



Chemical Storage Guide User Manual

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Introduction

This document provides information on how to use the [Chemical Storage Guide](#), general chemical storage guidelines, and a summary of storage locations and guidance based on a chemical’s Storage Group.

Chemical Storage Guide Instructions

The [Chemical Storage Guide](#) assists lab personnel in determining appropriate storage locations for chemicals based on their characteristics. The guide does not cover storage of hazardous waste, compressed gases, or Drug Enforcement Administration (DEA) Controlled Substances. Before using the guide, read the [General Storage Guidelines](#) found in this document.

Do the following to use the [Chemical Storage Guide](#).

1. Identify Storage Group

Follow the flowchart to identify the Storage Group and recommended storage locations.





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Compare the Globally Harmonized System (GHS) pictograms on the chemical's label to those on the flowchart or in the table in this section.* Begin at the top of the flowchart where it says Start (or the first row of the table in this section) and move down until you find a GHS pictogram that is on the chemical's label. If the flowchart returns you to another pictogram, continue to move downward until you reach another pictogram that appears on the chemical's label.

Many chemicals have multiple GHS pictograms. It's important to choose the first pictogram that matches one on the chemical label (the pictogram closest to the top of the flowchart or table).

GHS Pictogram	GHS Hazard Classification	Storage Group Conditions
	Explosive	Storage Group is Explosive or Unstable (EU).
	Flammable	<ol style="list-style-type: none">1. If Hazard Statement contains "Catches fire spontaneously" or "In contact with water releases", Storage Group is Pyrophorics and Water Reactives (PW). Otherwise, go to the next Flammable Storage Group condition.2. If Hazard Statement contains "Flammable liquid" or "Flammable aerosol", Storage Group is Flammable Liquids (FL). Otherwise, go to the next GHS pictogram.

* If the product doesn't have a GHS label, search Sigma Aldrich or go to [ChemWatch](https://www.chemwatch.com) and review their Gold Safety Data Sheet (SDS) for the same product. Use Section 2: Hazard Identification of the SDS to complete the Lab Chemical Storage Guide.



GHS Pictogram	GHS Hazard Classification	Storage Group Conditions
	Corrosive	<ol style="list-style-type: none">1. If the chemical is an inorganic acid, Storage Group is Inorganic Acids (IA). Otherwise, go to the next Corrosive Storage Group condition.2. If the chemical is an organic acid, Storage Group is Organic Acids (OA). Otherwise, go to the next Corrosive Storage Group condition.3. If the chemical is an inorganic base, Storage Group is Inorganic Bases (IB). Otherwise, go to the next GHS pictogram.
	Oxidizing	If Hazard Statement contains “May cause fire or explosion; strong oxidizer” or “May intensify fire, oxidizer”, Storage Group is Oxidizers (OX). Otherwise, go to the next GHS pictogram.
	Toxic	If Hazard Statement contains “Fatal if swallowed”, “Fatal if inhaled”, or “Fatal in contact with skin”, Storage Group is High Acute Toxicity (AT). Otherwise, Storage Group is General Storage (GS).

If the chemical’s label doesn’t include any of these pictograms or meet any of these conditions, the Storage Group is General Storage (GS).

2. Review Storage Location and Guidance

Read any [storage location and additional recommendations](#) associated with the Storage Group.

Always review Section 7.2: Conditions for Safe Storage and Section 10: Stability and Reactivity of the chemical’s SDS to determine any special storage requirements and to verify compatibility.



General Storage Guidelines

The following guidelines apply to storage of all chemicals.

- Separate the chemical Storage Groups from each other. Storage in separate cabinets or locations always meets this requirement and is preferred where space allows. Separating Storage Groups using secondary containment bins also meets this requirement, unless specifically prohibited in this guide.
- Store chemicals only in cool, dry areas.
- Do not store chemicals in direct sunlight or near a heat source.
- Store chemicals in well-ventilated areas. Do not store flammable liquids or volatile hazardous chemicals in cold or warm rooms. Refer to the [Cold and Warm Room Safety Guidelines](#) document for more details.
- Avoid storing chemicals on the floor when possible. If unavoidable, then store in a secondary containment bin.
- Do not store hazardous liquids above eye level. Have an appropriate step stool or ladder available if non-hazardous liquids or dry chemicals are stored at higher levels.
- Use designated labels for peroxide forming chemicals. Refer to the [Laboratory Safety Guideline: Peroxide Forming Chemicals](#) document for more details.
- Record the date received and the date opened on the label of all time-sensitive chemicals.
- Do not remove original labels from containers. Replace manufacturer labels if they are not legible. Include appropriate GHS information on the replacement label. Label templates can be found on the [Laboratory Labels and Sticker](#) webpage.
- Return chemicals to designated storage locations when not in use.
- Chemicals should not be stored in fume hoods used to conduct laboratory procedures.
- Carefully reseal opened containers before returning to storage. Replace broken, cracked, or deteriorated caps. Use Teflon tape and paraffin as indicated to control fugitive emissions of volatile high hazard or stench chemicals.



- EH&S recommends that secondary containment bins, where employed, are labeled with the Storage Group name.
- Clearly separate chemical storage from hazardous waste storage.
- Refer to the [Recommended Storage Groups for Common Acids and Bases](#) document for help identifying correct storage classes for common acids and bases.

Storage Location and Guidance Based on Chemical Storage Groups

The table in this section includes storage location information and additional guidance based on a chemical's Storage Group.

Use the [Chemical Storage Guide flowchart](#) to determine the appropriate Storage Group. Alternately, classify a chemical by assigning the first Storage Group listed in the table that can describe the chemical.

For example, if a chemical is both a flammable liquid and an organic acid it should be stored in the Flammable Liquids Storage Group since that group appears first in the table.

Storage Group	Storage Location	Additional Guidance
Explosive or Unstable (EU)		<ul style="list-style-type: none">• Contact EH&S or Department Safety Officer.
Pyrophorics and Water Reactives (PW)	<ul style="list-style-type: none">• Flammable storage refrigerator or freezer.• Inert gas glove box.• Dedicated cabinet away from other storage groups.	<ul style="list-style-type: none">• Use only refrigerator or freezer designed for flammable materials storage.• Store under inert atmosphere when indicated.• Do not store with flammable liquids in flammable storage cabinet.



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Storage Group	Storage Location	Additional Guidance
Flammable Liquids (FL)	<ul style="list-style-type: none">• Flammable storage refrigerator or freezer.• Flammable storage cabinet.• Approved safety cans.	<ul style="list-style-type: none">• Use refrigerator or freezer designed for flammable materials storage.• Do not store in cold rooms.• Limited amounts of flammable liquids may be stored outside cabinets or safety cans.• Place flammable organic acids in dedicated secondary containment bin.• Venting a flammable storage cabinet is not recommended. Contact EH&S before venting.
Inorganic Acids (IA)	<ul style="list-style-type: none">• Standard refrigerator or freezer.• Corrosive/acid storage cabinet.• Standard wooden cabinet	<ul style="list-style-type: none">• Place hydrofluoric acid in dedicated secondary containment bin.• Place perchloric acid in dedicated secondary containment bin. Do not store perchloric acid in same cabinet with organic chemicals including organic acids.• Vent corrosive/acid storage cabinets, if feasible.• Avoid placing in unvented metal cabinets unless designed for corrosive storage.
Inorganic Bases (IB)	<ul style="list-style-type: none">• Standard refrigerator or freezer.• Corrosive/acid storage cabinet.	<ul style="list-style-type: none">• Use a secondary containment bin to separate from acids if stored in same cabinet.• Vent corrosive/acid storage cabinets, if feasible.



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Storage Group	Storage Location	Additional Guidance
Oxidizers (OX)	<ul style="list-style-type: none">• Standard refrigerator or freezer.• Corrosive/acid storage cabinet.• Standard wooden cabinet.	<ul style="list-style-type: none">• Do not store in flammable storage refrigerator/freezer or flammable storage cabinet.• Do not store on bare (uncoated) wood or other combustible material.
High Acute Toxicity (AT)	<ul style="list-style-type: none">• Standard refrigerator or freezer.• Secure cabinet, if required for specific chemical.• Consider a vented cabinet for liquids with high volatility.	<ul style="list-style-type: none">• Monitor container condition.• Minimize storage in cold or warm rooms.• May be stored with General Storage Group.
General Storage (GS)	<ul style="list-style-type: none">• Standard refrigerator or freezer.• Any dedicated cabinet or shelf storage area away from other Storage Groups.	<ul style="list-style-type: none">• Separation of organic and inorganic chemicals is recommended.