost, fast-fusing, primary plasticizer for polyvinyl chloride and nitrocellulose. It offers good, general-purpose properties at lower cost than Dioctyl Phthalate.

USES: Since "Santicizer" 165 is slightly more volatile than Dioctyl Phthalate, its use is recommended for average rather than severe conditions. The main applications for this plasticizer are in film, sheeting, floor tile and extrusions.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (445-lb.) and 5-gal. (40-lb.) black iron drums; tank cars; tank wagons.

"SANTICIZER" 214 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, APHA 100 max.; appearance, clear oily liquid, essentially free of suspended matter or turbidity; acidity 0.15 meq/100 gms. max.; moisture, KF in methanol, 0.15%, max.; refractive index at 25°C., 1.483-1.485; Sp. Gr. 25°/25°C., 0.950-0.955.

PROPERTIES: "Santicizer" 214 is an unusual primary plasticizer for polyvinyl chloride. The initial plastisol viscosity of this material is very low. It allows formulators to produce a low viscosity formulation which is lower than usual after curing.

USES: "Santicizer" 214 imparts unique properties to polyvinyl chloride compounds. In proper concentration it gives the finished product a hard, brush surface, especially in vinyl coatings on metal.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (440-lb.) and 5-gal. (40-lb.) black iron drums; tank cars; tank trucks.

"SANTICIZER" 216 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, NPA, 3 max.; Sp. Gr. 25°/15.5°C. 0.865-0.877; refractive index 25°C. 1.4875-1.4901.

PROPERTIES: A bright light amber liquid. Shows good low-temperature performance, light stability and low viscosity.

USES: "Santicizer" 216 is a low cost extender plasticizer for polyvinyl chloride. It is of special interest in plastisols where it reduces formulation cost while lowering initial viscosity and improving viscosity stability without sacrificing flexibility, light stability or volatility. "Santicizer" 216 is also of interest in profile extrusions, film, sheeting, coatings and wire coating where its properties and low cost make it desirable.

SHIPPING INFORMATION: Resin Plasticizer, 55 and 5-gal. drums; tank cars; tank trucks.

"SANTICIZER" 409 POLYMERIC PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear, viscous liquid; color of solution (50 ml. : 50 ml. 3-A alcohol), 250 APHA max.; moisture (by KF in methanol), 0.15 max.; odor, very faint ester; Sp. Gr., 25°/25°C., 1.081-1.094; viscosity at 210°F., 115 to 130 centistokes; acidity, 2.0 meq/100 gms. max.

PROPERTIES: "Santicizer" 409 combines the ideal properties of several plasticizers for polyvinyl chloride in one primary polymeric plasticizer. "Santicizer" 409 has low specific gravity, color and toxicity. Polyvinyl chloride compositions plasticized with "Santicizer" 409 show excellent compatibility, excellent permanence, superior electrical properties, fast fusion, good low-temperature flexibility, good heat and light stability and excellent retention of physical properties.

USES: Because of its excellent electrical properties, "Santicizer" 409 is especially useful in wire coatings and tapes. It is also widely used in high-quality film and sheeting (adhesive backed), organosol fabric coatings, refrigerator gasketing and in other applications requiring a high degree of permanence and resistance to extraction. It is compatible with polyvinyl chloride, ethyl cellulose, cellulose acetate-butyrate and nitrocellulose.

SHIPPING INFORMATION: Resin Plasticizer, 55-gal. (450-lb.) and 5-gal. (45-lb.) steel drums; tank cars.

"SANTICIZER" 630 MODIFIED-PHTHALATE PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, APHA 70 max.; acidity, 0.12 meq/100 gms. max.; moisture (by KF in methanol), 0.10% max.; refractive index at 25°C., 1.5695-1.5160; Sp. Gr. 25°/25°C., 0.987-0.994.

PROPERTIES: "Santicizer" 630 is a low cost, primary plasticizer for polyvinyl chloride plastics. In some characteristics "San-

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ticizer" 630 is superior to Dioctyl Phthalate especially in migration resistance to nitrocellulose and in plastisol-viscosity stability. Since this material is much more volatile than Dioctyl Phthalate, it is not recommended for applications where permanence is essential.

USES: *"Santicizer" 630 is useful in formulating vinyl plastisols, extrusions, coatings or sheeting compounds. It imparts to vinyl compounds properties comparable to those imparted by DOP, but it costs less.*

SHIPPING INFORMATION: Resin Plasticizer. Tank trucks and tank cars only.

"SANTICIZER" 631 MODIFIED PHTHALATE PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 60 max.; acidity, 0.12 meq/100 gms., max.; moisture (by KF in methanol), 0.10% max.; refractive index at 25°C., 1.4990-1.5015; Sp. Gr. 25°/25°C., 0.984-0.990.

PROPERTIES: "Santicizer" 631 is a low cost, primary plasticizer for polyvinyl chloride plastics. It offers a unique balance of cost versus performance in this resin. "Santicizer" 631 is better than DOP in migration resistance to nitrocellulose and in plastisol-viscosity stability.

USES: "Santicizer" 631 is useful in formulating vinyl plastisols, extrusions, coatings or sheeting compounds. It imparts properties to PVC compounds in the range of those imparted by DOP and is used when cost is a decisive factor. It lies between "Santicizer" 630 and DOP in price versus performance.

SHIPPING INFORMATION: *Resin Plasticizer. Tank trucks and tank cars only.*

"SANTICIZER" 636 *2-ethylhexyl isodecyl phthalate.*

ORGANIC DIVISION

STANDARD FORM: Liquid.

SPECIFICATIONS: *Color, APHA 75 max.; acidity, 0.12 meq/100 gms. max.; moisture (by Karl Fischer), 0.10% max.; refractive index at 25°C., 1.478-1.488; Sp. Gr. 25°/25°C., 0.969-0.977.*

PROPERTIES: "Santicizer" 636 is a practically colorless, high-boiling liquid of low viscosity and excellent electrical properties. It is miscible with most common solvents, thinners and oils. "Santicizer" 636 combines good low temperature properties, good resistance to migration and to water extraction, and excellent heat and light stability.

USES: "Santicizer" 636 is especially useful in plastisols where it offers lower viscosity build-up on aging than does Dioctyl Phthalate. *It is also useful in electrical compounds where the* higher molecular weight and lower volatility result in improved permanence of these products in end applications.

SHIPPING INFORMATION: Resin Plasticizer. Tank trucks and tank cars only.

"HB-20" PARTIALLY HYDROGENATED ALKYL-ARYL HYDROCARBON

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Light-amber to dark-brown liquid; refractive index at 25°C., approx. 1.54; Sp. Gr. at 25°/15.5°C., approx. 0.96.

USES: A low-cost extender plasticizer for vinyls.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars; 450-lb. drums.

"HB-40" PARTIALLY HYDROGENATED TERPHENYL

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A clear, mobile, high-boiling hydrocarbon; almost colorless, oily liquid with faint, pleasant odor; density 1.001-1.007 at 25 / 15.6 C.; wt. per gal. 8.37 (average); refractive index 1.560±.5 25°/5 at 25 C.; insoluble in water; miscible in all proportions at room temperature with several solvents and oils.

USES: Low-cost, secondary plasticizer for vinyl sheeting, films and fabric or paper coatings. Plasticizer for vinyl protective coatings and other uses. Used to plasticize vinyl profile extrusions, tubing, wire coatings and dip-coating and slush-molding compounds. Plasticizer for styrene-water dispersion paints, *paper coatings, adhesives and styrene casting resins.*

SHIPPING INFORMATION: Resin Plasticizer. Tank cars; 450-lb. drums.

RUBBER CHEMICALS

ACCELERATORS FOR NATURAL AND SYNTHETIC RUBBERS

THIAZOLE TYPES

"EL-SIXTY" *1, 3-bis (2-benzothiazolylmercaptomethyl) urea.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—buff powder; ash—0.5% max.; fineness (200 mesh)—0.5% max. retained; heat loss—0.5% max.; melting point—220°C. min.; dedusting agent—5.0±1.5%; sp. gr.—1.38 at 25°C.

USES: Rubber compounding in formulations containing zinc oxide and fatty acid. May be used alone but, for best results, an activator is usually desirable. Gives excellent processing and curing characteristics to many types of compounds. Effective in compounds containing high loads of retarding pigments such as clay. "El-Sixty" is treated to reduce dusting and aid dispersion.

"SANTOCURE" *N-cyclohexyl-2-benzothiazolesulfenamide.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—light tan or buff powder; ash—0.5% max.; fineness (20 mesh)—trace max. retained; melting point—94°C. min.; moisture—1% max.; ether insolubles—5.0% max.; sp. gr.—1.27 at 25°C.

USES: Rubber compounding in formulations containing zinc oxide and fatty acid. Activators are sometimes desirable but not always needed. Gives excellent results in natural, reclaimed and synthetic rubbers. Exceptionally safe at processing temperatures but powerful at curing temperatures. Gives high modulus and tensile. Fairly low melting point makes dispersion easy.

"SANTOCURE NS" *N-tert-butyl-2-benzothiazolesulfenamide.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—tan to buff powder; ash—0.5% max.; fineness (20 mesh)—trace max. retained; melting point—103°C. min.; moisture—0.5% max.; ether insolubles—1% max. (when produced); sp. gr.—1.20 at 25°C.

USES: Rubber compounding in formulations containing zinc oxide and fatty acid. "Santocure NS" is used in the same way and for the same purposes as "Santocure". It provides even greater delayed action and this property can often be used to advantage. "Santocure NS" is a little stronger than "Santocure" and it is customary to reduce the dosage by about 10% when making the substitution. "Santocure NS" tends to be activated by acidic materials which should be avoided when seeking the ultimate in scorch delay.

"THIOFIDE" (MBTS)

2,2'-dithiobis (benzothiazole); also called benzothiazyl disulfide and 2,2'-dibenzothiazyl disulfide.

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—cream powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—167°C. min.; moisture—0.5% max.; petroleum ether extractable—8.5±1.5%; sp. gr.—1.54 at 25°C.

USES: *Rubber compounding in formulations containing* zinc oxide and fatty acid. An activator is usually desirable. Safe handling when properly activated. Can be used successfully in a wide variety of stocks. "Thiofide" is treated to reduce dusting and aid dispersion.

"THIOTAX" (MBT) *2-mercaptobenzothiazole.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—cream to light yellow; ash—0.5% max.; assay (MBT content)—90% min.; fineness (100 mesh)—0.5% max. retained; (200 mesh)—trace max. retained; melting point—

(Continued on next page)

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170°C. min.; dedusting agent—2.0-4.5%; moisture—0.5% max.; sp. gr.—1.30 at 25°C.

USES: Rubber compounding in formulations containing zinc oxide and fatty acid. An activator is not needed but is often desirable. Activator must be adjusted carefully to avoid scorch difficulties. "Thiotax" is treated to reduce dusting and aid dispersion.

"MERTAX" (MBT) *2 mercaptobenzothiazole.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—cream to light yellow powder; ash—0.3% max.; assay (MBT content)—97% min.; fineness (50 mesh)—0.5% max. retained, (100 mesh)—trace max. retained; melting point—170°C. min.; dedusting agent—2.0-4.5%; moisture—0.5% max.; sp. gr.—1.50 at 25°C.

USES: Rubber compounding as a purified form of "Thiotax"—can be used in the same way. Its chief advantage is a decided improvement in odor compared to "Thiotax." "Mertax" is treated to reduce dusting and aid dispersion.

ALDEHYDE-AMINE TYPE

"A-32" *Reaction product of butyraldehyde and butylidene aniline.*

SPECIFICATIONS: Appearance and condition—red-yellow to orange liquid, may be faintly turbid; moisture—no liquid separation on standing; sp. gr.—0.98 at 25°C.

USES: Rubber compounding in formulations usually containing zinc oxide and fatty acid. Gives high modulus and tensile. Flat curing and easy to process. Often useful as an activator of thiazole type accelerators. Excellent for hard rubber.

"A-100" *Reaction product of butyraldehyde, acetaldehyde and aniline.*

SPECIFICATIONS: Appearance and condition—dark, red brown oily liquid; moisture—no liquid separation on standing; sp. gr.—1.04 at 25°C.

USES: Vulcanizing hard rubber, either natural or synthetic. Use 1% to 2% on the rubber. Gives tough, horny vulcanizates with little tendency toward brittleness.

ULTRA TYPE

"RZ-50-A"

50% Solution in Cellosolve of the N,N-dimethylcyclohexylamine salt of dibutyldithiocarbamic acid.*

SPECIFICATIONS: Appearance and condition—clear brown liquid color (NPA)—8.0 max. (when produced); assay—50 ±2%; sp. gr.—0.96 at 25°C.

USES: For rubber curing, a very fast accelerator at room or slightly elevated temperatures. Curing speed can be increased by the inclusion of "Thiotax" in the compound. "RZ-50" is very useful in fast curing cements for spreader and combining work. Causes practically no discoloration and ages well.

**Cellosolve—a registered trademark of Union Carbide & Carbon Chemicals Corporation.*

"RZ-50-B"

50% Solution in Cellosolve of the N,N-dimethylcyclohexylamine salt of dibutyldithiocarbamic acid, with emulsifying agents added.

SPECIFICATIONS: Appearance and condition—clear dark brown liquid; sp. gr.—0.98 at 25°C.; assay—50 ±2%; turbid point—10°C. max.

USES: For latex emulsions, "RZ-50-B" is especially effective. A stable emulsion is prepared by stirring it into an equal volume of water. 1% "RZ-50-B" is a good starting point in latex compounding.

R-2 CRYSTALS

Reaction product of carbon disulfide and 1,1'-methylenedipiperidine.

SPECIFICATIONS: Appearance and condition—light brown, coarse crystalline solid; melting point—58°C. min.; sp. gr.—1.11 at 25°C.

USES: For latex and fast curing cements where an ultra accelerator is needed. Gives fast cures and excellent properties.

"MONO THIURAD"

Bis(dimethylthiocarbonyl)disulfide; also called tetramethylthiuram monosulfide.

SPECIFICATIONS: (Standard Powder). Appearance and condition—tan to yellow powder; ash—0.5% max.; fineness (200 mesh)—1% max. retained, (100 mesh)—trace max. retained; melting point—140°C. min.; moisture—0.5% max.; sp. gr.—1.39 at 25°C.

USES: For rubber compounding as an activator for thiazole accelerators. Somewhat safer to handle in this respect than "Thiurad". Gives low compression set. See data on "Thiotax", "Thiofide", "El-Sixty" and "Santocure". Also gives good results when used alone. Use 0.25% to 0.75% on the natural or synthetic rubber with or without sulfur. Available in oiled and unoiled powder forms, and pellet form.

"THIURAD"

Bis(dimethylthiocarbamyl)disulfide; also called tetramethylthiuram disulfide.

SPECIFICATIONS: (Standard Powder). Appearance and condition—light buff to white powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—144°C. min.; heat loss—0.5% max.; sp. gr.—1.41 at 25°C.

USES: Rubber compounding in formulations containing zinc oxide and fatty acid. An excellent activator for thiazole accelerators. See data on "Thiotax", "Thiofide", "El-Sixty" and "Santocure". Also used as straight accelerator in two ways. In stocks containing normal sulfur, use 0.15% to 0.50% on the rubber. For good aging and heat resistance, use 2% to 4% on the rubber and no sulfur. Excellent when used in the same manner in Buna N and SBR. 13% of its weight is available as sulfur. Available in oiled and unoiled powder form, and pellet form.

ACCELERATOR B

SPECIFICATIONS: Accelerator B is a physical blend of 2 parts "Thiurad" and 1 part "Thiotax". "Thiurad" and "Thiotax" are commonly used in this ratio as accelerators for butyl. Monsanto pre-blends the two compounds, offering the 2:1 mix as a convenience for the user.

GUANIDINE TYPE

DPG *Diphenylguanidine.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—white powder; ash—0.3% max.; fineness (100 mesh)—trace max. retained; melting point—145°C. min.; heat loss—0.5% max.; dedusting agent—1.0-3.0%; sp. gr.—1.19 at 25°C.

USES: For rubber compounding in mechanical type compounds. On 100 parts rubber, use 1% to 1.5% with 2% to 4% sulfur. Widely used as an activator. See data on "El-Sixty", "Santocure", "Thiotax" and "Thiofide". DPG is treated to reduce dusting and aid dispersion.

GUANTAL *Diphenylguanidine phthalate.*

SPECIFICATIONS: Appearance and condition—white powder; ash—0.3% max.; fineness (200 mesh)—0.5% max. retained; melting point—178°C. min.; heat loss—3.5% max.; sp. gr.—1.29 at 25°C.

USES: For rubber compounding as an activator for thiazole type accelerators. Excellent as a low-scorch activator. See data on "El-Sixty", "Santocure", "Thiotax" and "Thiofide".

THIOCARBANILIDE TYPE

A-1 THIOCARBANILIDE

Also called 1,3-diphenyl-2-thiourea and N,N'-diphenylthiourea.

SPECIFICATIONS: Appearance and condition—gray powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—148°C. min.; heat loss—0.75% max.; sp. gr.—1.32 at 25°C.

USES: For rubber compounding as an accelerator used with zinc oxide and fatty acid. Activates thiazole accelerators but finds its best use as a straight accelerator in fast curing stocks such as tube repair gum. On 100 parts rubber use 3% to 5% with 3% to 5% sulfur. Accelerates Neoprene latex; use about 0.5%.

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ANTIOXIDANTS AND ANTIOZONANTS

FLECTOL H *polymerized 1,2-dihydro-2,2,4-trimethylquinoline.*

SPECIFICATIONS: Appearance and condition—tan powder; ash—0.5% max.; fineness (200 mesh)—0.5% max. retained; melting point—120°C. min.; moisture—1% max.; sp. gr.—1.05 at 25°C.

USES: For protection of rubber against heat deterioration and normal aging. It causes less discoloration than most other full-power antioxidants. Small dosages, on the order of 0.25% on the rubber, may be used in light colored compounds. Flectol H has practically no value as an anti-flex material and should not be used in articles required to withstand severe flexing. It is an accelerator for Neoprene vulcanization but has no effect on the vulcanization of natural rubber, SBR and Buna N types. Very good to reduce frosting on dry heat cured compounds. For maximum protection use 1% to 3% on the rubber.

"SANTOFLEX" AW *6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline.*

SPECIFICATIONS: Appearance and condition—dark viscous liquid; heat loss—1% max.; insolubles (benzene)—trace max.; sp. gr.—1.04 at 45°C.

USES: For reducing the harmful effect of ozone attack and in this respect it appears to be somewhat more effective with SBR than natural rubber. It is particularly suggested for compounds used in dynamic service where waxes are sometimes not desirable. 1% to 2% on the hydrocarbon is usually sufficient. "Santoflex" AW is a fairly good antioxidant for the prevention of the usual deterioration on aging. It also has considerable merit as a flex-cracking inhibitor. Discolors and stains very badly.

"SANTOFLEX" DD *6-Dodecyl-1,2-dihydro-2,2,4-trimethylquinoline.*

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.1% max.; nitrogen content—3.1% max.; sp. gr.—0.93 at 45°C.

USES: For inhibiting flex-cracking and oxidation. It is especially recommended for rubber articles used in dynamic service but is equally effective in any type of rubber compound. It causes rubber severe discoloration and staining and as its use is limited to black or dark-colored articles. 1% to 2% on the hydrocarbon is usually sufficient but up to 4% can be used with improved results.

"SANTOFLEX" 75

Mixture of N,N'-diphenyl-p-phenylenediamine (DPPD), 75%, and 6-dodecyl-1,2-dihydro-2,2,4-trimethylquinoline ("Santoflex" DD), 25%.

SPECIFICATIONS: Appearance and condition—dark flakes; ash—0.5% max.; sp. gr.—1.10 at 25°C.

USES: For reducing aging and oxidation effects. "Santoflex" 75 contains a high percentage of N,N'-diphenyl-p-phenylenediamine. It is designed for those who wish to use a high dosage of this material, with a lower amount of regular antioxidant. More than 0.4% on the hydrocarbon is liable to cause blooming.

"SANTOVAR" A *2,5-di-(tert-amyl) hydroquinone.*

SPECIFICATIONS: Appearance and condition—buff powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—172°C. min.; heat loss—1% max.; sp. gr.—1.05 at 25°C.; color transmission—80% min.

USES: For the protection of uncured rubber from oxidation. It also inhibits oxygen attack on unsaturated resins and oils. Cold flow of uncured compositions is reduced by a stiffening effect of "Santovar" A. Excellent for adhesives or other uncured films. It is non-staining and non-discoloring. Use 0.5% to 4% on the material to be protected.

"SANTOWHITE" CRYSTALS *4,4'-thiobis (6-tert-butyl-m-cresol).*

SPECIFICATIONS: Appearance and condition—light gray to tan powder; ash—0.5% max.; fineness (50 mesh)—trace max. retained; melting point—115°C. min.; moisture—1% max.; sp. gr.—1.10 at 25°C.

USES: For the protection of light colored rubber from oxidation. It is also useful in any rubber product used in contact with surfaces such as lacquer or enamel which are subject to staining by ordinary antioxidants. "Santowhite" Crystals provides excellent protection against normal aging. Use 1% to 2% on the hydrocarbon. For heat for the protection of non-staining Neoprene compounds against heat deterioration.

"SANTOWHITE" L *(Essentially) thiobis-(di-sec-amylphenol).*

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.25% max.; heat loss—0.5% max.; softening point—0°C. max.; sp. gr.—0.99 at 50°C.

USES: For protection of rubber latex from oxidation. It is easily emulsified for use in latex and has no effect on latex stability. It is a non-staining and non-discoloring antioxidant of medium strength.

"SANTOWHITE" MK

Reaction product of 6-tert-butyl-m-cresol and SCl_2.

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.5% max.; heat loss—5% max.; softening point—20° to 30°C.; sp. gr.—1.06 at 25°C.

USES: For protection of rubber from oxidation. It is excellent from the standpoints of staining and discoloration. Use 1% to 2% on the hydrocarbon. Gives good protection to uncured SBR latex compounds. Its action is similar to "Santowhite" MK, but aging protection is not as high.

"SANTOWHITE" POWDER

4,4'-butylidenebis (6-tert-butyl-m-cresol).

SPECIFICATIONS: Appearance and condition—white powder; ash—0.3% max.; fineness (100 mesh)—trace max. retained; melting point—209°C. min.; heat loss—0.5% max.; assay—97.5% min.; sp. gr.—1.03 at 25°C.; reflectance (MgO = 100) using G.I-blue filter—80% min.

USES: For protection of latices and dry rubber against oxidation. It is unexcelled from the standpoints of staining and discoloration. Use 1% to 2% on the hydrocarbon.

SPECIAL MATERIALS

"SULFASAN" R *4,4'-dithiodimorpholine.*

SPECIFICATIONS: Appearance and condition—gray to tan powder; ash—0.5% max.; heat loss—0.5% max.; melting point—122°C. min.; fineness (100 mesh)—0.1% max. retained (200 mesh)—1.0% max. retained; sulfur—28 to 29%; sp. gr.—1.29 at 25°C.

USES: For imparting freedom from scorch. Stocks containing "Sulfasan" R give excellent aging and freedom from cured bloom. It does not discolor white compounds. Acidic materials such as pine tar and "Thiosay" reverse the antiscorch property. Especially effective with Sulfenamide accelerators.

"ELASTOPAR"

N-Methyl-N,4-dinitroaniline (33⅓%) plus Whitetex Clay (66⅔%).*

SPECIFICATIONS: Appearance and condition—light colored, free flowing powder; assay—31.6-35.0%; fineness (50 mesh)—trace max. retained; heat loss—0.5% max.

*Whitetex—a trade mark of Southern Clays, Inc.

USES: For chemically modifying butyl rubber. Used in a range of 0.5 to 1.25% on the butyl. When mixing at about 300°F. under proper conditions*, the following results may be expected: improved resilience; increased modulus; slightly lower hardness; increased resistance to abrasion; better low-temperature flexibility; increased electrical resistivity; reduced cold-flow of unvulcanized gum; reduced Mooney viscosity.

*NOTE: Butyl and "Elastopar" should be reacted in the absence of curatives and other reactive ecopounds. In a Banbury, the reaction will take place in about one minute at 300° F. Lower temperatures should be avoided and higher temperatures do no harm.

INSOLUBLE SULFUR 60

SPECIFICATIONS: Appearance and condition—greenish yellow powder; fineness (60 mesh)—trace max. retained; heat loss—1.4% max.; insolubles (carbon disulfide) 55% min.; sp. gr.—2.0 at 25°C.

USES: Used to retard sulfur bloom on uncured natural rubber or synthetic rubber surfaces. Used in the same amount as regular sulfur. With this type of sulfur there is usually a slightly enhanced rate of cure.

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ODORS AND DEODORANTS

General Properties	"Curodex" No. 19	"Curodex" No. 169	"Curodex" No. 194
Appearance	pale yellow liquid	pale yellow liquid	pale yellow liquid
Odor	deodorizes	lily	musk
% used on 100 lbs. of rubber	0.15 to 0.30	0.30 to 0.50	0.20 to 0.50
Melting Point			
Std. package	5-lb. bottle	5-lb. bottle	5-lb. bottle

General Properties	Vanillin	Coumarin	Ethavan
Appearance	white crystalline needles	white prismatic crystals	fine white crystalline needles
Odor	characteristic	characteristic	characteristic
% used on 100 lbs. of rubber	Very small amounts are usually effective		
Melting Point	81°C. min.	68.8°C. min.	76.5°C. min.
Std. package	25-lb. metal pail	25-lb. fiber drum	25-lb. metal pail

SPECIALTY PRODUCTS

ADHESIVES

CASEIN AND SOYBEAN ADHESIVES

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Dry powder.

PROPERTIES: Exceptionally good for low-temperature bonding applications where average to superior water resistance is desired.

USES: Cold-setting glues used in the manufacture of plywood, furniture, assembly gluing, case goods of all types. Also used in Monsanto's patented NO-CLAMP Process for making plywood, as well as in nail pressure gluing operations.

INDUSTRIAL USERS: Plywood and Forest Products Industries.

SHIPPING INFORMATION: Multiwall bags (100-lbs.). Glues Dry, NOIBN.

PHENOLIC AND RESORCINOL RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids.

PROPERTIES: Various properties are available for requirements demanding an extremely high degree of water resistance. Bonds can be made capable of withstanding continuous boiling.

USES: Glues for plywood, hardboard, particle board and general woodworking. Used for hot and cold pressing and for radio frequency work.

INDUSTRIAL USERS: Plywood, Hardwood, Particle Board and General Woodworking Industries.

SHIPPING INFORMATION: Metal drums (500-lbs.); tank trucks and tank cars. Glues Liquid, NOIBN.

UREA AND MELAMINE RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids; dry powders.

PROPERTIES: Various properties are available for uses requiring various degrees of water and weather resistance, speed of set and strength.

USES: Hot and cold setting adhesives for the plywood and wood-working industries. Laminating agent for particle board. Can be formulated for use in radio frequency equipment.

INDUSTRIAL USERS: Plywood, Particle Board, and Forest Products Industries.

SHIPPING INFORMATION: Fiber drums (250-lbs.) for powdered melamine resins. Metal drums, Trucks, tank trucks and tank cars for liquid urea resins. Dry Powders: Rail—Plastics, Synthetic, other than Resin, NOIBN. Trucks—Plastics, Powder, Liquid. Rail—Plastics, Synthetic, NOIBN. Truck—Plastics, Liquid, NOI.

ANTIFOAMS

DEFOAMER PC-1244

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Clear light yellow liquid.

SPECIFICATIONS: Color ASTM 0.5; Sp. Gr. 0.86 at 60°/60°F.; viscosity, SUS at 100 F., 100; 7.72-lbs. per gallon.

GENERAL INFORMATION: Solubility: PC-1244 is soluble in benzene, toluene, kerosene, petroleum ether, carbon tetrachloride, isopropanol, tertiary amyl alcohol, butyl cellosolve and ethyl acetate. It is not soluble in water, methanol, ethanol and methyl cellosolve.

USES: Foam control in non-aqueous systems. In paraffin wax formulations it not only controls foam, but also imparts a leveling action. Unusually effective in neutral or acidic media.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. non-returnable black iron drums; 5-gal. cans; tank cars.

ANTIOXIDANTS

"SANTOQUIN" *6 Ethoxy 1, 2-Dihydro 2,2,4-Tri-methyl Quinoline*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_{14}H_{19}NO$

MOLECULAR WEIGHT: 217.3

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow liquid when produced. Darkens with age with no loss in activity. Refractive index 1.560 to 1.572 at 25°C.; Sp. Gr. 1.03-1.042 at 25°/25 C.

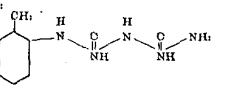
USES: A preservative for the purpose of retarding oxidative destruction of naturally occurring carotenes and Vitamin E in dehydrated forage crops. Also added to poultry feeds to retard oxidative destruction of carotenes, Vitamins A and E and xanthophylls.

SHIPPING INFORMATION: 55 and 5-gal. drums. Rail: Condition powders, regulators or tonics, animal or poultry, NOIBN. Truck: Feed Supplements, not frozen.

"SOPANOX" ortho-TOLYL BIGUANIDE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 200.24

STANDARD FORM: Powder.

SPECIFICATIONS: White to off-white powder; assay 90% min.; loss on drying 5% max.; melting point 126 C. min.; trace retained on a 30 mesh sieve; alcohol insolubles 0.5% max.

PROPERTIES: An amino compound effective in minute quantities in restraining the oxidation of soap and the resulting rancidity, discoloration and other adverse qualities, all of which must be avoided in producing a product of highest grade.

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USES: Our experience shows that "Sopanox" satisfies the exacting demands of manufacturers of soaps produced from animal or vegetable oils, fitted or unfitted. Particularly valuable in preventing discoloration of refined toilet soaps.

SHIPPING INFORMATION: Chemicals NOIBN, 150-lb. lever paks.

CURING AGENTS

CATALYSTS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORMS: Catalyst AC is light yellow liquid compatible in resin baths with most cationic, anionic, anionic and nonionic softeners and penetrants. Catalysts AC is used with "Resloom" HP finishes. Catalyst AC-4 and AC-6 are clear, compatible liquids. AC-7 is an organometallic catalyst designed for curing formaldehyde-containing resins used in the textile industry.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Speeds cure of cyclic-urea and melamine treating resins.

USES: To provide rapid and uniform resin cure and retention in treatment of fabrics, including rayons, cottons and the synthetics.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: AC—475-lb. drums; AC-2 thru AC-7—500-lb. drums; All AC series can be shipped in liquid bulk. Glue Catalyst NOIBN.

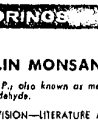
FLAVORINGS

"VANILLIN MONSANTO"

Vanillin U. S. P., also known as methylprotocatechuic aldehyde and 3-methoxy-4-hydroxybenzaldehyde.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 152.14

STANDARD FORM: Fine crystals.

SPECIFICATIONS: Fine, white crystalline needles; M.P. 81.6°C. min.; no foreign flavor (in sugar solution); moisture 0.06% max.; solubility in alcohol (1:2) complete.

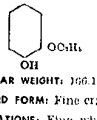
USES: As a flavoring agent in foodstuffs and beverages and as an odorant in rubber.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. fiber drums; 25-lb. fiber drums.

"ETHAVAN" *Ethyl Vanillin.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 166.17

STANDARD FORM: Fine crystalline needles.

SPECIFICATIONS: Fine white crystalline needles; completely soluble in ethyl alcohol 95°, (1:2); ash 0.05% max.; M.P. 76.5°C. min.

USES: A flavoring and aromatic. Has a flavor similar to that of vanillin but not identical with it. The relative flavoring strength of "Ethavan" approximates three times that of vanillin.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. fiber drums; 25-lb. fiber drums.

FILLERS, BODYING AGENTS

"SANTOCEL" *Silica Aerogel for Industrial Applications.*

INORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS:

	Unit	FR-C	O
Bulk Density	lb/cu. ft.	5-6	5.0
Particle Size (AV)	microns	4-5	3-5
Surface Area	sq. meters/gm	250-270	190
Oil Absorption	gm. oil/gm	3.5	3.0
SiO_2	%	93-99	90.0-91.5
Volatile	%	3.5-4.0	4-5
Na_2SO_4	%	0.20-0.25	2-3
pH	—	3.7	3.8
Index of Refraction	—	1.45-1.46	1.45-1.46
Absolute density	lb/gal.	17.1	17.1

GRADES: "Santocel" C, "Santocel" CS, "Santocel" CX, "Santocel" 54, "Santocel" FR-C.

USES: Flatting agent to produce matte finishes in coatings of all types (lacquers, varnishes, vinyl resin coatings and resin dispersions); bodying agent in printing inks; bulking agent for dry powders, free-flowing and anticaking agent for dry powders; insecticide for stored industrial grains; application aid for rubber cements; reinforcing agent for silicone rubbers; bodying agent to make lubricating greases; dry grinding aid for DDT and other sticky powders; to raise heat distortion point, as in molded brake linings; mold lubricants for hard rubber; bodying agent for paint removers; antisettling agent for pigments; antislip agent in paste floor waxes; flatting agent for free film and textile coatings. Imparts thixotropy properties to polyester and epoxy resins dispersions and solutions.

SHIPPING INFORMATION: Silica NOIBN less than 10 lb. per cu. ft. Multiwall bags, O, OS. FR-C—25-lb.; CX—15-lb.; 54—20-lb.

"SANTOCEL" *Silica Aerogel for Thermal Insulation.*

INORGANIC DIVISION

STANDARD FORM: "Santocel" A—sugar-sized particles.

TYPICAL ANALYSIS: Approximate analysis for all insulation grades of "Santocel": SiO_2 93.0-96.0%; volatile* 0.5-1.5%; Na_2SO_4 2.5-3.5%; Fe_2O_3 and Al_2O_3 1%.
*Volatile is water, alcohol, acetaldehyde.

PROPERTIES: Known technically as a silica aerogel, it possesses the lowest coefficient of thermal conductivity known. Dry bulk density: "Santocel" A, 5-lbs. per cu. ft.; absolute density 17.1 lbs. per gal.; specific heat 0.234, angle of repose 12.5°; thermal conductivity (mean temp. 60°F.) 0.150 BTU/Hr./Ft.²/in./°F.

USES: Adapted for any use where efficiency or space saving is a factor in thermal insulation, especially in freezers, shipping containers, insulated trucks, trailers and freight cars, liquid oxygen manufacture and storage, and cold-storage room doors.

SHIPPING INFORMATION: Silica NOIBN, less than 10 lb. per cu. ft. Multiwall paper bags 20-lbs. net.

"SYTON" AS-200 *Colloidal Silica.*

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Most carpet fabrics can have their soiling properties improved by a treatment of a very finely divided colloidal silica dispersion. Wool-rayon blends, cotton and other synthetic carpets can be markedly improved against soiling by a silica sol treatment. Pure wool carpets are less subject to improvement than the synthetics or blends.

USES: For use as an anti-soilant for pile fabrics.

SHIPPING INFORMATION: Colloidal Silica, liquid NB freezes 32°F. Keep from freezing. 550-lb. drums.

"SYTON" C-30 AND 200 COLLOIDAL SILICA

INORGANIC DIVISION

TYPICAL ANALYSIS:

	Syton C-30	Syton 200
SiO_2	30%	30%
Water	70%	70%
Na_2SO_4	0.15%	0.15%
Sp. Gr.	1.2	1.2
pH	10.0	8.7
Appearance	Milky white dispersion	Slightly bluish liquid
Ultimate particle size	250-400 angstroms	100-200 angstroms

(Continued on next page)

0557040

TOWOLDMON0005821
WATER_PCB-00002331

GENERAL INFORMATION: Colloidal dispersion of silica in water. Will freeze at 32 F, and the silica is precipitated irreversible.

USES: Anti-chloride agent in water finishes. Gloss control agent in water finishes. Improved bond strength of rubber latex adhesives. Increase modulus of latex film and thread. Surface hardening water base laminating resins. Suspending agent or pigments in water systems. Mold lubricant. Binder for precision casting molds. Flame retarding agent for water-based paints.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 30 F. Keep from freezing), 55-lb. drums.

"SYTON" DS AND DS-200 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Extremely fine colloidal aqueous dispersions of silica. In textile spinning controls the slippage between fibers, thereby increasing tensile strength of spun yarns, permitting less twist in some cases, or fewer breaks during spinning and weaving. In textile finishing, controls slippage in woven rayons, gives dry worsted-like hand, delusters in higher concentrations.

USES: Spinning, wet processing and finishing textiles.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32 F. Keep from freezing), 550-lb. drums.

"SYTON" P AND P-200 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: The application of an extremely fine colloidal aqueous dispersion of silica applied either by spray or roller to multiwall paper bags or most any type of paperboard boxes will materially reduce slippage between the coated surfaces. "Syton" P is proving to be the most effective anti-skid agent.

USES: For use on paper containers to make slip-resistant containers.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32°F. Keep from freezing), 550-lb. drums.

"SYTON" W-200 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: "Syton" W-200 is an extremely fine colloidal aqueous silica dispersion and is used in wax emulsions primarily to give anti-slip properties to the wax applications.

USES: For use as an anti-slip agent in wax emulsion polishing compounds.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32°F. Keep from freezing), 550-lb. drums.

FUNCTIONAL FLUIDS

"AROCLOR" POLYCHLORINATED POLYPHENYLS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids, resins or solids.

PROPERTIES: Chlorinated aromatic hydrocarbons varying from water-white mobile liquids and pale yellow viscous oils to light amber resins and opaque crystalline solids. Refractive indices above 1.6125. In general are stable on long heating at 150°C.; not affected by boiling with sodium hydroxide solution. The light oils can be distilled at atmospheric pressure without appreciable decomposition and the viscous oils and resins distill readily under vacuum. Viscous oils and resins almost odorless and tasteless at ordinary temperatures.

GENERAL INFORMATION: Most "Aroclor" materials flux readily with resinous and pitch-like materials to give products having a decreased fire hazard. (Viscous oils and resins do not support combustion when heated alone even at their boiling points—temperatures above 300°C.) All have excellent electrical characteristics, high dielectric strength and resistivity, low power factor; certain of the liquids have a high dielectric constant as compared with mineral oils. The oils and resins easily soluble in most common organic solvents and drying oils; hard crystalline materials are, in general, less soluble; all are insoluble in water. The more viscous oils and resins have excellent adhesive properties. All forms are chemically stable, absorb little moisture and undergo no further condensation or hardening upon repeated heating and cooling. Nondrying; when exposed to air do not undergo oxidation or hardening tendencies. The oils have extremely low rubber vapor pressures (e.g., at 65.6 C. less than 0.01 gm. per sq. in. of surface per month.

USES: Liquid "Aroclors" are used as dielectrics for condensers or transformers and heat transfer media. Solid "Aroclors" are used to impregnate carbon rods for electrical applications combined with other plastic materials, the "Aroclors" are excellent sealers or impregnating agents for a variety of electrical apparatus, wire coatings and tape. "Aroclors" are used as plasticizers and resins in lacquer, including nitrocellulose, ethyl cellulose and cellulose acetate butyrate types, and varnish resins and oils and as plasticizers and resins for rubber-base paints, including chlorinated rubber, styrene, butadiene and vinyls. In these protective coatings for metal, masonry and wood, "Aroclors" impart resistance against moisture, acids, alkalies or other corrosive influence and they improve electrical insulating properties, durability and reduce flammability. They function as softeners in waterproofing compounds, wood preservative formulations, caulking compounds and putty. Employed in combustible siding materials and cellulose products impregnated or laminated with asphaltic materials, the "Aroclors" plasticize the asphalt, reduce flammability and increase durability. For printing inks; in precision-casting waxes, floor waxes and other wax products. Used widely in certain adhesives including ethyl cellulose, styrene, vinyls and rubber-base materials. "Aroclors" improve adhesion and resistance against corrosive influences. Selected liquid "Aroclors" are used as nonflammable hydraulic fluids for die-casting machines. They are used as actuating media for thermostats. "Aroclors" are useful in cutting oils as extreme pressure lubricants, as high-temperature lubricants and as crimping fluids. "Aroclor" 1248 is employed as a nonflammable, liquid-phase, heat-transfer medium for continuous operation in closed systems at temperatures up to 300 C. and at normal atmospheric pressure.

SHIPPING INFORMATION: Resin, Synthetic NOIBN without filler, 800-lb. steel drums; 500-lb. net fiber drums.

"COOLANOL 45" DIELECTRIC COOLANT FOR ELECTRONIC EQUIPMENT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A clear, amber liquid with dielectric, heat transfer and hydraulic properties over a —65°F. to 400°F. temperature range.

USES: Dielectric coolant for both airborne and ground environmental electronic equipment. Also utilized in hydraulic applications in electronic equipment.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

"PYDRAUL F-9" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—245 SUS, 210°F.—45 SUS; moisture—0.20% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.275-1.295.

PROPERTIES: A light, amber, cloudy liquid; straight synthetic fire resistant fluid with excellent lubricity and pumping characteristics; non-corrosive, extremely stable to both heat and air; recoverable by filtration; designed for long service life.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 55-gal. steel drums and 5-gal. cans.

"PYDRAUL 60" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—60 SUS, 210°F.—34 SUS; moisture—0.25% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.069-1.095.

PROPERTIES: A clear blue, oily, straight synthetic fire resistant hydraulic fluid with excellent lubricating and pumping characteristics; highly resistant to mechanical shear and breakdown; inert to common metals of construction; an excellent fluid for low temperature operations.

USES: A fire resistant hydraulic fluid in systems requiring extremely low viscosity. Low viscosity is excellent for high speed, precision equipment such as machine tools. Low temperature properties suited for many outdoor operations.

0557041

TOWOLDMON0005822
WATER_PCB-00002332

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 54-gal. steel drums and 5-gal. cans.

"PYDRAUL 150" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—150 SUS, 210°F.—50 SUS; moisture—0.25% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.115-1.135.

PROPERTIES: A light, amber, straight synthetic fire resistant hydraulic fluid of low viscosity with excellent lubricity and low temperature pumping characteristics; non-corrosive, stable to heat and air.

USES: Fire resistant hydraulic fluid in equipment which operates out of doors at low temperatures part or all of the time, such as Askania Regulator Equipment, fork-lift trucks and similar equipment with cold weather fluid requirements.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 55-gal. steel drums; 5-gal. cans.

"PYDRAUL 625" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—625 SUS, 210°F.—45 SUS; moisture—0.15% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.340-1.370.

PROPERTIES: A light, amber, straight synthetic fire resistant hydraulic fluid of high viscosity with excellent lubricity and pumping characteristics; non-corrosive, extremely stable to heat and air; a shear, stable fluid designed for long service life.

USES: A fire resistant hydraulic fluid in equipment requiring a high viscosity medium, such as large forging presses, extrusion presses and some die-casting machines.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 54-gal. steel drums; 5-gal. cans.

"PYDRAUL A-200" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—230 SUS, 210°F.—44.9 SUS; moisture—0.05% max.; neutralization number (acid)—1.0 max.; sp. gr. at 25°/25°C.—1.415-1.430.

PROPERTIES: A light amber, straight synthetic, fire resistant hydraulic fluid with excellent lubricity; non-corrosive, extremely stable to both heat and air; is designed to be permanent; fluid spilled and leaked can be easily reclaimed by filtration; does not thicken with use; resists "breakdown" even under extreme conditions; passes ASTM-D-665-A rust test with perfect score; A-200 is shear stable and undergoes no loss of viscosity after years of severe use.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 55-gal. steel drums; 5-gal. cans.

"PYDRAUL AC" FUNCTIONAL FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—405 SUS, 210°F.—42 SUS; moisture—0.15% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.546-1.556.

PROPERTIES: A light amber, mobile straight synthetic fire resistant air compressor lubricant with excellent lubricity; non-corrosive, extremely stable to heat and air; designed as a inert stable fluid with a two-fold purpose, to eliminate carbon deposits on valves and cylinder walls, thereby reducing maintenance costs; and to provide safety from air compressor fires and explosions.

USES: A fire and explosion resistant lubricant for air compressors, such as those used in air separation plants, plant air systems, ammonia synthesis plants, gas transmission booster stations and other type processing plants.

SHIPPING INFORMATION: Chemicals NOIBN, 54-gal. steel drums; 5-gal. cans.

"SKYDROL 500-A" FIRE RESISTANT JET AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Moisture .20% max.; neutralization number 0.10 max.; Sp. Gr. 25°/25°C. 1.060-1.066; viscosity at 100°F. 11.7±0.4 cs.

PROPERTIES: A clear, purple, fire-resistant hydraulic fluid with excellent lubricity. Operational at −65°F.

USES: Hydraulic fluid for hydraulic systems in turbo jet and turbo prop aircraft, which must be operational at −65°F.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

"SKYDROL 7000" FIRE RESISTANT AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS: Cloud point below 0°F.; moisture 0.25% max.; neutralization number 0.2 max.; Sp. Gr. 1.080 to 1.086 at 25°/25°C.; pour point −70°F. or lower.

PROPERTIES: A clear, green fire-resistant hydraulic fluid with outstanding lubricity, stability, non-corrosiveness, excellent viscosity-temperature characteristics, and resistance to oxidation.

USES: Hydraulic fluid in aircraft cabin superchargers, expansion turbines for air-conditioning systems and the aircraft hydraulic system itself.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

GERMICIDES, FUNGICIDES, DISINFECTANTS

"ACTAMER" *2, 2' thiobis-(4,6-dichlorophenol.)*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: White powder; assay 99.0% min.; color of Solution (10:100 of Acetone); 100 APHA max.; loss on drying 0.025% max.; screen test retained on 50 mesh 1.0% max., retained on 200 mesh 20.0% max.; melting point 187°C. min. (first meniscus).

USES: "Actamer" is an effective skin bacteriostat, a non-toxic, low cost, royalty-free degerming agent recommended for incorporation in soaps and other topically applied pharmaceutical and cosmetic preparations.

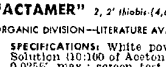
SHIPPING INFORMATION: Chemicals NOIBN, 200 and 50-lb. fiber drums.

CHLORAMINE-T, N. F.

Also known as N-sodium-N-chloro-para-toluenesulfonamide.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 281.70

STANDARD FORM: Crystalline powder.

SPECIFICATIONS: White or faintly yellow powder or crystals; solubility in water (2:15) complete; moisture 16.5-20.0%; available chlorine 24.5-25.2%; assay 97.3% min.; trace max. retained on 10 mesh; .15% retained on 35 mesh.

CHLORINE-CAUSTIC SODA, CAUSTIC POTASH AND SODIUM SULFIDE PLANTS—Complete manufacturing plants using DeNora Mercury Cells offered by Engineering Sales Department.

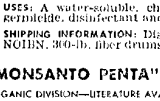
USES: A water-soluble, chlorine-bearing powder used as a germicide, disinfectant and deodorant.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN, 300-lb. fiber drums; 125-lb. lever-paks.

"MONSANTO PENTA" *Pentachlorophenol, Technical.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 266.35

(Continued on next page)

0557042

TOWOLDMON0005823
WATER_PCB-00002333

STANDARD FORM: Flakes, "Monsanto Penta" Oiled also available. Contains 5 lbs. oil per 100 lbs. of PENTA TECHNICAL. Oil does not affect the fluidity behavior of the product.

SPECIFICATIONS: Dark grayish flakes; crystallizing point 174.0°C. min.; alkali insoluble material 1.0% max.; assay 99.0%; high pour oil solution NPA 5.0 max. Meets Federal Specification TT-W-570.

PROPERTIES: Chlorophenolic odor; bulking value 15.5 lbs. per cu. ft.; stable under ordinary conditions; relatively non-hygros opic and unreactive chemically; soluble to various degrees in organic solvents; relatively insoluble in water.

GENERAL INFORMATION: "Monsanto Penta" and its solutions and formulations may be irritating to the skin and mucous membranes and are somewhat toxic to man and the higher animals. Precautions suggested for handling should be observed.

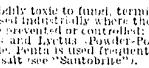
USES: Highly toxic to fungi, termites and many forms of bacteria. Used industrially where the growth of microorganisms must be prevented or controlled; to protect wood against rot, termites and Lyctus Powder-Post beetles; as an effective herbicide. Penta is used frequently in oil solutions or as the sodium salt (see "Santobrite").

SHIPPING INFORMATION: Pentachlorophenol, 100-lb. fiber container; 50-lb. multiwall paper bags. Oiled Penta 16½-gal. lever-pak; 51-lb. multiwall paper bags.

"SANTOBRITE" SODIUM PENTACHLOROPHENATE, TECHNICAL

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: ONa



MOLECULAR WEIGHT: 288.36

STANDARD FORM: Neutral powder, pellets, fines or briquettes.

SPECIFICATIONS: Light tan powder, pellets, fines or briquettes; assay 88.0% min.; free alkali (as NaOH) 0.5-0.9%.

PROPERTIES: Comparatively odorless; stable under ordinary atmospheric conditions when stored in dry place; bulking value: briquettes 40-50 lbs./ft.³, pellets 35-40 lbs./ft.³, powder 55-65 lbs./ft.³; soluble in water and various organic polar solvents. Relatively inert toward organic compounds.

GENERAL INFORMATION: "Santobrite" and its solutions may be irritating to the skin and mucous membranes of some individuals and are somewhat toxic to man and the higher animals. For detailed information on uses and methods of handling, write for listed literature.

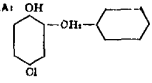
USES: A water-soluble industrial preservative, fungicide and herbicide. Used for the manufacture of termite-resistant cellulose insulating board and for the preservation of wood, cellulose products, textiles, starches, adhesives, leather, oils, paints, latex and rubber. Also for control of slime and algae; manufacture of herbicides; as a fermentation disinfectant; for control of sap stain in green lumber.

SHIPPING INFORMATION: Sodium Pentachlorophenate, 100-lb. fiber containers.

"SANTOPHEN" 1 GERMICIDE *ortho-benzyl-parachlorophenol.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 218.68

STANDARD FORM: Flaked solid.

SPECIFICATIONS: White to light tan or pink flakes; crystallizing point 45.0°C. min.; Sp. Gr. 1.185-1.190 at 55°/15.5°C.; free acidity (as HCl) 0.01% max.; odor slight phenolic max.

PROPERTIES: "Santophen" 1 possesses high bactericidal and fungicidal activity, but low toxicity to higher animals. When properly formulated for disinfectant use, it is considered nonirritating in use dilutions. Insoluble in water, but highly soluble in alcohol and other organic solvents; dispersible in aqueous media with the aid of soaps or synthetic dispersing agents. Nonoxidizing to most metals or other engineering materials. "Santophen" 1 can be easily rendered water soluble by converting it to the sodium salt.

USES: Used as the active chemical agent for finished products that destroy harmful microorganisms that attack human beings, animals and naturally derived materials.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN, 55 and 22-gal. lacquer-lined drums.

"SANTOPHEN" 1 SOLUTION

75% "Santophen" 1, 25% isopropanol.

ORGANIC DIVISION

STANDARD FORM: Liquid.

SPECIFICATIONS: Color to amber clear liquid; assay 75.0 to 77.0%; Sp. Gr. 1.080-1.090 at 15.5°/15.5°C.; color Barrett Std. No. 3 max.; moisture 0.25% max.

USES: Used as the germicidal active principle, or as an enhancing agent for disinfectants. "Santophen" 1 solution is convenient for formulators as a non-acidic dealer the compound in isopropyl alcohol. The use of "Santophen" 1 solution saves one step in formulation procedures.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN, 55 and 15-gal. drums.

TCC *3, 4, 4' Trichlorocarbanilide.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_{13}H_9Cl_3N_2O$

MOLECULAR WEIGHT: 315.6

STANDARD FORM: Micronized and unmicronized.

SPECIFICATIONS: Fine white to grayish white powder; loss on drying at 110 C., 0.15%; melting point 250.0°C. (first meniscus); particle size:

micronized	20 microns max. 3 microns ave.
unmicronized	0.1%; retained on a 30 mesh screen

USES: 3,4,4' trichlorocarbanilide is recommended for incorporation into soap and other topically applied preparations as a degerming agent.

SHIPPING INFORMATION: Chemicals, NOIBN, 100-lb. fiber drums—micronized, 200-lb. fiber drums—unmicronized.

ODORANTS

"SANTOMASK" II ODOR-MASKING AGENT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, light yellow liquid; pleasant characteristic odor; Sp. Gr. 25° 25°C. 1.18 to 1.20; color NPA 2.0 max.; chill test, clear @ 0°C.

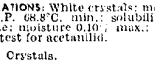
USES: Odor-masking ingredient for interior paints, printing inks and similar products having objectionable natural odors. Will not affect drying time, color durability and other characteristics of paints and inks.

SHIPPING INFORMATION: Chemicals NOIBN, 250 and 45-lb. drums.

"COUMARIN MONSANTO" *Coumarin, N. F.*

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 146.14

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White crystals; melt (liquid) clear and colorless; M.P. 68.8°C. min.; solubility in ethyl alcohol (1:10) complete; moisture 0.10% max.; ash 0.05% max.; conforms to N.F. test for acetanilid.

GRADES: Crystals.

USES: Deodorizing and odor enhancing agent; used in perfumes, soaps, tobacco, inks, rubber and other products where aromatic ingredients are required.

SHIPPING INFORMATION: Chemicals NOIBN, 200 and 25-lb. fiber drums.

"VANILLIN MONSANTO"

Vanillin U.S.P.; also known as methylprotocatechuic aldehyde and 3-methoxy-4-hydroxy-benzaldehyde.

ORGANIC DIVISION—LITERATURE AVAILABLE

0557043

TOWOLDMON0005824
WATER_PCB-00002334

FORMULA:



MOLECULAR WEIGHT: 152.14

STANDARD FORM: Fine crystals.

SPECIFICATIONS: Fine, white crystalline needles; M.P. 81.6°C. min.; no foreign flavor (in sugar solution); moisture 0.05% max.; solubility in alcohol (1:2) complete; food purity of 99.9%.

USES: Used as a flavoring agent in foodstuffs, pharmaceuticals and beverages and as an odorant in rubber. Also used as an odor masking and odor enhancing agent.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. fiber drums; 25-lb. fiber drums.

METHYL SALICYLATE U.S.P. *Synthetic.*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Colorless liquid; assay essentially 100%; color APHA 10 max.; odor, characteristic; refractive index at 20°C. 1.536; specific gravity at 25°/25°C., 1.180 to 1.185; solubility in 70% alcohol (1:7), complete; solubility in Normal Potassium Hydroxide (1:10), Turbidity, none; color, faint yellow, max.; heavy metals, meets USP; weight per gallon, 9.9 pounds; meets all requirements of USP.

USES: Methyl Salicylate U.S.P. (Synthetic) is widely used in sprays, as well as various kinds of insecticides, disinfectants, mouth washes, perfumes, pharmaceuticals, in masking gummed tape and paper, as an odor principle in polishes, printing and copying inks, and in covering disagreeable odors of such products as paste and glues. Used for food flavoring, candy lozenges, chewing gum and root beer.

SHIPPING INFORMATION: 500-lb. drums—returnable; 500 and 50-lb. drums—non-returnable. Methyl Salicylate (Essential Oil NOIBN).

PAINT/COATING ADDITIVES

"SANTOMASK" II ODOR-MASKING AGENT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, light yellow liquid; pleasant characteristic odor; Sp. Gr. 25°/25°C. 1.18 to 1.20; color NPA 2.0 max.; chill test, clear at 0 C.

USES: Odor-masking ingredient for interior paints, printing inks and similar products having objectionable natural odors. In addition to masking odors, may reduce or eliminate irritation to eyes, nose and throat caused by volatile components of some interior paints. Will not affect drying time, color durability and other characteristics of paints and inks.

SHIPPING INFORMATION: Chemicals NOIBN, 250 and 45-lb. drums.

"BENTHAL" ALKYD RESIN INTERMEDIATE

ORGANIC DIVISION

STANDARD FORM: Light yellow flakes.

TYPICAL ANALYSIS: Ash 0.05% max.; iron 10 ppm max.; C.P. 117-120 C. min. to start; odor characteristic.

USES: "Benthal" is used in short oil alkyds which are primarily baking finishes for appliance and automotive enamels. By reducing excess amount of alcohols in the formulation and introducing "Benthal" in quantities of 3-20% by weight on the phthalic anhydride, enamels show substantial improvement in flexibility, gloss and durability. The "Benthal" acts as a chain terminator hence retarding the viscosity increase until low acid values are obtained in the resin.

SHIPPING INFORMATION: Resin Plasticizer, 500-lb. net wt. fiber drums.

"D. P. SOLUTION" *Dibutylamine Pyrophosphate.*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Pale straw-colored liquid; wt. per gal. 8.2 lbs.; 40% sol. in equal parts of ethyl alcohol and acetone.

USES: An anticorrosion agent in lacquers and cotton solutions; an agent to prevent the settling of "Santocel" in flat lacquer formulations; for light and heat stabilization of vinyl chloride and vinyl copolymer resins.

SHIPPING INFORMATION: Chemicals NOIBN, 55 and 5-gal. Heresite-lined steel drums.

"MERTONE" WB-4 *Precoat for Reproduction Papers.*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A 30% colloidal dispersion of silica in water; odorless.

USES: As a precoat on blueprint and other reproduction papers for clearer, more legible prints. On blueprint a darker, more lively blue is obtained. Also used on diazo paper, blueprint cloth, negative paper and Van Dyke paper. Precoating is performed by coaters. U. S. reissue patent No. 23510 (Andrews Paper and Chemical Co.) relates to the precoating of photosensitive papers with colloidal silica.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. lined steel drums.

SIZING AGENTS/PAPER

"MERSIZE" *Paper Sizing Agent.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Paste, powder and liquid.

GENERAL INFORMATION: "Mersize RM 70%" and "Mersize RM 77%" are 70% and 77% solids paste sizes; "Mersize RM Dry" a dry granular powder; "Mersize CD-2" a 50% solids solution; "Mersize CD-2 Dry" a dry powder.

USES: "Mersize RM 70%," "Mersize RM 77%" and "Mersize RM Dry" are forms of chemically fortified rosin-based sizes that are ready to use in a paper mill to reduce sizing costs, improve resistance to ink, water and other aqueous solutions, give better feathering resistance and more uniform, dependable sizing. "Mersize CD-2" and "Mersize CD-2 Dry" are used in conjunction with typical rosin sizes to obtain the same results.

SHIPPING INFORMATION: Tank cars, 500-lb. steel drums and 50-lb. bags. Rosin Sizing NOIBN.

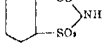
SWEETENERS

SACCHARIN, U.S.P.

Also known as saccharin insoluble, and orthosulfobenzimide.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 183.18

STANDARD FORM: Powder and coarse powder.

SPECIFICATIONS: White crystalline powder; assay 98% min.; M.P. 227.0 C. min.; moisture 0.50% max.; solubility in 10% Na_2CO_3 4.5% complete; ash 0.2% max.; heavy metals 20 ppm max.

USES: Sweetener for tooth pastes, mouth washes and pharmaceutical preparations. *Approximately 500 times* the sweetening power of sugar.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. fiber drums.

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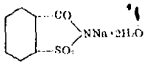
WATER_PCB-00002335

SACCHARIN, SODIUM, U.S.P.

Also known as soluble saccharin and sodium orthosulfobenzimide.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



MOLECULAR WEIGHT: 241.21

STANDARD FORM: Powder, granules, crystals.

SPECIFICATIONS: White crystals or powder; solubility in water 1:8 complete. Loss on drying at 125 C.: crystals 13.9% min., 14.4 max.; powder 5.0%, min., 5.8% max.; assay 98% min.

GRADES: Soluble granular crystals; soluble powder.

USES: Sweetener in tooth pastes, mouth washes and pharmaceutical preparations; in beverages and food in place of sugar for diabetics. Crystals approximately 375 times the sweetening power of sugar; powder approximately 425 times the sweetening power of sugar.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. fiber drums.

TANNING AGENTS

"SANTOTAN" KR BASIC CHROME SULFATE

INORGANIC DIVISION

FORMULA: Contains approximately 50% of $Cr(SO_4)(OH)$

STANDARD FORM: Crystals.

TYPICAL ANALYSIS: Dark green crystals; solution in water (5:500) clear; basicity ($Cr_2O_3(SO_3)$ 101-105; basicity (Schorlemmer) 37.3-39.7; chromium as Cr_2O_3 23.9% min.

USES: In chrome tanning of calf, cow and horse hides and sheepskins.

SHIPPING INFORMATION: Tanning Extract Dry NOIBN, 100-lb. paper bags.

ZINC OXIDE, TECHNICAL

INORGANIC DIVISION

FORMULA: ZnO

MOLECULAR WEIGHT: 81.38

SPECIFICATIONS: Light gray or tan powder assaying 90.0% min. ZnO.

GENERAL INFORMATION: This technical grade has been found acceptable in the rubber trade and paper manufacture.

SHIPPING INFORMATION: Zinc Oxide Dry, 50-lb. bags.

SURFACE ACTIVE AGENTS, DETERGENTS and ACL PRODUCTS

ANIONICS—SURFACE-ACTIVE AGENTS

DDBSA *Dodecylbenzene Sulfonic Acid.*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $C_{12}H_{25}(C_6H_4)\cdot SO_3H$

MOLECULAR WEIGHT: 320

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: DDBSA—96.5%; H_2SO_4—3.7%, water and unsulfonated matter—2.8%.

GENERAL INFORMATION: DDBSA is sulfonated alkyl benzene, but not neutralized; that is, on reacting with caustic or other alkaline salts, either dry or in solution, it yields a surface active material identical to the active portion of "Santomerse" 1 and 85.

USES: Intermediate for the preparation of neutral alkyl aryl sulfonates for use in dry and liquid detergents, and many other applications. See uses of "Santomerse."

SHIPPING INFORMATION: Washing compound liquid, NOIBN. Tank cars and tank trucks; 55-lb. drums.

DDBSA-94

INORGANIC DIVISION

GENERAL INFORMATION: Similar to DDBSA, but contains 94% active and less than 1.5% H_2SO_4.

USES: Similar to DDBSA, but particularly useful in liquid detergents where a low sulfate content is required.

SHIPPING INFORMATION: Washing compound liquid, NOIBN. Tank cars and tank trucks; 450-lb. drums.

"SANTOMERSE" ALKYL ARYL SULFONATES

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: The salts of a homologous series of substituted aromatic sulfonic acids. The "Santomerse" series consists of five products, each distinctive in character and developed to meet a certain industrial need.

GENERAL INFORMATION: "Santomerse" No. 1—neutral flakes, granular and powdered form, 40% active. "Santomerse" 85 85% active powder or flake. "Santomerse" SX—30% active solution. "Santomerse" 3 Paste—85% active paste. "Santomerse" E—70% active powder of high solubility.

USES: Highly efficient surface-active, wetting, spreading, penetrating, emulsifying agents and detergents used in the following industries: textile, paper, leather, adhesive, rubber, insecticide, dust collection, soap, cosmetic, ceramic, detergent, metal cleaning, plating, emulsions, dyes, pharmaceutical, laundry, steel, paint, cement, glue, felt, color, etc.

SHIPPING INFORMATION: Washing compound, dry; or washing compound, liquid. NOIBN. "Santomerse" No. 1—75-lb. bags and 175-lb., 200-lb., and 225-lb. drums depending on type of flake. "Santomerse" 3 Paste—150 lb. drums; "Santomerse" 85—200-lb. drums; "Santomerse" E—175-lb. drums; "Santomerse" SX—250 and 450-lb. drums; tank cars and tank trucks.

NONIONICS—SURFACE-ACTIVE AGENTS

"STEROX" AJ

"STEROX" AJ-100

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tridecanolethylene oxide condensates. (Polyoxyethylene ether)

PROPERTIES: "Sterox" AJ-100 is 100% active in a soft paste form. "Sterox" AJ is 85% active and a clear liquid. Each is soluble in water, and produces a moderate amount of foam. Extremely efficient as a surface active agent.

USES: Recommended for powdered detergent formulations, as an emulsifier in a variety of applications, and as an aid in textiles, paper and leather processing.

SHIPPING INFORMATION: Washing compound—NOIBN liquid. Tank cars and tank trucks; 450-lb.

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"STEROX" AP

"STEROX" AP-100

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tridecanolethylene oxide condensates. (Polyoxyethylene ether)

PROPERTIES: Higher molecular weight than "Sterox" AJ-100. "Sterox" AP-100 is 100% active in soft paste form, while "Sterox" AP is 80% active and a clear liquid. Produce more foam than "Sterox" AJ-100, and are more soluble in water solutions, in presence of other materials.

USES: Generally same as "Sterox" AJ-100, but specifically designed for use in liquid detergents, or where greater solubility or solubilizing of other materials is desired.

SHIPPING INFORMATION: Washing compound—NOIBN liquid. Tank cars and tank trucks; 450-lb. drums.

"STEROX" CD

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tall oilethylene oxide condensate. (Polyoxyethylene ester)

PROPERTIES: Nonionic. 100% active surface-active agent with high detergent action accompanied by low foaming. Compatible with other type detergents and builder materials. Light amber liquid.

USES: Mixed with builder materials, an unusually high cleaning action is obtained with little sudsing. Used as a degussing and conditioning agent for detergent compositions. Used in insecticide and herbicide formulations. Excellent rewetting agent for paper towels and products to increase water absorbency.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and 475-lb. drums.

"STEROX" DF

INORGANIC DIVISION

CHEMICAL COMPOSITION: Dodecyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active miscible with water at room temperature. Soluble in nonpolar solvents. Excellent emulsifier. Chemically stable, low foaming.

USES: Designed as an intermediate for sulfation, thus producing high foaming, highly soluble surface active agents for liquid detergents. Per se, an excellent emulsifier, oil soluble, useful in metal cleaning, textile and paper processing, etc.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

"STEROX" DJ

INORGANIC DIVISION

CHEMICAL COMPOSITION: Dodecyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active, soluble in water. Low odor and color. Higher molecular weight than "Sterox" DF. Chemically stable, low foaming. Optimum detergency.

USES: For low foaming powdered and liquid detergents. Excellent detergency properties. Low odor and color levels give more sales appeal to finished detergents.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

"STEROX" NJ

INORGANIC DIVISION

CHEMICAL COMPOSITION: Nonyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active soluble in water. Chemically stable, medium foam. Low odor and color levels.

USES: General purpose nonionic for use in powdered and liquid detergents, textile, leather and paper processing, metal cleaning, toxicant formulations, dedusters, etc.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

"STEROX" NL

INORGANIC DIVISION

CHEMICAL COMPOSITION: Nonyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active, soluble in water. Chemically stable, medium foam. Higher molecular weight than "Sterox" NJ.

USES: Designed for use in liquid detergents, or where higher solubility or solubilizing power is desired. Other uses similar to "Sterox" NJ.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

"STEROX" SK

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Polyoxyethylene thioether.

PROPERTIES: Light amber liquid, 100% active nonionic-type surface-active agent and detergent. Extremely fast wetting action, good deterrency and emulsifying properties.

USES: Wetting agent and penetrant for insecticidal and herbicidal formulations. Wetting agent with low foam characteristics for wet collection dust systems. De-emulsifier for some hydrocarbon-water emulsions.

SHIPPING INFORMATION: Washing Compound, NOIBN Liquid. Tank cars and tank trucks; 465-lb. drums.

"STEROX" NO. 6

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Polyoxyethylene thioether.

PROPERTIES: Nonionic surface-active agent, designed especially for operations where exceptionally fast wetting and high scouring efficiency is desired. Compatible with principle textile operations. 85% active liquid without inorganic salts.

USES: Designed especially for textile operations where fast wetting, good scouring and emulsification of grease soil are needed. Scouring efficiency particularly advantageous for raw wool and woolen piece goods scouring. Effective rewetting agent for textiles.

SHIPPING INFORMATION: Washing Compound, NOIBN, Liquid. Tank cars and tank trucks; 450-lb. drums.

BLEACHING COMPOUNDS

"ACL"

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder and granular. A series of solid, organic chlorine liberating compounds, useful as active ingredients in household and commercial laundry bleaches, scouring cleansers, machine diswashing compounds, sanitizing agents, etc.

PRODUCT DESCRIPTION:

ACL Grade	Chemical Name	Typical % Available Chlorine
85	Trichloroisocyanuric Acid	90
70	Dichloroisocyanuric Acid	70
60	Sodium dichloroisocyanurate	61
59	Potassium dichloroisocyanurate	60

SHIPPING INFORMATION: Fiber drums with polyethylene bag liner. ACL-85 and ACL-59 270-lbs. net. ACL-70 and ACL-60 225-lbs. net.

The information contained in this catalog is to our best knowledge true and accurate, but all recommendations or suggestions are made without guarantee, since the conditions of use are beyond our control. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents covering any material or use.

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WATER_PCB-00002337

MONSANTO DISTRICT SALES OFFICES

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920 Brown Street (11)
P. O. Box 2307
Tel. Hemlock 4-1921
Division: Organic (Rubber Chemicals)

ATLANTA, GEORGIA
1401 Peachtree St., N. E. (9)
Tel. Trinity 6-0777
Divisions: Inorganic—Organic

BOSTON, MASSACHUSETTS
Everett Station (49)
Tel. Dunkirk 7-5010
Divisions: Inorganic—Organic

CHARLOTTE, NORTH CAROLINA
Charlotte Town Mall
Charlotte, N. C.
Tel. Edison 3-2101
Division: Plastics

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McGraw-Hill Building
520 N. Michigan Ave. (11)
Tel. Whitehall 4-6750
Divisions: Inorganic—Organic—Plastics

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2330 Victory Parkway (6)
Tel. Woodburn 1-3677
Divisions: Inorganic—Organic

CLEVELAND, OHIO
427 Hanna Bldg. (15)
Tel. Superior 1-3830
Divisions: Inorganic—Organic—Plastics

DETROIT, MICHIGAN
18230 Grand River Ave. (23)
Tel. Broadway 3-7090
Divisions: Inorganic—Organic—Plastics

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Lion Oil Building
Tel. Union 3-3111
Division: Lion Oil

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Lion Red Bird Station
1820 West Franklin
Evansville, Indiana
Tel. Harrison 5-8391
Division: Lion Oil

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Texas Gas Building
2472 Bolsover St. (5)
P. O. Box 6863
Tel. Jackson 6-2551
Divisions: Inorganic—Organic

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950 Milner Building
Tel. Fleetwood 2-3648
Division: Lion Oil

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VFW Building
406 West 34th Street
Tel. Willow 2-0084
Division: Organic

LITTLE ROCK, ARKANSAS
National Oil Line Life Insurance Building
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P. O. Box 711
Tel. Franklin 6-2437
Division: Lion Oil

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Tel. Raymond 3-2492
Divisions: Inorganic—Organic—Plastics

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P. O. Box 252
Tel. Whitehall 8-4451
Division: Lion Oil

MINNEAPOLIS, MINNESOTA
Room 515
Foshay Tower (2)
Tel. Federal 9-4651
Divisions: Organic—Plastics

NEW ORLEANS SALES OFFICE
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Luling, Louisiana
Tel. Sterling 4-2911
Divisions: Inorganic—Organic

NEW YORK
445 Park Avenue (22)
Tel. Plaza 9-3200
Divisions: Inorganic—Organic—Plastics

ORLANDO, FLORIDA
711 Magnolia Avenue
Tel. Garden 5-6432
Division: Organic

PITTSBURGH, PENNSYLVANIA
20 Cedar Blvd. (28)
Tel. Locust 3-4010
Division: Organic

ST. LOUIS, MISSOURI
800 North Lindbergh Blvd. (66)
Tel. Wydown 3-1000
Divisions: Inorganic—Organic—Plastics

P. O. Box 2201
St. Louis 19, Missouri
Tel. Mission 5-3809
Division: Lion Oil

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Tel. Yukon 6-6232
Divisions: Inorganic—Organic

SEATTLE, WASHINGTON
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Tel. Main 2-4203
Divisions: Organic—Plastics

SPRINGFIELD, MASSACHUSETTS
New England
812 Monsanto Avenue (2)
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Division: Plastics

SYRACUSE, NEW YORK
409 Romax Building
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Division: Organic

WILMINGTON, DELAWARE
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