# Chemical Warehousing 101

Not all chemicals are hazardous, but those that are must adhere to specific storage requirements to ensure a safe environment. If you are responsible for the storage and distribution of commercial chemicals, this paper serves as a primer on safe, compliant storage.


## What Classifies As A Hazardous Material?

Under the Hazard Communication Standard (HCS) of the U.S. Occupational Health and Safety Administration (OSHA), any chemical that presents a physical hazard or a health hazard is considered a hazardous chemical. The HCS definitions for physical and health hazards are:

- **Physical hazard** – there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
- **Health hazard** – there is statistically significant evidence that acute or chronic health effects may occur in exposed employees. This includes many chemical types, including carcinogens, irritants, corrosives, and agents which damage the lungs, skin, eyes, or mucous membranes.

## What Are SDS Sheets?

OSHA requires that the chemical manufacturer, distributor, or importer provide to downstream users Safety Data Sheets, or SDS sheets, for each hazardous chemical. These sheets contain information on the specific hazard so workers handling these products can be informed and take the relevant precautions. SDS sheets are presented in a consistent, user-friendly format to aid understanding. In general, best practices can be maintained by following the guidelines outlined in the SDS sheet for handling, storing, and transporting the chemical.

## What Is The Specific Classification Of The Chemicals For Which I Am Responsible?

There are 9 different classifications of hazardous materials. Each classification can also be broken down into divisions based on the type of hazard, as shown in the following chart. The SDS sheet for each of your chemical products indicates the exact classification.

| CLASS | DEFINITION | DIVISIONS |
|---|---|---|
| **EXPLOSIVES** | Any substance or article that is designed to function by explosion or which, by chemical reaction within itself, is able to function in a similar manner. | 1.1 Mass explosion hazard<br>1.2 Projection hazard<br>1.3 Fire hazard or minor projection hazard<br>1.4 No significant hazard<br>1.5 Very insensitive substances with mass explosion hazard<br>1.6 Extremely insensitive articles with no mass explosion hazard |
| **GASES** | Any material or mixture having in the container an absolute pressure exceeding 40 psi (pounds per square inch) at 70°F or, regardless of the pressure at 70°F, having an absolute pressure exceeding 140 psi at 130°F; or any flammable material having a vapor pressure exceeding 40 psi at 100°F. | 2.1 Flammable Gas<br>2.2 Non-Flammable Gas<br>2.3 Poisonous Gas |
| **FLAMMABLE LIQUIDS** | A liquid having a flash point of not more than 60°C (140°F). | |
| **FLAMMABLE SOLIDS** | Solid materials that pose a serious risk of fire in uncontrolled conditions. The hazard class is divided into three broad categories. | 4.1 Flammable Solids<br>4.2 Spontaneously Combustible<br>4.3 Water Reactive |
| **OXIDIZERS** | Materials that can start and support a fire through the chemical reaction of oxidation. | 5.1 Oxidizers<br>5.2 Organic Peroxide |
| **POISONS** | A material, other than a gas, which is known to be extremely toxic to humans and may be hazardous to health during transportation. | |
| **RADIOACTIVE** | Any material that contains unstable isotopes of an element undergoing decay and emitting radiation. | |
| **CORROSIVE** | A liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period time. A liquid or a solid which may become liquid during transportation, that has a severe corrosion rate on steel or aluminum. | |

## Can Any Warehouse Store My Hazardous Product?

No. You must find a warehouse or third-party logistics provider (3PL) certified to handle your particular hazardous material. The certification process is rigorous and can involve many different agencies, including the Department of Homeland Security, the Department of Justice, the Environmental Protection Agency, the Drug Enforcement Administration, plus local fire departments, air quality boards and other agencies. Each may require lengthy applications, followed by phone and in-person meetings. The bureaucracy is thick, but it's necessary to ensure a safe environment.

Since 9/11, security and safety requirements have become strict and unyielding. Regular inspections and unannounced audits can occur at any time.

## What Requirements Pertain To Specific Classes Of Chemicals?

The chart below is a high-level summary of storage requirements for common classes of commercial chemicals.

## What Is CFATS And Why Should I Care?

The **Chemical Facility Anti-Terrorism Standards (CFATS)**, also known as 6 CFR, Part 27, are a set of U.S. government


security regulations for high-risk chemical facilities such as chemical plants and chemical warehouses.

If you outsource chemical storage and distribution, it's critical that you partner with an experienced provider. A 3PL that is CFATS-compliant has met strict standards for safety and security.

Homeland Security has established a 4-level, risk-based tier structure for chemical storage that ranges from Tier 1 (highest risk) to Tier 4 (lowest risk). The assignment of each tier is established by assessing the possible consequences of a successful attack on warehouses that store volatile chemicals.

| CHEMICAL CLASS | REQUIREMENTS |
|---|---|
| **EXPLOSIVES** | Heat, shock, friction or even static electricity can initiate explosions of these chemicals. All rooms in the distribution center should be "no spark" environments to eliminate the potential for sparks or equipment backfires. That means using non-spark forklift trucks and EE- and EEE-rated machinery. |
| **FLAMMABLE LIQUIDS AND SOLIDS** | All flammable products are required to be stored in one classified room, away from any potential ignition sources. Flammable liquids and gases require rack stack storage and a rack firehouse pump system (sprinklers). Regular preventative maintenance is required to ensure that all systems are well maintained and up to code. |
| **GASES** | Great care must be taken in storing and handling compressed gases since dropping or knocking over a cylinder can cause the energy in the cylinder to be rapidly released, even propelling the cylinder like a rocket. Specific storage requirements will depend on the type of gas. If the gas is flammable, it is stored in a classified flammable room. Some gases could be a mix of toxics and corrosives, so they might go into toxic room. |
| **OXIDIZERS** | Oxidizers require their own room and are not to be mixed with other product, especially flammable or combustible materials. Oxidizers should be kept in a cool, dry place, well ventilated and away from sunlight. Oxidizer rooms have no windows to keep out sunlight and are ventilated to reduce smell and allow airflow. |
| **POISONS** | Poisons require their own classified room. This room needs to have ventilation and be segregated from combustibles. Typically, air vents suck out the odor and the air travels to charcoal bins above the warehouse. Poisons should be labeled, processed and palletized in a poison-coded room. Poisonous products should never see any other part of the warehouse except their specified room. |
| **CORROSIVES** | Corrosives require their own room and are to be handled with great precaution. As with other chemicals, workers should use goggles, gloves and closed-toe shoes while handling corrosives. The classified corrosive room does not contain rack water systems. Pallets that enter the warehouse are taken to the secluded room with air vents that suck out the odor. The product should be labeled, processed and palletized in the classified corrosive room. |

The classes of hazardous product in the warehouse will determine how much risk the facility contains. As an example, Weber Logistics' chemical warehouse is ranked Tier 2. Because it does not house Class 1 explosives or Class 7 radioactive materials, overall risk is lowered.

## How Can I Assess The Capabilities Of A Commercial Warehousing Partner?

Here are six tips to help you tell the experts from the imposters.

**1. Check the provider's reputation with objective sources.** Don't rely on the 3PL's marketing claims to gauge capabilities.

**2. Look for experience handling the class of chemicals you market.** 3PLs that handle one class of chemicals are not necessarily qualified to handle others.

**3. Limit transportation miles.** With chemicals, fewer miles are better. Finding a provider that is centrally located to efficiently reach your customer base will reduce your costs and risk.

**4. Dig into the experience of key personnel.** Ask about the chemical logistics experience of those supervising and operating your business. These people should be advising you, not the other way around.

**5. Choose a partner for present AND future needs.** Anticipate your needs well into the future and look for a partner that can satisfy these requirements to avoid the cost and risk involved in switching providers.

**6. Find out how active the provider is in industry groups.** Environmental and safety regulations are constantly changing. Providers need to remain active in industry groups to stay abreast of these changes.

*Founded in 1924, Weber Logistics is a third-party logistics company that provides warehousing, transportation, and port logistics services on the West Coast. With distribution centers throughout California and a fleet of trucks for dry and temperature-controlled deliveries, Weber gives growing companies flexible, scalable distribution solutions for their West region customers.*


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