

The City College
of New York



Office of Environmental
Health and
Occupational Safety

Chemical Incompatibility Guide

Compton-Goethals CG04
137th Street and Convent Avenue
New York, NY 10031
212-650-5080
ehos@ccny.cuny.edu

Content

- I. Purpose
- II. Common Incompatibilities
- III. Adapting Storage

I. Purpose

Chemical incompatibilities pose a hazard in laboratory storage, as breakage or leaks can lead to reactions that quickly become uncontrollable and cause significant losses. Ideally, a lab is designed to provide storage areas for various classes of chemicals to avoid incompatibilities, but this is not the case for many lab locations.

Alphabetical sorting is a common method of storing chemicals for ease of access, but can lead to these incompatibilities if it is the primary method of sorting.

This policy identifies common laboratory chemicals that require separate storage to avoid incompatibility, as well as methods to ensure compliance with FDNY regulations on chemical storage policies. The table in Section II indicates the most frequent improperly stored chemicals and the storage groups they should be placed in.

II. Common Incompatibilities

CHEMICAL	COMPATIBLE CHEMICALS
Sodium azide	None
Picric acid, 10-40% water	None
Nitric acid	None
Perchloric acid	None
Citric acid monohydrate	Organic acids
Propionic acid	Organic acids
MOPS Buffer	Organic acids
Butyric acid	Organic acids
Formic acid	Organic acids
Glacial acetic acid	Organic acids (store with flammables)
Hydrochloric acid	Inorganic acids
Phosphoric acid	Inorganic acids
Sulfuric acid	Inorganic acids
Ammonium nitrate	Oxidizers, including peroxides
Ammonium perchlorate	Oxidizers, including peroxides
Ammonium persulfate	Oxidizers, including peroxides
Benzoyl peroxide	Oxidizers, including peroxides
t-Butyl hydroperoxide	Oxidizers, including peroxides

Calcium hypochlorite	Oxidizers, including peroxides
Chlorosulfonic acid	Oxidizers, including peroxides
Chromic acid	Oxidizers, including peroxides
Hydrogen peroxide, 30%	Oxidizers, including peroxides
Isoamyl nitrite	Oxidizers, including peroxides
Potassium chlorate	Oxidizers, including peroxides
Potassium dichromate	Oxidizers, including peroxides
Potassium permanganate	Oxidizers, including peroxides
Silver nitrite	Oxidizers, including peroxides
Sodium chlorate	Oxidizers, including peroxides
Sodium chlorite	Oxidizers, including peroxides
Sodium hypochlorite solution (bleach)	Oxidizers, including peroxides
Fuming nitric acid	Oxidizers, including peroxides
Ammonium hydroxide	Inorganic bases
Potassium hydroxide	Inorganic bases
Sodium hydroxide	Inorganic bases
Ethanolamine	Organic bases
Isopropylamine	Organic bases
Triethanolamine	Organic bases
Triethylamine	Organic bases
TEMED	Organic bases
Sodium dodecyl sulfate	Nonreactive flammables
Tetrahydrofuran	Nonreactive flammables
Piperidine	Nonreactive flammables
Phenol	Nonreactive flammables
B-Mercaptoethanol	Nonreactive flammables
Dimethyl sulfoxide	Nonreactive flammables
Carbon disulfide	Nonreactive flammables
Benzene	Nonreactive flammables
Formaldehyde, 37%	Nonreactive flammables
Hydrazine	Nonreactive flammables
Formamide	Nonreactive flammables
Paraformaldehyde	Nonreactive flammables
Acetyl chloride	Pyrophoric or water reactive materials
Lithium aluminum hydride	Pyrophoric or water reactive materials
Phosphorus pentachloride	Pyrophoric or water reactive materials
Sodium hydride	Pyrophoric or water reactive materials
Silanes	Pyrophoric or water reactive materials

This is not a complete list of the chemicals that require segregation in a lab, but they are among those most commonly found in labs and most likely to be missed when planning chemical storage.

III. Adapting Storage

The recommended course of action to identify incompatible chemicals is to check this list against a current chemical inventory, then find the physical location of those chemicals in the lab and ensure that they are segregated from other chemicals by secondary containment or isolation in the lab.

Flammable chemicals, including solid combustibles such as paraformaldehyde or solid phenol, should be stored in a designated flammable cabinet or safe designed to contain fires.

Organic and inorganic/mineral acids should be kept separate, but may be stored in the same cabinet. Segregation may be achieved with trays or other secondary containment.

Pyrophoric and water reactive chemicals must be kept away from corrosive or aqueous liquids. Closed cabinets are ideal storage locations, but avoid under-sink locations.

Chemicals with a compatibility of 'None' must be isolated by secondary containment.