

Appendix 8.2.6.1 - Chemical Incompatibilities (Partial List)

These listings were taken from ‘Prudent Practices in the Laboratory’ They are not considered to be exhaustive.

<u>CHEMICAL</u>	<u>INCOMPATIBLE CHEMICAL(S)</u>
Acetic acid	aldehyde, bases, chromic acid, carbonates, hydroxides, metals, oxidizers, nitric acid, peroxides, permanganates, phosphates, xylene
Acetic anhydride	Hydroxyl-containing compounds such as ethylene glycol, perchloric acid
Acetylene	halogens (chlorine, fluorine, etc.), mercury, potassium, oxidizers, silver
Acetone	acids, amines, oxidizers, plastics
Alkali and alkaline earth metals	acids, carbon dioxide, carbon tetrachloride, chlorinated hydrocarbons, chromium, ethylene, halogens, hydrogen, mercury, nitrogen, oxidizers, plastics, sodium chloride, sulfur
Ammonia (anhydrous)	acids, aldehydes, amides, bromine, calcium hypochlorite, chlorine, halogens, heavy metals, hydrogen fluoride, iodine, mercury, oxidizers, plastics, sulfur
Ammonium nitrate	acids, alkalis, chlorates, combustible materials, metals, organic materials, phosphorous, reducing agents, urea
Aniline	acids, aluminum, dibenzoyl peroxide, oxidizers, plastics
Azides	acids, heavy metals, oxidizers
Bromine	ammonia, acetaldehyde, acetylene, alcohols, alkalis, amines, benzene, butadiene, butane, combustible materials, ethylene, fluorine, hydrogen, ketones (acetone, carbonyls, etc.), metals, sodium carbide, sulfur
Calcium oxide	acids, ethanol, fluorine, organic materials, water
Carbon (activated)	alkali metals, calcium hypochlorite, halogens, oxidizers

<u>CHEMICAL</u>	<u>INCOMPATIBLE CHEMICAL(S)</u>
Carbon tetrachloride	benzoyl peroxide, ethylene, fluorine, metals, oxygen, plastics, silanes
Chlorates	ammonium salts, acids, powdered metals, sulfur, finely divided organic or combustible materials
Chromates	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Chromic acid and Chromium trioxide	acetic acid, acetone, alcohols, alkalis, ammonia, bases benzene, combustible materials, hydrocarbons, metals, organic materials, phosphorous, plastics
Chlorine	alcohols, ammonia, benzene, combustible materials, flammable compounds (hydrazine), hydrocarbons (acetylene, ethylene, etc.), hydrogen peroxide, iodine, metals, nitrogen, oxygen, sodium hydroxide
Chlorine dioxide	ammonia, hydrogen, mercury, organic materials, phosphorous, potassium hydroxide, sulfur
Copper	acetylene, calcium, hydrocarbons, oxidizers
Cyanides	acids, alkaloids, aluminum, iodine, oxidizers, strong bases
Dichromates	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Flammable liquids	ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Fluorine	Isolate from everything.
Halogens and Halogenating agents	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Hydrazine	Hydrogen peroxide, nitric acid, other oxidants

<u>CHEMICAL</u>	<u>INCOMPATIBLE CHEMICAL(S)</u>
Hydrocarbons propane, benzene, turpentine, etc.)	acids, bases, halogens, oxidizers, peroxides, plastics (Such as butane,
Hydrocyanic acid	Nitric acid, alkalis
Hydrofluoric acid	ammonia, metals, organic materials, plastics, silica (glass), (anhydrous) sodium
Hydrogen peroxide	acetylaldehyde, acetic acid, acetone, alcohol's carboxylic acid, combustible materials, metals, nitric acid, organic compounds, phosphorous, sulfuric acid, sodium, aniline
Hydrogen sulfide	acetylaldehyde, metals, nitric acid, oxidizers, sodium
Hypochlorites	acids, activated carbon
Iodine	acetaldehyde, acetylene, ammonia, metals, sodium
Mercury	acetylene, aluminum, amines, ammonia, calcium, fulminic acid, lithium, oxidizers, sodium
Nitrates	acids, nitrites, metals, reducing agents, sulfur, sulfuric acid
Nitric acid	acetic acid, acetonitrile, alcohols, amines, (concentrated) ammonia, aniline, bases, benzene, cumene, formic acid, ketones, metals, organic materials, plastics, sodium, toluene
Nitrites	Acids, oxidizing agents
Nitroparaffins	Inorganic bases, amines
Organic compounds	Oxidizing agents
Organic acyl halides	Bases, organic hydroxyl and amino compounds
Organic anhydrides	Bases, organic hydroxyl and amino compounds

<u>CHEMICAL</u>	<u>INCOMPATIBLE CHEMICAL(S)</u>
Organic halogen compounds	Group IA and IIA metals, aluminum
Organic nitro compounds	Strong bases
Oxidizing agents	reducing agents, organic compounds
Oxalic acid	mercury and silver and their salts, oxidizers, sodium chlorite
Oxygen	acetaldehyde, secondary alcohols, alkalis and alkalines, ammonia, carbon monoxide, combustible materials, ethers, flammable materials, grease, hydrogen, hydrocarbons, metals, oils, phosphorous, polymers
Perchlorates	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Perchloric acid	acetic acid, acetic anhydride, alcohols, aniline, bismuth and its alloys, combustible materials, dehydrating agents, ethyl benzene, grease, hydroiodic acid, hydrochloric acid, iodides, ketones, organic materials, oils, oxidizers, paper, pyridine, wood
Permanganates	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Peroxides	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Peroxides, organic	acids (organic or mineral), avoid friction, store cold
Persulfates	ammonia, carbon, metals, metal hydrides, nitrites, organic compounds, phosphorous, silicon, sulfur
Phosphorus (white)	oxygen (pure and in air), alkalis
Phosphorous pentoxide	alcohols, strong bases, water
Potassium	acetylene, acids, alcohols, halogens, hydrazine, mercury, oxidizers, selenium, sulfur, water

<u>CHEMICAL</u>	<u>INCOMPATIBLE CHEMICAL(S)</u>
Potassium chlorate	acids, ammonia, combustible materials, fluorine, hydrocarbons, metals, organic materials, sugars
Potassium	alcohols, combustible materials, fluorine, hydrazine, metals, organic perchlorate matter, reducing agents, sulfuric acid
Potassium permanganate	benzaldehyde, ethylene glycol, glycerol, sulfuric acid
Reducing agents	arsenates, arsenites, oxidizing agents, phosphorous, selenates, selenites, tellerium salts and oxides.
Silver and salts	acetylene, ammonia, fulminic acid, oxalic acid, oxidizers, ozonides, peroxyformic acid, tartaric acid,
Sodium	acids, hydrazine, metals, oxidizers, water
Sodium nitrate	acetic anhydride, acids, metals, organic matter, peroxyformic acid, reducing agents
Sodium nitrite	Ammonium nitrate and other ammonium salts
Sodium peroxide	any oxidizable substance; acetic acid, acetic anhydride, alcohols, benzaldehyde, benzene, carbon disulfide, ethyl acetate, ethylene glycol, furfural, glycerol, hydrogen sulfide metals, methyl acetate, oxidizers, peroxyformic acid, phosphorous, reducers, sugars, water
Sulfides	acids
Sulfuric acid	potassium chlorates, potassium perchlorate, potassium permanganate