

Boston

BOSTON FIRE DEPARTMENT
STORAGE PRACTICE FOR HAZARDOUS MATERIALS

ISSUED BY
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SAFE CHEMICAL STORAGE

1. ACIDS

Storage Precautions:

- Store large bottles of acids on low shelf or in acid cabinets.
- Segregate oxidizing acids from organic acids, flammable and combustible materials.
- Segregate acids from bases and active metals such as sodium, potassium, magnesium, etc.
- Segregate acids from chemicals which could generate toxic gases upon contact such as sodium cyanide, iron sulfide, etc.
- Use bottle carriers for transporting acid bottles.
- Have spill control pillows or acid neutralizers available in case of acid spills.

STRONG OXIDIZING ACIDS

Chromic Acid
Hydrobromic Acid
Iodic Acid
Nitric Acid
Perchloric Acid
Sulfuric Acid

ORGANIC ACIDS

Acetic Acid
Benzoic Acid
Chloroacetic Acid
Phenol
Propionic Acid
Sulfamic Acid
Sulfanilic Acid

ACIDS

Hydrobromous Acid
Hydrochloric Acid
Hydrochlorous Acid
Hydrofluoric Acid
Hydroiodic Acid
Nitrous Acid
Phosphoric Acid
Phosphorous Acid
Sulfurous Acid

2. BASES

Storage Precautions:

- Segregate bases from acids.
- Store solutions of inorganic hydroxides in polyethylene containers.
- Have spill control pillows or caustic neutralizers available for caustic spills.

Ammonium Hydroxide
Bicarbonates, salts of Potassium Bicarbonate, Sodium Bicarbonate, etc.
Carbonates, Salts of Calcium Carbonate, Sodium Carbonate, etc.
Calcium Hydroxide
Potassium Hydroxide
Sodium Hydroxide

3. FLAMMABLES

Storage Precautions:

- Store in approved safety cans or cabinets.
- Segregate from oxidizing acids and oxidizers.
- Keep away any source of ignition: flames, localized heat or sparks.
- Keep fire fighting equipment readily available.
- Have spill clean-up materials handy.
- Store highly volatile flammable liquids in a specially equipped refrigerator.

SOLIDS

Benzoyl Peroxide
Calcium Carbide

Phosphorous, Yellow
Picric Acid

GASES

Acetylene
Ammonia
Butane
Carbon Monoxide
Ethane
Ethyl Chloride
Ethylene

Ethylene Oxide
Formaldehyde
Hydrogen
Hydrogen Sulfide
Methane
Propane
Propylene

LIQUIDS

Acetaldehyde	Isobutyl Alcohol
Acetone	Isopropyl Acetate
Acetyl Chloride	Isopropyl Alcohol
Allyl Alcohol	Isopropyl Ether
Allyl Chloride	Mesityl Oxide
N-Amyl Acetate	Methanol
N-Amyl Alcohol	Methyl Acetate
Benzene	Methyl Acrylate
N-Butyl Acetate	Methylal
N-Butyl Alcohol	Methyl Butyl Ketone
N-Butylamine	Methyl Ethyl Ketone
Carbon Disulfide	Methyl Formate
Chlorobenzene	Methyl Isobutyl Ketone
Cyclohexane	Methyl Methacrylate
Diethylamine	Methyl Propyl Ketone
Diethyl Carbonate	Morpholine
p-Dioxane	Naptha
Ethanol	*Nitromethane
Ethyl Acetate	Octane
Ethyl Acrylate	Piperidine
Ethylamine	Propanol
Ethyl Benzene	Propyl Acetate
Ethylene Dichloride	Propylene Oxide
Ethyl Ether	Pyridine
Ethyl Formate	Styrene
Furan	Tetrahydrofuran
Gasoline	Toluene
Heptane	Turpentine
Hexane	Vinyl Acetate
Hydrazine	Xylene

*Most nitrohydrocarbons are flammable.

4. OXIDIZERS

Storage Precautions:

- Store in a cool, dry place.
- Keep away from flammable and combustible materials (such as paper, wood, etc.).
- Keep away from reducing agents such as zinc, alkaline metals and formic acid.

SOLIDS

Ammonium Dichromate	Nitrates, Salts of 4
Ammonium Perchlorate	Periodic Acid
Ammonium Persulfate	Permanganic Acid
Benzoyl Peroxide	Peroxides, Salts of 5
Bromates, Salts of 1	Potassium Dichromate
Calcium Hypochlorite	Potassium Ferricyanide
Cerric Sulfate	Potassium Permanganate
Chlorates, Salts of 2	Potassium Persulfate
Chromium Trioxide	Sodium Bismuthate
Ferric Trioxide	Sodium Chlorite
Ferric Chloride	Sodium Dichromate
Iodates, Salts of 3	Sodium Nitrite
Iodine	Sodium Perborate
Magnesium Perchlorate	Sulfates, Salts of 6
Maganese Dioxide	

1. Potassium Bromate, Sodium Bromate, etc.
2. Potassium Chlorate, etc.
3. Sodium Iodate, etc.
4. Ammonium Nitrate, Ferric Nitrate, etc.
5. Lithium Peroxide, Sodium Peroxide, etc.
6. Ferric Sulfate, Potassium Sulfate, etc.

LIQUIDS

Bromine	Nitric Acid
Chromic Acid	Perchloric Acid
Hydrogen Peroxide	Sulfuric Acid

GASES

Chlorine	Nitrogen Oxide
Chlorine Dioxide	Oxygen
Fluorine	Ozone
Nitrogen Dioxide	

5. WATER REACTIVE CHEMICALS

Storage Precautions:

- Store in a cool, dry place.
- In case of fire, keep water away.

WARNING: These chemicals react with water to yield flammable or toxic gases or other hazardous conditions.

SOLIDS

Aluminum Chloride, Anhydrous	Maleic Anhydride
Calcium Carbide	Phosphorus Pentachloride
Calcium Oxide	Phosphorus Pentasulfide
Ferrous Sulfide	*Potassium
*Lithium	*Sodium
Magnesium	

*Lithium, Potassium and Sodium should be stored under Kerosene.

LIQUIDS

Acetyl Chloride	Stannic Chloride
Chlorosulfonic Acid	Sulfur Chloride
Phosphorus Trichloride	Sulfuryl Chloride
Silicon Tetrachloride	Thionyl Chloride

6. PYROPHORIC SUBSTANCES

Storage Precautions:

- Store in a cool, dry place.

WARNING: Pyrophoric substances ignite spontaneously upon contact with air.

Boron	*Iron
*Cadmium	*Lead
*Calcium	*Manganese
*Chromium	*Nickel
*Cobalt	**Phosphorus, yellow
Diborane	*Titanium
Dichloroborane	*Zinc
2-Furaldehyde	

*Finely divided metals form a pyrophoric hazard.

**Phosphorus (yellow) should be stored and cut under water.

7. LIGHT SENSITIVE CHEMICALS

Storage Precautions:

- Avoid exposure to light.
- Store in amber bottles in a cool, dry place.

Bromine	Oleic Acid
Ethyl Ether	Potassium Ferrocyanide
Ferric Ammonium Citrate	Silver Salts ²
Hydrobromic Acid	Sodium Iodide
Mercuric Salts ¹	Mercurous Nitrate

¹Mercuric chloride, mercuric iodide, etc.

²Silver acetate, silver chloride, etc.

8. PEROXIDE FORMING CHEMICALS

Storage Precautions:

- Store in airtight containers in a dark, cool and dry place.
- Label containers with receiving, opening and disposal dates.
- Dispose of peroxide forming chemicals before expected date of first peroxide formation in accordance with local regulations.
- Test for the presence of peroxides periodically.

WARNING: Under proper conditions, these chemicals will form explosive peroxides which can be detonated by shock or heat.

*Potassium
Cyclohexene
p-Dioxane
Ethyl Ether
Isopropyl Ether

Tetrahydrofuran
Acetaldehyde
Acrylaldehyde
Crotonaldehyde

*Potassium peroxide often exist in the crust around a chunk of Potassium. When cut with a knife the peroxide rapidly oxidizes the residual kerosene resulting in an explosion.

9. TOXIC COMPOUNDS

Storage Precautions:

- Store according to hazardous nature of chemical, using appropriate security when necessary.
- Post emergency telephone number near telephone.

WARNING: These chemicals are dangerous or extremely dangerous to health and life when inhaled, swallowed or absorbed by skin contact. Take proper precautions to avoid exposure.

SOLIDS

Antimony Compounds
Arsenic Compounds
Barium Compounds
Beryllium Compounds
Cadmium Compounds
Calcium Oxide
Chromates, Salts of
Cyanides, Salts of
Fluorides, Salts of
Iodine
Lead Compounds
Mercuric Compounds

Oxalic Acid
Phenol
Phosphorus (yellow)
Phosphorus Pentachloride
Phosphorus Pentasulfide
Picric Acid
Potassium
Selenium Compounds
Silver Nitrate
Sodium
Sodium Hydroxide
Sodium Hypochlorite

LIQUIDS

Aniline
Bromine
Carbon Disulfide
Carbon Tetrachloride
Chloroform
Chromic Acid
p-Dioxane
Ethylene Glycol
Formic Acid
Hydrazine
Hydrobromic Acid

Hydrochloric Acid
Hydrofluoric Acid
Hydrogen Peroxide
Mercury
Nitric Acid
Perchloric Acid
Phosphorus Trichloride
Sulfuric Acid
Tetrachloroethane
Tetrachloroethylene

GASES

Carbon Monoxide
Chlorine
Cyanogen
Diborane
Fluorine
Formaldehyde
Hydrogen Bromide

Hydrogen Chloride
Hydrogen Cyanide
Hydrogen Sulfide
Nitrogen Dioxide
Ozone
Sulfur Dioxide

10. CARCINOGENS

Storage Precautions:

- Label all containers as Cancer Suspect Agents.
- Store according to hazardous nature of chemical, using appropriate security when necessary.

Antimony Compounds
Arsenic Compounds
Benzidine
Beryllium
Cadmium Compounds
Chromates, Salts of
Beta-Naphthylamine
Nickel Compound
Vinyl Chloride

Acrylonitrile
Benzene
Chloroform
Dimethyl Sulfate
Dioxane
Ethylene Dibromide
Hydrazine
Nickel Carbonyl

11. TERATOGENS

Storage Precautions:

- Label all containers Teratogens.
- Store according to hazardous nature of chemical, using appropriate security when necessary.

Aniline
Benzene
Carbon Disulfide
Carbon Monoxide
Chlorinated Hydrocarbons
Lead

Mercury
Nitrobenzene
Phosphorus
Radioactive Substances
Toluene
Turpentine