Polycarbonate Resistance to Various Chemicals and Products

LEDRAYS designs, engineers and manufactures LED luminaires for use in increasingly difficult, severe and harsh environments. Hence understanding how environmental factors can affect long term fixture performance is crucial in meeting engineering goals and in meeting customers' expectations.

LEDRAYS has expertise in material science and thus employs a variety of tangible matter including exotic and cutting edge substances to meet the engineering challenges of demanding applications. LEDRAYS INC. extensively incorporates the use of polycarbonate (PC) materials into the fabrication of LED luminaires. Polycarbonate is strong and resilient, can effectively absorb shock, can be produced with high optical purity and can be formed and machined into various components such as lenses, light pipes, collimators, isolators, sub assemblies, guides, mechanical interfaces etc...

Polycarbonate lenses and light pipes are widely used in our products. However when chemicals which possibly can or are known to have detrimental long term interactions with polycarbonate are present, we alternatively choose Acrylic (PMMA), borosilicate glass or silicone as viable options.

Polycarbonates can experience noticeable deterioration and failures when exposed to certain chemicals either airborne in the form of vapors and mist or when in direct contact. Certain chemicals can have detrimental effects on luminaire integrity which might not be noticeable to the unaided eye. This can range from minor fading, color change, whitening to stress cracking or crazing which can be serious conditions leading up to possible catastrophic mechanical and or electrical failures.

Stress cracking commonly occurs where the polycarbonate is under tension or load, this usually coincides in areas where mounting protrusions, fasteners locations or bends in the material are situated.

Other issues such as swelling can be caused by agents such as benzene, chlorobenzene, tetralin, acetone, ethyl acetate, acetonitrile and carbon tetrachloride. Partial dissolution of polycarbonate can be caused by Ethylene chloride, chloroform, tetrachloroethane, m-cresol, pyridine and other chemicals. Acetone, ketones, ethers, and aromatic and chlorinated hydrocarbons are not commonly recommended to use with polycarbonate as well as aqueous or alcoholic alkaline solutions, ammonia gas and its solutions and amines.

Polycarbonate is resistant to mineral acids, many organic acids, oxidizing and reducing agents, neutral and acid salt solutions, many greases, waxes and oils, saturated, aliphatic and cycloaliphatic hydrocarbons and alcohols, with the exception of methyl alcohol.

Polycarbonate resistance as compiled in this list is based on a 48hr exposure to various chemical and agents at an ambient temperature of 20°C (68°F) and at 50% humidity. This list is not exhaustive, nor should it be used as a master document to make a final buying or engineering decision. Presented as baseline data, the information herein usually warrants further exploration and testing to validate and ascertain usage within the application.

Due diligence is required in all cases to confirm suitability of product for the expected environment. Length of exposure, concentration, and whether the polycarbonate material is under load will determine the products admissibility within that application. For example cured sealants and adhesives making permanent contact with polycarbonate will have a different effect then uncured material.

Please note exposure to any incompatible chemicals can create defects and failures not covered under warranty. We urge you to discuss your application with your representative, agent or with our engineering team prior to using a product within an environment where chemicals will be present. You can reach LEDRAYS at 888.LEDLABS / 888.533.5227 info@ledrays.com

Chemical Compound / Product	COMPATIBILITY			
	YES	FAIR	NO	N/A
Aral BG 58			X	
ENTH ACID 82			X	
1MS-SPEC NEUTRAL OIL 3-M #EC847			X	
3-M #EC866			X	
ACCELOGLOS-134099 BL			X	
Acetaldehyde		X		
Acetamide			X	
Acetate Solvent				X
Acetates			X	
Acetic Acid	X			
Acetic Acid 20%	X			
Acetic Acid 80%	X			
Acetic Acid, 5%	X			
Acetic Acid, Glacial		X		
Acetic Anhydride			X	
Acetone			X	
Acetonitrile			X	
Acetophenone			X	
Acetyl Bromide				X
Acetyl Chloride (dry)			X	
Acetylene			X	
Acrylonitrile			X	
AD DETERGENT			X	
ADHESIVE FOR FILM			X	
ADHESIVE PROD CO MYTEX 182			X	
ADHESIVE PROD CO PLASTIC 3059			X	
ADHESIVE PROD CO POLYSTIC 3720			X	
ADHESIVE PROD CO STIXGRIP 482			X	
Adipic Acid				X
ALADDIN CLEANERS			X	
Alcohol, Amyl			X	
Alcohol, Benzyl			X	
Alcohol, Ethyl (Ethanol), 50%			X	
Alcohol, Isopropyl, 100%			X	
Alcohol, Methyl (Methanol), 50%			X	
Alcohols: Benzyl				X
Alcohols: Butyl	X			
Alcohols: Diacetone				X
Alcohols: Ethyl		X		
Alcohols: Hexyl				X
Alcohols: Isobutyl				X
Alcohols: Isopropyl	X			
Alcohols: Methyl		X		
Alcohols: Octyl				X
Alcohols: Propyl				X
Allspice			X	
Allyl Alcohol			X	
Alum (Aluminium Ammonium Sulfate)			X	
Aluminium Oxalate			X	
Aluminium Sulfate			X	
Aluminum Chloride	X			
Aluminum Chloride 20%	X			
Aluminum Fluoride				X
Aluminum Hydroxide		X		
Aluminum Nitrate	X			
Aluminum Potassium Sulfate 10%	X			
Aluminum Potassium Sulfate 100%	X			
Aluminum Sulfate	X			
Alums				X
Amines			X	
Ammonia			X	
Ammonia (Aqueous)			X	
Ammonia (Gas)			X	
Ammonia 10%			X	

Ammonia Nitrate				X
Ammonia, anhydrous			X	
Ammonia, liquid			X	
Ammonium Acetate				X
Ammonium Bifluoride				X
Ammonium Carbonate				X
Ammonium Caseinate				X
Ammonium Chloride	X			
Ammonium Fluoride			X	
Ammonium Hydroxide			X	
Ammonium Nitrate				X
Ammonium Oxalate	X			
Ammonium Persulfate				X
Ammonium Phosphate, Dibasic	X			
Ammonium Phosphate, Monobasic				X
Ammonium Phosphate, Tribasic				X
Ammonium Sulfate	X			
Ammonium Sulfite				X
Ammonium Thiosulfate				X
Amyl Acetate			X	
Amyl Chloride				X
ANDEROL 500			X	
ANDEROL L-826			X	
Aniline			X	
Aniline Hydrochloride			X	
Aniseed, Bay Leaves	X			
ANSTAC 2M			X	
ANSTAC M			X	
Antifreeze				X
Antimony Trichloride	X			
Aqua Regia (80% HCl, 20% HNO3)			X	
ARDCO 0323B			X	
ARDCO NS 35 AL. CLEANERS			X	
Arochlor 1248				X
Aromatic Hydrocarbons				X
Arsenic Acid	X			
Arsenic Salts				X
Asphalt				
ATLANTIC ALPHAOIL			X	
Automatic Switch Grease			X	
Automotive Waxes			X	
Aviation Fuel			X	
Baby lotion			X	
Bacon Fat			X	
Barium Carbonate	X			
Barium Chloride	X			
Barium Cyanide				X
Barium Hydroxide			X	
Barium Nitrate			X	
Barium Sulfate			X	
Barium Sulfide				X
Battery Acid			X	
Baysilon - silicon oils			X	
BB SOAK CLEANER			X	
BEACON 325			X	
Beer	X			
Beet Sugar Liquids				X
Benzaldehyde			X	
Benzene			X	
Benzene Sulfonic Acid			X	
Benzoic Acid		X		
Benzoic Aldehyde			X	
Benzol			X	
Benzonitrile	X			
Benzyl Alcohol			X	
BENZYL BENZOATE			X	
Benzyl Chloride				X
Betadine			X	
BISSELL RUG SHAMPOO			X	

Bleach (Clorox)			X	
Bleaching Liquors				X
Bleaching Powder Solution, 2%	X			
Blood and Blood Plasma			X	
BONDMASTER M777			X	
Borax (Sodium Borate)				X
Boric Acid				X
Boric Acid, 10%	X			
Brake Fluid			X	
Brewery Slop				X
Bromine		X		
Bromobenzene			X	
Butadiene				
Butane			X	
Butanol (Butyl Alcohol)		X		
BUTON ENAMEL LOW BAKE-ENJAY			X	
Butter				X
Buttermilk	X			
Butyl Acetate			X	
Butyl Acetyl Ricinoleate			X	
Butyl Amine			X	
Butyl Ether				X
Butyl Phthalate			X	
Butyl Stearate			X	
Butylacetate			X	
Butylene			X	
Butylene Glycol			X	
Butyric Acid			X	
Calcium Bisulfate			X	
Calcium Bisulfite			X	
Calcium Carbonate		X		
Calcium Chloride				X
Calcium Hydroxide			X	
Calcium Hypochlorite			X	
Calcium Nitrate	X			
Calcium Oxide				X
Calcium Soap Fat			X	
Calcium Sulfate	X			
Calgon				X
Camphor Oil			X	
Cane Juice				X
Car Wash Detergent	X			
Carbolic Acid			X	
Carbolic Acid (Phenol)			X	
Carbon Bisulfide				X
Carbon Bisulfite			X	
Carbon Dioxide (dry)				X
Carbon Dioxide (wet)				X
Carbon Dioxide Gas (Moist)			X	
Carbon Disulfide			X	
Carbon Monoxide			X	
Carbon Tetrachloride			X	
Carbon Tetrachloride (dry)				X
Carbon Tetrachloride (wet)				X
Carbonated Water				X
Carbonic Acid	X			
CASTER OIL HYDROGEN			X	
Castor Oil			X	
CATANAC SN. ANTISTAT			X	
Catsup (Ketchup)			X	
Caustic Potash (Potassium Hydroxide)			X	
Caustic Soda (Sodium Hydroxide)			X	
CELL. ACETO BUTYRATE			X	
Cellulose Paints			X	
CELLULUBE 150			X	
CHECICAL CO. LIC NY REZ-N-BOND			X	
CHEER DETERGENT			X	
CHEMTOOL 500-JP (COOLANT)			X	
CHLOROTHENE			X	

Chloric Acid				X
Chlorinated Glue				X
Chlorinated Hydrocarbons			X	
Chlorinated Solvents			X	
Chlorine (dry)				X
Chlorine Water				X
Chlorine-base Cleaners (Clorox)	X			
Chlorine, Anhydrous Liquid		X		
Chloroacetic Acid			X	
Chlorobenzene (Mono)			X	
Chlorobromomethane				X
Chloroform			X	
Chlorosulfonic Acid		X		
Chocolate Syrup	X			
Chrome Alum			X	
Chromic Acid 10%		X		
Chromic Acid 30%				
Chromic Acid 5%		X		
Chromic Acid 50%			X	
Chromium Salts				X
CHRYLSER BRAKE FLUID			X	
Cider	X			
Cinnamon			X	
Citric Acid	X			
Citric Oils				X
Cloroxr (Bleach)				X
Clove Oil			X	
Cloves			X	
Coal Gas			X	
Coca Cola			X	
Cocoa			X	
Cod Liver Oil			X	
Coffee			X	
COLD DUST			X	
CONVEYOR LUBRICANT			X	
CORNELIUS SOLUTION			X	
COSMOLUBE 615			X	
Cooking Oil			X	
Copper Cyanide			X	
Copper Fluoborate				X
Copper Nitrate			X	
Copper Sulfate 5%	X			
Copper Sulfate>5%	X			
Cosmoline Removers			X	
Cottonseed Oil	X			
Cream				X
Cresols			X	
Cresylic Acid			X	
Cupric Acid	X			
Cupric Chloride			X	
Cuprous Chloride			X	
Cutting Fluids and Oils			X	
Cyanic Acid				X
Cyclohexane		X		
Cyclohexanone			X	
Cyclohexene			X	
DDT			X	
Dekalin			X	
DELCO ELETROLYTE DOW-SILLICONE 510			X	
Demethyl Sulfoxide (DMSO)			X	
Detergents	X			
Developing Solutions			X	
DHESIVE PROD CO PLASTIC 3058			X	
Diacetone Alcohol			X	
Diamyl Phthalate			X	
Dibutyl Sebacate			X	
Dichlorobenzene			X	
Dichloroethane			X	
Diesel Fuel	X			

Diethyl Ether			X	
Diethylamine			X	
Diethylene Glycol		X		
Dimethyl Formamide			X	
Dinonyl Phthalate (Plasticiser)			X	
Dioctyl Sebacate			X	
Dioxane			X	
Diphenyl				X
Diphenyl Oxide				X
Diphyl 5,3			X	
Doctyl Phthalate (plasticiser)			X	
DOWGARD ANTIFREEZE			X	
DREW #10 ALL PURPOSE			X	
DREW CAUSTICLEAN			X	
DREW CHLOR-TROI			X	
DREW COL-UEEL			X	
DUPONT 4678			X	
DUPONT KRYTOX			X	
DUPONT THINNER 3336			X	
DUTCH CLEANER			X	
DUTCH RED LITHO INK			X	
Dyes				X
EC 1022 COATING - 3N			X	
ELCO GEAR SAFETY 28			X	
ELECTRO COIL 405A			X	
ELECTROLUBE #1			X	
ELECTROLUBE #2			X	
Epoxy Adhesives	X			
Epsom Salts (Magnesium Sulfate)	X			
ESSCO 335 PRIMOL SS301			X	
ESSCO EXTRA QUALITY			X	
ESSCO FAXUM 35 OIL			X	
ESSCO HITEST			X	
ESSCO LIGHT BLUE			X	
ESSCO REGULAR			X	
ESSCO TRANSMISSION FLUID			X	
ESSCO-CARUM 325			X	
Ethanol		X		
Ethanolamine				X
Ether			X	
Ethyl Acetate			X	
Ethyl Alcohol, 15%	X			
Ethyl Alcohol, Concentrated			X	
Ethyl Amine			X	
Ethyl Benzoate			X	
Ethyl Bromide			X	
Ethyl Butyrate			X	
Ethyl Chloride			X	
Ethyl Ether				X
Ethyl Sulfate				X
Ethylene Chloride			X	
Ethylene Chlorohydrin			X	
Ethylene Diamine	X			
Ethylene Dibromide			X	
Ethylene Dichloride			X	
Ethylene Glycol		X		
Ethylene Glycol E	X			
Ethylene Oxide				
Fatty Acids		X		
FELS NAPTHA FERTILIZER-GOLD			X	
Ferric Sulfate	X			
Ferrous Chloride			X	
Ferrous Sulfate	X			
FIRERETARD AWPAP 1054			X	
Fish and Fish Oils			X	
FLEXCRAFT #1321			X	
Floor Polish			X	
Fluoboric Acid				X
Fluorine		X		

FLUOROCARDON S-122			X	
Fluosilicic Acid	X			
Formaldehyde 100%	X			
Formaldehyde 40%	X			
Formic Acid	X			
Freon			X	
Freon 113		X		
Freon 12				X
Freon 22				X
FREON REFRIG. OIL			X	
Freon TF				X
Freon 11				X
Fruit Juice				X
Fuels w/ Benzene (Gasoline)			X	
Furan Resin				X
Furfural			X	
Gallic Acid				X
Gasoline (high-aromatic)	X			
Gasoline, leaded, ref.	X			
Gasoline, unleaded	X			
Gear Oil			X	
Gelatin				X
GENERAL MOTORS 11HDT			X	
GLAMORENE RUG CLEANERS			X	
Glass Cleaners			X	
Glazers Putty			X	
Glucose	X			
Glue, P.V.A.				X
Glutaraldehyde			X	
Glycerin	X			
Glycerol			X	
Glycols			X	
GLYPTAL PAINT 8167 HW.			X	
Gold Monocyanide				X
Grape Juice				X
Grease				X
Grease, Automotive (Most)			X	
Heptane		X		
Hexane			X	
Hexane @ 25°C	X			
HIGRADE 350 FLUXREM			X	
HOLLAND DUTCH RED INK			X	
Honey	X			
HOPPE GUN OIL			X	
HOPPE NITRO SOLV.9			X	
HOUGHTON ANTISEP			X	
HOUTOSAFE 1000			X	
HYAMINE 10X			X	
HYAMINE 2389			X	
HYDR FLUID MIL-05606			X	
Hydraulic Oil (Petro)				X
Hydraulic Oil (Synthetic)				X
Hydrazine			X	
Hydrobromic Acid 100%				X
Hydrobromic Acid 20%				X
Hydrochloric Acid 37%			X	
Hydrochloric Acid, Dry Gas				X
Hydrocyanic Acid (Gas 10%)		X		
Hydrofluoric Acid 100%			X	
Hydrofluoric Acid 20%			X	
Hydrofluoric Acid 50%			X	
Hydrofluoric Acid 75%			X	
Hydrofluosilicic Acid 100%				X
Hydrofluosilicic Acid 20%				X
Hydrogen Gas	X			
Hydrogen Peroxide 10%	X			
Hydrogen Peroxide 100%	X			
Hydrogen Peroxide 30%	X			
Hydrogen Peroxide 50%	X			

Hydrogen Sulfide (aqua)	X			
Hydrogen Sulfide (dry)				X
Hydroquinone				X
Hydroxyacetic Acid 70%				X
INGLIS XP621265 B1-COATING			X	
Ink				X
INTERCHEMICAL 671 WH.			X	
INTERCHEMICAL 711 WH.			X	
INTERCHEMICAL E11876			X	
INTERCHEMICAL E82539			X	
INTERCHEMICAL E94628			X	
INTERCHEMICAL THINNER			X	
INTERNA T COMPOUND			X	
Iodine				X
Iodine (in alcohol)				X
Iodoform				X
Isoamyl Alcohol			X	
Isoctane			X	
Isopropyl Acetate			X	
Isopropyl Ether			X	
Isotane				X
IVORY SNOW 1.5% SOL			X	
Jet Fuel (JP3, JP4, JP5)	X			
JET FUEL OIL-JP4			X	
KEEGO DETERGENT			X	
KELOY ANTIFREEZE			X	
Kerosene			X	
KESTER FLUX 1544			X	
KESTER FLUX 1577			X	
KESTER THINNER			X	
Ketones			X	
KODAK DEVELOPER D41			X	
KODAK X-OMAT DEVELOPER			X	
KODAK X-RAY DEVELOPER			X	
KOLLIE COOLANT			X	
Lacquer Thinners		X		
Lacquers			X	
Lactic Acid		X		
Lactic Acid Butyl Ester			X	
Lactic Acid, 20%	X			
Lard	X			
Latex				X
Laundry Detergents (Most)			X	
Lead Acetate				X
Lead Nitrate				X
Lead Sulfamate	X			
LESTOIL			X	
Ligroin				X
LIKE MAGIC			X	
Lime				X
Linoleic Acid				X
Linseed Oil			X	
Lithium Chloride		X		
Lithium Hydroxide				
Loctite			X	
LOGO R-2154			X	
LOGOSTAT R-192-31248			X	
LONCO FLUX REMOVER 65			X	
Lubricants	X			
Lubricating Oils (Most)			X	
Lye: Ca(OH)2 Calcium Hydroxide			X	
Lye: KOH Potassium Hydroxide			X	
Lye: NaOH Sodium Hydroxide			X	
Machine Oils (Most)			X	
Magnesium Bisulfate	X			
Magnesium Carbonate	X			
Magnesium Chloride	X			
Magnesium Hydroxide	X			
Magnesium Nitrate	X			

Magnesium Oxide				X
Magnesium Sulfate (Epsom Salts)	X			
MAID EASY			X	
Maleic Acid				X
Maleic Anhydride				X
Malic Acid				X
Manganese Sulfate	X			
Margarine			X	
MARKEM HXN7251 BL.			X	
Mash				X
Mayonnaise				X
Meat	X			
FIEND GUN OIL			X	
Melamine				X
Mercuric Chloride (dilute)	X			
Mercuric Cyanide				X
Mercurous Nitrate	X			
Mercury			X	
MESAMOLL L-235			X	
Meta-Cresol			X	
Metal Carbonates	X			
Metal Chlorides	X			
Metal Sulfates	X			
Methane				X
Methyl Acetate			X	
Methyl Acetone				X
Methyl Acrylate				X
Methyl Alcohol 10%		X		
Methyl Benzoate			X	
Methyl Bromide				X
Methyl Butyl Ketone			X	
Methyl Cellosolve			X	
Methyl Chloride			X	
Methyl Cycohexanol			X	
Methyl Dichloride				X
Methyl Ethyl Ketone			X	
Methyl Ethyl Ketone Peroxide				X
Methyl Isobutyl Ketone			X	
Methyl Isopropyl Ketone			X	
Methyl Methacrylate				X
Methyl Naphthalene			X	
Methyl Salicyclate			X	
METHYL SALICYLATE			X	
Methylamine			X	
Methylene Chloride			X	
Methylene Dichloride			X	
Methylmethacrylate			X	
Metylcellusolve			X	
MIL-05606A			X	
MIL-G-3278A BEACON 325			X	
MIL-L-46000			X	
Milk	X			
Mineral Oil @ 25°C	X			
Mineral Oil @ 40°C+			X	
Mineral Spirits		X		
Molasses				X
Monochloroacetic acid			X	
Monoethanolamine				X
Morpholine			X	
Motor oil	X			
MYSTIC 622B			X	
n-butyric Acid, 100%			X	
n-Octane			X	
Nail Polish			X	
Naphtha		X		
Naphthalene				X
Naphthenic Acids			X	
Natural Gas				X
NEOPRENE PRIMER N11			X	

NEWBECK-DEXTER.			X	
Nickel Nitrate				
Nickel Sulfate	X			
Nitrating Acid (<15% HNO3)				X
Nitrating Acid (>15% H2SO4)				X
Nitrating Acid (S1% Acid)				X
Nitrating Acid (S15% H2SO4)				X
Nitric Acid (20%)		X		
Nitric Acid (5-10%)	X			
Nitric Acid (50%)		X		
Nitric Acid (Concentrated)		X		
Nitrobenzene			X	
Nitrogen Dioxide Gas	X			
Nitrogen Fertilizer				X
Nitropropane			X	
Nitrous Acid				X
Nitrous Oxide			X	
Nutmeg			X	
ODA OIL			X	
OIL NPACO 1296			X	
OIL-ES-OIL (AEROSOL)			X	
OIL-ES-OIL (ESSENCE)			X	
Oils: Aniline				X
Oils: Anise				X
Oils: Bay				X
Oils: Bone				X
Oils: Castor				X
Oils: Cinnamon			X	
Oils: Citric	X			
Oils: Clove				X
Oils: Coconut				X
Oils: Cod Liver				X
Oils: Corn				X
Oils: Cottonseed				X
Oils: Creosote				X
Oils: Diesel Fuel Oil (20, 30, 40, 50)				X
Oils: Fuel Oil (1, 2, 3, 5A, 5B, 6)		X		
Oils: Ginger				X
Oils: Hydraulic Oil (Petro)				X
Oils: Hydraulic Oil (Synthetic)				X
Oils: Lemon				X
Oils: Linseed				X
Oils: Mineral		X		
Oils: Olive	X			
Oils: Orange		X		
Oils: Palm				X
Oils: Peanut				X
Oils: Peppermint				X
Oils: Pine	X			
Oils: Rapeseed				X
Oils: Rosin				X
Oils: Sesame Seed				X
Oils: Silicone				X
Oils: Soybean				X
Oils: Sperm (whale)				X
Oils: Tanning				X
Oils: Transformer				X
Oils: Turbine				X
Oleic Acid				X
Oleum 100%				X
Oleum 25%				X
Olive Oil	X			
Onions			X	
Oxalic Acid (cold)				X
Oxalic Acid, 100%	X			
Oxygen	X			
Ozone	X			
Ozone			X	
P AX HAND CLEANS CREAM			X	

Paint Thinner			X	
Palmitic Acid				X
Paprika			X	
Paraffin	X			
Paraffin, Medicinal	X			
PAX CREME SOAP 24021			X	
PAX HAND CLEAN 17752			X	
PAX LANOLIN LOTION			X	
PAX PHG HAND CLEANER			X	
PAX SILICONE LOTION			X	
PAX SOLVENT HAND CLEANER			X	
PAX SOLVENT SUPER 2561			X	
Pentane	X			
Pepper			X	
Perchloric Acid				X
Perchloroethylene			X	
Petrolatum				X
Petroleum				X
Petroleum Ether			X	
Petroleum Oil (Refined)			X	
Phenol (10%)		X		
Phenol (Carbolic Acid)			X	
Phenol, Aqueous, 5%			X	
Phenols			X	
Phosphoric Acid (>40%)	X			
Phosphoric Acid (crude)	X			
Phosphoric Acid (molten)				X
Phosphoric Acid (S40%)	X			
Phosphoric Acid Anhydride			X	
Phosphoric Acid, 30%	X			
Phosphorous Oxychloride			X	
Phosphorous Pentoxide			X	
Phosphorus				X
Phosphorus Trichloride		X		
Photographic Baths	X			
Photographic Developer	X			
Photographic Solutions	X			
Phthalates			X	
Phthalic Acid				X
Phthalic Anhydride	X			
Picric Acid				
PLATING SENSITIZER			X	
Plating Solutions (Brass): High-Speed Brass Bath 110°F				X
Plating Solutions (Brass): Regular Brass Bath 100°F				X
Plating Solutions (Bronze): Cu-Cd Bronze Bath R.T.				X
Plating Solutions (Bronze): Cu-Sn Bronze Bath 160°F				X
Plating Solutions (Bronze): Cu-Zn Bronze Bath 100°F				X
Plating Solutions (Cadmium): Cyanide Bath 90°F				X
Plating Solutions (Cadmium): Fluoborate Bath 100°F				X
Plating Solutions (Copper) (Acid): Copper Fluoborate Bath 120°F				X
Plating Solutions (Copper) (Acid): Copper Sulfate Bath R.T.				X
Plating Solutions (Copper) (Cyanide): Copper Strike Bath 120°F				X
Plating Solutions (Copper) (Cyanide): High-Speed Bath 180°F				X
Plating Solutions (Copper) (Cyanide): Rochelle Salt Bath 150°F				X
Plating Solutions (Copper) (Misc): Copper (Electroless)				X
Plating Solutions (Copper) (Misc): Copper Pyrophosphate				X
Plating Solutions (Gold): Acid 75°F				X
Plating Solutions (Gold): Cyanide 150°F				X
Plating Solutions (Gold): Neutral 75°F				X
Plating Solutions (Iron): Ferrous Am Sulfate Bath 150°F				X
Plating Solutions (Iron): Ferrous Chloride Bath 190°F				X
Plating Solutions (Iron): Ferrous Sulfate Bath 150°F				X
Plating Solutions (Iron): Fluoborate Bath 145°F				X
Plating Solutions (Iron): Sulfamate 140°F				X
Plating Solutions (Iron): Sulfate-Chloride Bath 160°F				X
Plating Solutions (Rhodium) 120°F				X
Plating Solutions (Zinc): Acid Chloride 140°F				X
Plating Solutions (Zinc): Acid Fluoborate Bath R.T.				X
Plating Solutions (Zinc): Acid Sulfate Bath 150°F				X

Plating Solutions (Zinc): Alkaline Cyanide Bath R.T.				X
Plating Solutions, (Chromium): Barrel Chrome Bath 95°F				X
Plating Solutions, (Chromium): Black Chrome Bath 115°F				X
Plating Solutions, (Chromium): Chromic-Sulfuric Bath 130°F				X
Plating Solutions, (Chromium): Fluoride Bath 130°F				X
Plating Solutions, (Chromium): Fluosilicate Bath 95°F				X
Plating Solutions, (Nickel): Electroless 200°F				X
Plating Solutions, (Nickel): Fluoborate 100-170°F				X
Plating Solutions, (Nickel): High-Chloride 130-160°F				X
Plating Solutions, (Nickel): Sulfamate 100-140°F				X
Plating Solutions, (Nickel): Watts Type 115-160°F				X
Plating Solutions, (Silver) 80-120°F				X
Plating Solutions, Antimony Plating 130°F				X
Plating Solutions, Arsenic Plating 110°F				X
Plating Solutions, Indium Sulfamate Plating R.T.				X
Plating Solutions, Lead Fluoborate Plating				X
Plating Solutions, Tin-Fluoborate Plating 100°F				X
Plating Solutions, Tin-Lead Plating 100°F				X
PLURONIC L62			X	
Polishing Compounds	X			
Polyethylene			X	
Potash (Potassium Carbonate)				X
Potassium Acetate			X	
Potassium Aluminium Alum (Sulfate)			X	
Potassium Bicarbonate				X
Potassium Bromide	X			
Potassium Chloride	X			
Potassium Chromate				X
Potassium Cyanide Solutions				X
Potassium Dichromate	X			
Potassium Dichromate, 10%	X			
Potassium Ferrocyanide				X
Potassium Hydroxide (Caustic Potash)			X	
Potassium Hypochlorite				X
Potassium Iodide				X
Potassium Metabisulfide			X	
Potassium Nitrate	X			
Potassium Oxalate				X
Potassium Perchlorate			X	
Potassium Permanganate	X			
Potassium Persulfate			X	
Potassium Rhodanide			X	
Potassium Sulfate	X			
Power Steering Fluid	X			
PRESTIONE ANTIFREEZE			X	
Propane (liquefied)		X		
Propargyl Alcohol			X	
Propionic Acid			X	
Propyl Alcohol (1-Propanol)			X	
Propylene				X
Propylene Glycol		X		
PYDRAUL			X	
PYON CAN CLEANER			X	
PYRANOIL 1470			X	
Pyridine			X	
Pyrogallic Acid				X
Resorcinal		X		
ROCKFORD PAINT 11123A			X	
Rosins				X
Rum				X
Rust Inhibitors				X
Salad Dressings				X
Salad Oil			X	
SALASOL			X	
Salicylic Acid	X			
Salt	X			
Salt Brine (NaCl saturated)	X			
SANTOMERSE 3			X	
Sea Water	X			

Shellac (Bleached)				X
Shellac (Orange)				X
Silicofluoric Acid			X	
Silicone	X			
SILICONE EMULS SM2040			X	
SILICONE EMULS SM55			X	
SILICONE EMULS SM61			X	
Silicone Oil			X	
SILICONE OIL SF92			X	
Silver Bromide				X
Silver Nitrate	X			
SILVER PAINT 6216			X	
Soap Solutions	X			
Soda Ash (see Sodium Carbonate)	X			
Sodium Acetate	X			
Sodium Aluminate				X
Sodium Benzoate	X			
Sodium Bicarbonate	X			
Sodium Bisulfate	X			
Sodium Bisulfite	X			
Sodium Borate (Borax)	X			
Sodium Bromide				X
Sodium Carbonate	X			
Sodium Chlorate	X			
Sodium Chloride	X			
Sodium Chromate	X			
Sodium Cyanide				X
Sodium Ferrocyanide				X
Sodium Fluoride				X
Sodium Hydrosulfite				X
Sodium Hydroxide (20%)	X			
Sodium Hydroxide (50%)			X	
Sodium Hydroxide (80%)			X	
Sodium Hypochlorite (<20%)		X		
Sodium Hypochlorite (100%)				X
Sodium Hypochlorite, 15%	X			
Sodium Hypochlorite, 30%			X	
Sodium Metaphosphate				X
Sodium Metasilicate				X
Sodium Nitrate				X
Sodium Perborate				X
Sodium Peroxide	X			
Sodium Polyphosphate				X
Sodium Sulfate	X			
Sodium Tetraborate				X
Sodium Thiosulfate (hypo)			X	
Sodium Thiosulphate, 40%	X			
Sorghum				X
Soy Sauce				X
Spindle Oil			X	
Stannic Chloride	X			
Stannic Fluoborate				X
Starch				X
Stearic Acid	X			
STEROX CD			X	
Stoddard Solvent	X			
Styrene			X	
Sugar (Liquids)				X
Sulfate (Liquors)				X
Sulfoxides			X	
Sulfur Chloride				X
Sulfur Dioxide				X
Sulfur Dioxide (dry)	X			
Sulfur Dioxide (Gas)			X	
Sulfur Hexafluoride				X
Sulfur Trioxide				X
Sulfur Trioxide (dry)				X
Sulfuric Acid (<10%)	X			
Sulfuric Acid (10-75%)		X		

Sulfuric Acid (75-100%)			X	
Sulfuric Acid (cold concentrated)				X
Sulfuric Acid (hot concentrated)			X	
Sulfuryl Chloride				X
SUNOCO GREASE			X	
Tallow				X
TANNERGAS			X	
Tannic Acid		X		
Tannic Acid, 10%	X			
Tanning Liquors				X
Tapping Oil			X	
Tartaric Acid				X
Tea			X	
Tear Gas (Chloracetophenone)			X	
Terpineol			X	
Tetrachloroethane				X
Tetrachloroethylene			X	
Tetrahydrofuran			X	
Tetralin			X	
TEXACO DIALA OIL			X	
TEXAMA TIC			X	
Thiophene			X	
Thyme			X	
TIDE			X	
Tin Salts				X
Tincture of Iodine, 5%			X	
Titanium Tetrachloride			X	
Tobacco			X	
Toluene			X	
Toluene (Toluol)			X	
Tomato Juice	X			
Transformer Oil			X	
Transmission Fluid			X	
Trichloroacetic Acid			X	
Trichloroethane			X	
Trichloroethylene			X	
Trichloroethylphosphate			X	
Trichloropropane				X
Tricholorethylamine			X	
Tricresylphosphite			X	
Triethylamine				X
TRIPLE CLEANER			X	
Tripropylene Glycol	X			
Trisodium Phosphate			X	
TUFON 7473			X	
Turpentine			X	
UCON OIL (NEW)			X	
UCON OIL-LB140XY26			X	
Urea			X	
Uric Acid				X
Urine				X
Vacuum Pump Oil			X	
Vanilla			X	
Varnish				
VARNISH CO			X	
VARNISH V-687-STERLING			X	
Vaseline			X	
Vegetable Juice				X
Vinegar	X			
Vinyl Acetate				X
Vinyl Chloride				X
VYTON CUTTING OIL			X	
WAGNER BRAKE FLUID			X	
Water (Demineralised or Sea)			X	
Water, Acid, Mine		X		
Water, Deionized				X
Water, Distilled	X			
Water, Fresh	X			
Water, Salt	X			

Wax Polish				
Weed Killers				X
WESSON OIL			X	
Whey				X
Whiskey & Wines	X			
White Liquor (Pulp Mill)				
White Water (Paper Mill)				X
WINSOR LUBE OIL L245			X	
WIPE 50-50			X	
WIPE IT PAINT THINNER			X	
WISCONSIN PAINT 13365			X	
Witch Hazel			X	
Worcester Sauce			X	
Xylene			X	
Zinc Chloride	X			
Zinc Hydrosulfite				X
Zinc Oxide			X	
Zinc Stearate			X	
Zinc Sulfate	X			