

## APPENDIX C: Chemical Lists

### Partial List of Incompatible Chemicals

(Adapted from Manufacturing Chemists' Association, Guide for Safety in the Chemical Laboratory, pp. 215-217)

CHEMICAL	KEEP OUT OF CONTACT WITH
Acetic Acid	Chromic acid, nitric acid hydroxyl compounds, ethylene, glycol, perchloric acid, peroxides, permanganates
Acetone	Concentrated nitric and sulfuric acid mixtures
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali Metals	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, the halogens
Ammonia, anhydrous	Mercury, chlorine, calcium hypochlorite, iodine, bromine, hydrofluoric acid
Ammonium Nitrate	Acids, metal powders, flammable liquids, chlorates, nitrites, sulfur, finely divided organic or combustible materials
Aniline	Nitric acid, hydrogen peroxide
Arsenical materials	Any reducing agent
Azides	Acids
Bromine	Same as chlorine
Calcium Oxide	Water
Carbon (activated)	Calcium hypochlorite, all oxidizing agents.
Carbon tetrachloride	Sodium
Chlorates	Ammonium salts, acids, metal powders, sulfur, finely divided organic or combustible materials
Chromic Acid	Acetic acid, naphthalene, camphor, glycerin, turpentine, alcohol, flammable liquids in general
Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, turpentine, benzene, finely divided metals
Chlorine Dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene Hydroperoxide Cyanides	Acids, organic or inorganic
Flammable Liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Hydrocarbons	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic Acid	Nitric acid, alkali
Hydrofluoric Acid	Ammonia, aqueous or anhydrous
Hydrogen Peroxide	Copper, chromium, iron, most metals or their salts, alcohols, acetone, organic materials, aniline, nitromethane, flammable liquids, oxidizing gases
Hydrogen Sulfide	Fuming nitric acid, oxidizing gases, acetylene, ammonia (aqueous or anhydrous), hydrogen
Hypochlorites	Acids, activated carbon
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen



CHEMICAL	KEEP OUT OF CONTACT WITH
Mercury	Acetylene, fulminic acid, ammonia
Nitrates	Sulfuric acid
Nitric Acid	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide,
Nitrites	Acids
Nitroparaffins	Inorganic bases, amines
Oxalic Acid	Silver, mercury
Oxygen	Oils, grease, hydrogen; flammable liquids, solids, or gases
Perchloric Acid	Acetic anhydride, bismuth and its alloys, alcohol, paper, wood
Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Phosphorus (white)	Air, oxygen, alkalis, reducing agents
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium Chlorate	Sulfuric and other acids
Potassium Permanganate	Glycerin, ethylene glycol, benzaldehyde, sulfuric acid
Selenides	Reducing agents
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium nitrite	Ammonium nitrate and other ammonium salts
Sodium Peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride,
Sulfides	Acids
Sulfuric Acid	Potassium chlorate, potassium perchlorate, potassium permanganate (or
Tellurides	Reducing agents



## Chemical List of Peroxide Formers

The following are examples of the materials commonly used in laboratories that may form explosive peroxides. Note that Class III peroxide formers must be used within 3 months of receipt: Note: This table is not all inclusive. Please see the document for Peroxide-forming Materials on the Risk Management and Safety website.

**Group A: Forms without concentration**

**Group B: Forms on concentration**

**Group C: May autopolymerize**

Isopropyl ether	Acetal	Acrylic acid
Butadiene	Cumene	Butadiene
Chlorobutadiene (chloroprene)	Cyclohexene	Chlorotrifluoroethylene
Potassium amide	Cyclooctene	Ethyl acrylate
Potassium metal	Diacetylene	Methyl methacrylate
Sodium amide (sodamide)	Dicyclopentadiene	Styrene
Tetrafluoroethylene	Diethylene glycol dimethyl ether	Vinyl acetate
Divinyl acetylene	Diethyl ether	Vinyl chloride
Vinylidene chloride	Tetrahydronaphthalene	Vinyl pyridine
	Dioxane	
	Ethylene glycol dimethyl ether	
	Furan	
	Cyclopentene	
	Methyl acetylene	
	Methyl cyclopentane	
	Methyl-isobutyl ketone	
	Tetrahydrofuran	
	Vinyl ethers	



## Chemical List of High Energy Oxidizers

The following are examples of materials which are powerful oxidizing reagents:

Ammonium perchlorate	Dibenzoyl peroxide	Potassium chlorate
Ammonium permanganate	Fluorine	Potassium perchlorate
Barium peroxide	Hydrogen peroxide	Potassium peroxide
Bromine	Magnesium perchlorate	Propyl nitrate
Calcium chlorate	Nitric acid	Sodium chlorate
Calcium hypochlorite	Nitrogen peroxide	Sodium chlorite
Chlorine trifluoride	Perchloric acid	Sodium perchlorate
Chromium anhydride (chromic acid)	Potassium bromate	Sodium peroxide

## List of Shock Sensitive Chemicals:

Shock sensitive refers to the susceptibility of the chemical to decompose rapidly or explode when struck, vibrated or otherwise agitated. The following are examples of materials that can be shock sensitive:

Acetylides of heavy metals	Heavy metal azides	Organic amine nitrates
Aluminum ophrite explosive	Hexanite	Organic nitramines
Amatol Ammonal	Hexanitrodiphenylamine	Organic peroxides
Ammonium nitrate	Hexanitrostilbene	Picramic acid
Ammonium perchlorate	Hexogen	Picramide
Ammonium picrate	Hydrazinium nitrate	Picratol
Ammonium salt lattice	Hyrazoic acid	Picric acid
Butyl tetryl	Lead azide	Picryl chloride
Calcium nitrate	Lead mannite	Picryl fluoride
Copper acetylide	Lead mononitroresorcinate	Polynitroaliphatic compounds
Cyanuric triazide	Lead picrate	Potassium nitroaminotetrazole
Cyclotrimethylenetrinitramine	Lead salts	Silver acetylide
Dinitroethyleneurea	Lead styphnate	Silver azide
Dinitroglycerine	Trimethylolethane	Silver styphnate
Dinitrophenol	Magnesium ophorite	Silver tetrazene
Dinitrophenolates	Mannitol hexanitate	Sodatol
Dinitrophenyl hydrazine	Mercury oxalate	Sodium amatol
Dinitrotoluene	Mercury tartrate	Sodium dinitro-orthocresolate
Dipicryl sulfone	Mononitrotoluene	Sodium nitrate-potassium
Dipicrylamine	Nitrated carbohydrate	Sodium picramate
Erythritol tetranitrate	Nitrated glucoside	Styphnic acid
Fulminate of mercury	Nitrated polyhydric alcohol	Tetrazene
Fulminate of silver	Nitrogen trichloride	Tetranitrocarbazole
Fulminating gold	Nitrogen tri-iodide	Tetrytol
Fulminating mercury	Nitroglycerin	Trimonite
Fulminating platinum	Nitroglycide	Trinitroanisole
Fulminating silver	Nitroglycol	Trinitrobenzene
Gelatinized nitrocellulose	Nitroguanidine	Trinitrobenzoic acid
Germane	Nitroparaffins	Trinitrocresol
Guanyl nitrosamino guanyl-	Nitronium perchlorate	Trinitronaphtalene
Guanyl nitrosaminoguanylidene	Nitrourea	Urea nitrate

