



# Practices for Proper Chemical Storage

Office of Environmental Health & Safety

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## Introduction

Proper storage is needed to minimize the hazards associated with accidentally mixing incompatible chemicals.

Do not sort and store chemicals alphabetically unless they have first been separated into hazard classes. Additional guidelines on storing chemicals according to their hazard classes are presented later in this section.

## Basic Guidelines

Observe the following general storage guidelines:

In general, chemicals should be separated according to the following categories:

- o Solvents, which include flammable/combustible liquids and halogenated hydrocarbons (e.g., acetone, benzene, ethers, alcohols) Note: Store glacial acetic acid as a flammable liquid
- o Inorganic mineral acids (e.g., nitric, sulfuric, hydrochloric, and perchloric acids).
- o Bases (e.g., sodium hydroxide, ammonium hydroxide)
- o Oxidizers
- o Poisons
- o Explosives or unstable reactive chemicals such as picric acid.
- o Store separately outdoors in flammable storage cabinets

- x Avoid storing chemicals on countertops or in fume hoods except for those being currently used.
- x Label all containers (squeeze bottles) to which hazardous materials are transferred with the identity of the substance and its hazards.
- x Be aware that squeeze bottles have varying resistances to different chemicals. It is recommended that each chemical that is used be checked to verify chemical compatibility with the container type. Some can form peroxide crystals that can lead to deterioration and degradation of container integrity.
- x Limit the amount of chemicals purchased and stored to the minimum required.
- x

- x Refrigerators and freezers for storing flammable liquids (including ethanol) must be designed, constructed and approved for that purpose. Domestic refrigerator/freezers as well as units that have been modified to remove spa99pk(s)4[(s)ou(c

## Solvents (Flammable and Halogenated Solvents)

- o Store in approved safety cans or cabinets.
- o Segregate from oxidizing acids and oxidizers.
- o Keep away from any source of ignition (heat, sparks, or open flames)



4. Type the Name or CAS number of any chemical in the space under the heading Name/CAS and click on Search – after a few seconds the SDS will be shown with the Chemwatch list will appear containing all chemical names that include the chemical entered.
5. To view the SDS, click on the desired listing. If you are looking for a SDS from a specific manufacturer, click on the VENDOR SDS
6. After performing a search a chosen a particular chemical, a set of keys appear on the left of the screen – their identity and function are as follows:
  - a. Mini M (SDS) – Contains select emergency information from an SDS such as Properties, Health Hazards, and Precautions for use, etc...compressed onto one page.
  - b. M (SDS) – Contains the full SDS for the chosen chemical. Chemwatch defaults to the first SDS from the manufacturers listed alphabetically
  - c. Summary – Contains select information from an SDS including Personal Protective Equipment, Risk statements, safety statements, etc... This is the screen that first appears following a requested search for a particular chemical
  - d. Vendor M(SDS) – Chemwatch will provide a list of all

## Chemical Storage- Incompatible Chemicals

Certain hazardous chemicals should not be mixed or stored with other chemicals because a severe reaction can take place or an extremely toxic reaction product can result. The label and SDS will contain information on incompatibilities.

The following incompatibility matrix and table contains examples of incompatible chemicals:

### Chemical Incompatibility Matrix

|  |                    |                    |                  |                   |          |
|--|--------------------|--------------------|------------------|-------------------|----------|
|  | Acids,<br>Inorgani | Acids,<br>Oxidizin | Acids,<br>Organi | Alkalis<br>(Bases | Oxidizer |
|--|--------------------|--------------------|------------------|-------------------|----------|



| 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, and strong bases  |

Acetylene

|                      |  |
|----------------------|--|
| Chlorine Dioxide     | Ammonia, methane, phosphine, hydrogen sulfide  |
| Copper               | Acetylene, hydrogen peroxide   |
| Cumene Hydroperoxide | Acids, organic or inorganic  |
| Cyanides             | Acids  |
| 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 |
| Hydrogen Sulfide     | Fuming nitric acid, other acids, oxidizing gases, acetylene, ammonia (aqueous or anhydrous), hydrogen                              |
| Hypochlorites        | Acids, activated carbon  |

Iodine

|                    |   |
|--------------------|---|
| Perchloric Acid    | Acetic anhydride, bismuth and its alloys, alcohol, paper, wood, grease and oils |
| Peroxides, organic | Acids (organic or mineral), avoid friction, store cold                          |