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DENIOS is the worldwide leader in hazardous materials storage, industrial environmental protection, and workplace health and safety. Our highly motivated and skilled team is constantly searching for new ideas and creative innovations, making a positive impact in shaping the future. We provide customer benefits through exceptional product quality, prompt delivery, and outstanding customer support and communication.

DENIOS pledges to be a confidence inspiring project partner and reliable problem solver for all environmental protection and workplace safety applications.

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Our experts will also be happy to meet you personally on site for consultations and needs analysis. We will identify your individual requirements, and profile together the appropriate products to meet your unique needs.



Manufactured in the USA.

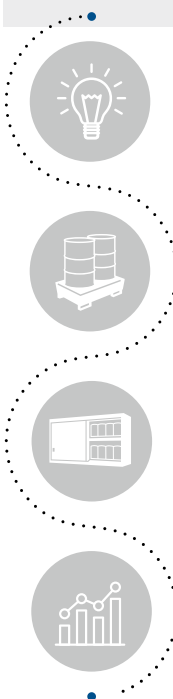
DENIOS, your partner in safety and environmental protection.

For over 30 years DENIOS has been the worldwide leader in the design and manufacture of custom engineered chemical storage structures. Working directly with our customers we help assess risks and provide solutions for the safe storage and containment of hazardous chemicals and processes.

DENIOS Delivers

- ✓ **Quality, Performance, and Compliance-**products designed, manufactured and shipped direct from our plant
- ✓ **Expertise and Responsiveness-** a team of Technical Sales and Engineering Staff available for expert consultation
- ✓ **Customized Solutions-** standard and custom engineered solutions for any application
- ✓ **A Complete Program of Chemical Storage and Containment Solutions**

DENIOS ENGINEERING provides you



A complete understanding of hazardous chemicals and chemical processes. Our Technical Sales and Engineering Staff understand potential risks they pose to facilities, personnel, and the environment. They will work with you every step of the way in designing a safe storage solution for your individual applications.

Expertise in helping you meet applicable laws and regulations. DENIOS not only knows the regulations, we work directly with leading insurers, risk managers, and government authorities in developing new equipment or setting performance standards for existing designs and construction. We will work with you in meeting Federal standards as well as those of your local authorities, helping make sure your DENIOS products are in complete compliance.

When we put a DENIOS label on your product you know we stand behind what we design and manufacture, and that we're here for you well after the sale is completed.



Contain the risk!

Acetone, phosphorous, peroxide, tetrachloromethane, hydrofluoric acid... the list goes on. Often with unimposing names, they are all commonly found in production processes as raw materials, additives, waste products or as the desired end product of production. The problem is they are hazardous substances which are flammable, oxidising, toxic or even potentially explosive.

The right knowledge is vital for the risk assessment and implementation of suitable protective measures. This is where DENIOS, with our specialist expertise, can act as your partner.

We've put together the most important information for you from page ➔ 6. We can also help with easy to use storage solutions should be.

When storing or dispensing hazardous substances, you need to contain the risk! Occupancy and Non Occupancy Storage Building with or without Fire Protection from DENIOS prevent the substances stored inside from causing serious damage to their Environment, from page ➔ 22.

If you like to store smaller quantities you will find our Lockers and Hazmat Stations as safe and suitable solutions, from page ➔ 44.

Many situations do not lend themselves to common secondary containment equipment. Processing or warehousing often involve larger volumes or areas than can be practically housed in a hazmat enclosure. In addition, what about damage to facilities from outside floodwaters? OSHA and EPA regulations require that all releases be contained and that the flow chemicals and/or sprinkler water be prevented from migrating into drains, sewers or the environment. Such large volume spills can prove to be catastrophic in scope and expenses involving reclamation, repair and monetary fines. DENIOS is your best partner for analyzing and solving your Large Area Spill Containment issues. Large Area Spill Containment, from page ➔ 58

Since pressurized gas cylinders pose a high risk, the proper storage of gas cylinders is extremely important. DENIOS produces products for gas cylinder storage and handling that reliably meet basic requirements such as adequate ventilation and access protection for unauthorized persons. Gas Cylinder, from page ➔ 64



DENIOS expertise

Many years of experience and continuous staff training ensures that we are competent to offer advice on hazardous substances. We love to share our knowledge, for example in the popular DENIOS Hazmat Manual, in seminars in the DENIOS Academy or in these pages.

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If you still have questions, our experienced team of experts will be pleased to assist you.

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Visit www.denios-us.com to get in contact with your local representative.

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Know Your Hazard Symbols (Pictograms)

Hazard symbols have come a long way from the rudimentary drawings used to designate poison in the early 1800s.

As a result of updated OSHA chemical labeling requirements, 2016 marks the first full year of adoption of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) in the U.S.

The GHS system, part of OSHA's Hazard Communication Standard (HCS), consists of nine symbols, or pictograms, providing recognition of the hazards associated with certain substances. Use of eight of the nine are mandatory in the U.S., the exception being the environmental pictogram (see below).

Each pictogram covers a specific type of hazard and is designed to be immediately recognizable to anyone handling hazardous material. In addition to pictograms, labels are required to include a signal word ("danger" or "warning"), a brief hazard statement and a precautionary statement outlining ways to prevent exposure.

Pictograms and Descriptions

Health Hazard



A cancer-causing agent (carcinogen) or substance with respiratory, reproductive or organ toxicity that causes damage over time (a chronic, or long-term, health hazard).

Flame



Flammable materials or substances liable to self ignite when exposed to water or air (pyrophoric), or which emit flammable gas.

Skull and Crossbones



Substances, such as poisons and highly concentrated acids, which have an immediate and severe toxic effect (acute toxicity).

Flame Over Circle



Identifies oxidizers. Oxidizers are chemicals that facilitate burning or make fires burn hotter and longer.

Corrosion



Materials causing skin corrosion/burns or eye damage on contact, or that are corrosive to metals.

Exploding Bomb



Explosives, including organic peroxides and highly unstable material at risk of exploding even without exposure to air (self-reactives).

Gas Cylinder



Gases stored under pressure, such as ammonia or liquid nitrogen.

Exclamation Mark



An immediate skin, eye or respiratory tract irritant, or narcotic.

Environmental Hazard



Chemicals toxic to aquatic wildlife. (Non-Mandatory)

Chemical Spill Containment Requirements

Secondary Containment

Containment is described in the Fire Code, Flammable Liquids Code and the Code of Federal Regulations (CFR). In general the capacity of the containment must be 10% of the aggregate liquid volume stored or the volume of the largest container stored whichever is larger.

Where the storage is indoors and a sprinkler system is in place, the containment may be required to contain the above mentioned volume plus the volume discharged by the sprinkler system for 20 minutes. Local jurisdictions and third party certifiers may have more stringent requirements.



Flammable Cabinet sump provides added capacity bringing the system into spill compliance.

Storage of Flammable Liquids in Quantities not exceeding 120 gal (460L)

For this application, a flammable liquids storage cabinet as approved or listed by a recognized third party agency or constructed per NFPA 30 will suffice. The Local Authority Having Jurisdiction should be consulted regarding the number of cabinets allowed per control area (see definition above).

Typically, flammable liquids storage cabinets are designed to have a sump or spill containment volume of 5 gallons which is based upon storage of typical containers having a volume of 5 gallons or less. However, some of these cabinets are designed to store (2) 55 gallon drums (still within the 120 gallon limit) and DENIOS believes that these cabinets should be compliant under EPA and UFC regulations. Therefore, DENIOS offers a Flammable cabinet Sump that can be added to the Flammable cabinets bringing the complete system into EPA and UFC compliance.

Make sure to consult your local Authority Having Jurisdiction (AHJ).



Occupancy Buildings provide compliant secondary containment sumps below a grated surface.



Guidance and information for using, handling and storing Hazardous and Flammable Chemicals in accordance with the U.S. Guidelines and Regulations.

This document is intended as a guide to the vast array of regulations concerning the storage and handling of flammable and combustible chemicals. As regulations and their interpretations change over time, your local Authority Having Jurisdiction (AHJ) should always be consulted when considering storing hazardous materials inside or outside your facility.

These next few paragraphs will provide brief insight to help you understand some of the fundamental parts of the Code of Federal Regulations, Title 29, Parts 1900 to 1910.999, and the Occupational Health and Safety Act of 1970 regarding the external storage of flammable liquids. In addition, data has been taken from the National Fire Protection Association's NFPA 30 "Flammable and Combustible Liquids Code", the 2018 edition of the "International Building Code" and the 2018 edition of the "International Fire Code."

National / International Authorities

- International Fire Code (IFC)
- International Building Code (IBC)
- Code of Federal Regulations (CFR)
- Environmental Protection Act (EPA)
- National Fire Protection Assn (NFPA)
- Uniform Fire Code (UFC)
- Uniform Building Code (UBC)



Definitions

It is critical to understand the uniform system of defining and classifying flammable and combustible liquids and why it is important to take the necessary precautions to provide the correct methods of storage.

Authority Having Jurisdiction (AHJ)

An organization, office or individual responsible for enforcing code requirements or standards.

Auto-Ignition Temperature

The minimum temperature at or above which a material will spontaneously ignite (catch fire) without an external spark or flame. See following Table:

Auto-Ignition Temperatures for Some Common Chemicals or Fuels		
Chemical or Fuel	Temperature	
	°C	°F
Acetone	465	869
Benzene	560	1,040
Diethyl Ether	160	320
Ethylene	490	914
Ethyl Alcohol	365	689
Fuel Oil No. 2	256	494
Gasoline	280	536
Kerosene	210	410
Isopropyl Alcohol	399	750
Methyl Alcohol	385	725
Propane	480	896
Toluene	480	896
Xylene	463	867

Boiling Point

The temperature at which the vapor pressure of a liquid equals the surrounding atmospheric pressure.

Flash Point

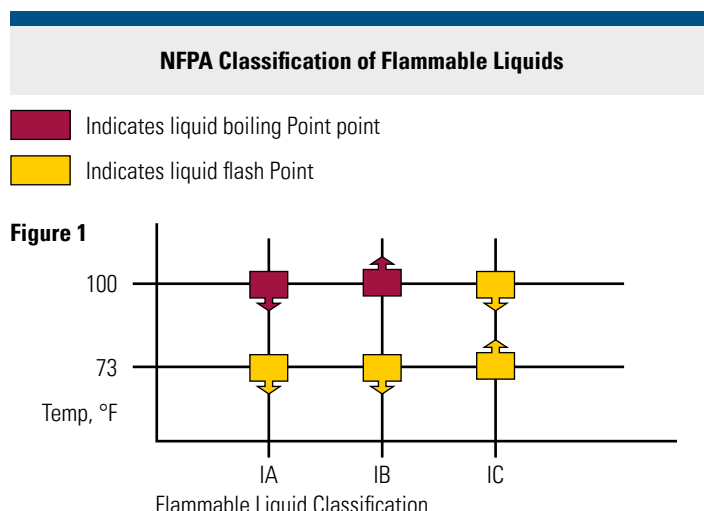
The minimum temperature of a liquid at which sufficient vapor is given off to form an ignitable mixture with air near the surface of the liquid.

Flammable Liquid

Any liquid that has a flash point below 100° F (37.8° C).

Flammable liquids are classified as Class I liquids with further sub-classification per the following and as shown in Figure 1:

- **Class IA** – Any liquid that has a flash point below 73° F (22.8° C) and a boiling point below 100° F (37.8° C). Examples of this class are Ethyl Ether and Pentane.
- **Class IB** – Any liquid that has a flash point below 73° F (22.8° C) and a boiling point at or above 100° F (37.8° C). Examples of this class are Gasoline and Butanone (Methyl Ethyl Ketone).
- **Class IC** – Any liquid that has a flash point at or above 73° F (22.8° C) but below 100° F (37.8° C). Examples of this class are Xylene and Turpentine.
- *OSHA has different regulations



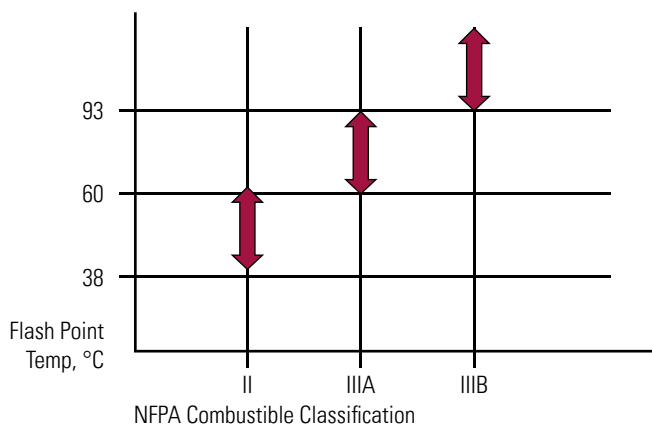
Combustible Liquid

Any liquid that has a flash point at or above 100° F (37.8° C).

Combustible liquids are classified per the following and as shown in Figure 2:

- **Class II** – Any liquid that has a flash point at or above 100° F (37.8° C) and below 140° F (60° C). Examples of this class are Kerosene and Oil-Based paints.
- **Class III** – Any liquid that has a flash point above 140° F (60° C)
 - [1] Class IIIA Liquid – Any liquid that has a flash point at or above 140° F (60° C), but below 200° F (93° C). An example of this is Mineral Spirits.
 - [2] Class IIIB Liquid – Any liquid that has a flash point at or above 200° F (93° C). Examples of this class are Hydraulic Brake/Transmission fluids and lube oils.

Figure 2



Flammable Range (Explosive Range)

The range of a concentration of a gas or vapor that will burn (or explode) if an ignition source is introduced.

MAQ (Maximum Allowable Quantity)

The maximum quantity of flammable or combustible liquids allowed to be stored in a given occupancy. The MAQ varies per the occupancy class and the fire protection systems available. But in general it begins at 120 gallons of liquid.

Control Area

Defined in NFPA 30, Section 9.7 and generally defined as follows:

- [1] A building or portion of a building within which flammable and combustible liquids are allowed to be stored, dispensed and used or handled in quantities of liquids that do not exceed those listed in NFPA 30 Table 9.6.1 or Table 9.6.2 for all liquid Classes I, II and III.
- [2] An area separated from each other by fire barriers per NFPA Table 9.7.2.

"H" Occupancy

Occupancy where the quantity of flammable liquid or other hazardous material stored exceeds the MAQ. Storing quantities above MAQ generally makes the occupancy a "hazardous occupancy" (H1-H5).

Most DENIOS Lockers, Non-Occupancy Buildings and "walk in" style Occupancy Buildings fall into these two categories:

- **H-2** – Class I, II or IIIA flammable or combustible liquids which are used or stored in NORMALLY OPEN containers or systems, or in closed containers pressured at more than 15 psig.
- **H-3** – Class I, II or IIIA flammable or combustible liquids which are used or stored in NORMALLY CLOSED containers or



4 drum locker with fire rated construction for storage of flammable liquid chemicals.

Storage of Flammable Liquids in Quantities Exceeding 120 gal (460L)

The storing of Class I, II and IIIA liquids in individual containers shall meet all the applicable requirements of NFPA 30.

Where the quantity of flammable or combustible liquids stored exceeds the MAQ, the material must be separated from the rest of the occupancy either by distance or by fire rated walls. DENIOS Lockers, Non-Occupancy Buildings and "walk in" style Occupancy Buildings are designed for this purpose.

Table 2 adjacent is designed to provide general guidance as to separation distances relative to required fire ratings. It should be used as a guideline, however, the applicable local code and the local code enforcement officials should be consulted before placing any chemical storage structure.

Table 2

Minimum Separation Distance from Storage Structure to Property Line or other Important Building	
Fire Rating (hrs)	Distance (ft)
4	0
2	10
0	30

Storage of Flammable Liquids in Chemical Storage Structures Inside an Existing Building

When flammable or combustible liquids are stored in a chemical storage structure that is less than 1500 ft² and is located inside of an existing structure, the chemical storage structure is classified as a Liquid Storage Room and must meet the requirements prescribed for same including the fire ratings in Table 2 above.

Ventilation

Chemical storage structures used for storing combustible and flammable liquids should be ventilated. The ventilation method can be either passive (natural) or mechanical (forced). When flammable or combustible liquids are being dispensed, creating vapors, then mechanical ventilation should be provided at a rate not less than 1 cu ft/min of floor area with a minimum of 150 sq ft/min.

When designing ventilation systems, be aware of the specific gravity of the actual gas/vapor. In most cases air should be drawn from a location within 12-18" of the floor as the majority of flammable liquids give off vapors that are heavier than air.

Deflagration control

Where flammable liquids are dispensed, deflagration panels or control should be provided. Where deflagration panels are provided, the exterior wall containing the panels should be a minimum of 30 feet from another building and the area adjacent to the panels should be kept clear of pedestrian traffic for 30 feet as well.

Deflagration panels may not be vented to the interior of a structure and should be directed out special shafts to the exterior or positioned on an exterior wall.

Explosion prevention systems can be provided which include LEL detectors, multiple fans and associated controls to maintain the vapor level at or below 25% of the Lower Explosive Limit (LEL).

Organic Peroxides present special challenges for storage and handling as they are temperature sensitive and can combust spontaneously if they reach certain temperatures unique to each material.

Self-Accelerating Decomposition Temperature

Organic Peroxides decompose at various temperatures giving off heat that can cause or contribute to a fire. This temperature is called Self Accelerating Decomposition Temperature, or SADT, and can be anywhere between 14°F to 392°F depending upon the material. At the SADT, the heat lost to surroundings is surpassed by the heat generated and the temperature of the material begins to rise.

The rate of decomposition increases as the temperature increases and may reach a point where it is so rapid that large quantities of heat are produced which further increase the rate. In addition to producing heat, the decomposition process can cause pressure buildup. If allowed to continue, it may become uncontrollable, leading to fire or combustion. Copious amounts of water are required when fighting organic peroxides on fire in order to cool the material back below its SADT to stop the acceleration and then extinguish the fire.

Control Temperature

Another important temperature is the CT or Control Temperature. This is the temperature at which the material can be stored or transported over a long periods of time. This temperature varies between 32 and 68 °F less than the SADT depending upon the SADT.

- $CT = SADT - 4\text{ }^{\circ}F$ if $SADT < 68\text{ }^{\circ}F$
- $CT = SADT - 5\text{ }^{\circ}F$ if $SADT > 68\text{ }^{\circ}F$ but $< 95\text{ }^{\circ}F$
- $CT = SADT - 14\text{ }^{\circ}F$ if $SADT > 95\text{ }^{\circ}F$ but $< 122\text{ }^{\circ}F$
- IF $SADT > 122\text{ }^{\circ}F$ then there is no CT.

The CT can also be thought of as the alarm temperature when storing the given material. Since it is well below the SADT it may be exceeded for short time periods due to maintenance or until alternative cooling methods are available. Still another temperature may come in to play. That is the recommended storage temperature from the manufacturer of the material. This may be even lower than the CT to prevent the material from degrading, decreasing its usefulness.

Thus the key to managing organic peroxides is temperature. If they are maintained at the appropriate temperature in accordance with the manufacturer's instructions, they can be handled and stored safely.



Redundant cooling system ensures temperature stability should primary system fail.

Proper Storage of Organic Peroxides

Storage areas for organic peroxides must also be separated from other chemicals including flammables, oxidizers, acids and alkalis by a minimum of 25 feet or a liquid tight one hour fire barrier. Class I (see definitions below) peroxides provide extra challenges as they are considered explosive. Deflagration panels and special building reinforcement are called for when storing these materials. Areas where organic peroxides are stored should be electrically classified as CL I Div 1 or Div 2 as designated by NFPA 400.

In addition controls on the refrigeration system should include over temperature alarms (usually set at the Control Temperature) and a smoke or heat detector to notify the appropriate response of a problem in the storage area. Redundant temperature control equipment or approved alternate means should be available in the event of equipment failure. Standby or emergency power should also be considered per NFPA 400.

Organic Peroxides by Definition

Organic Peroxides are divided into five classes by NFPA 400 Chapter 14 for storage, firefighting and safety reasons.

Class I is the most dangerous class of Organic Peroxides and describes those materials that present a hazard of deflagration through rapid explosive decomposition. Such materials are safe only under strictly controlled temperatures. Dibenzoyl peroxide 98% is one such material.

Class II formulations present a fire hazard similar to Class I flammable liquids such as acetone or toluene.

Class III formulations burn rapidly and present a moderate reactivity hazard. They are similar to combustible liquids such as #2 fuel oil.

Class IV describes those formulations that burn in a manner similar to ordinary combustibles. These fires are easily controlled.

Class V materials burn with less intensity than ordinary combustibles and do not present a severe fire hazard.



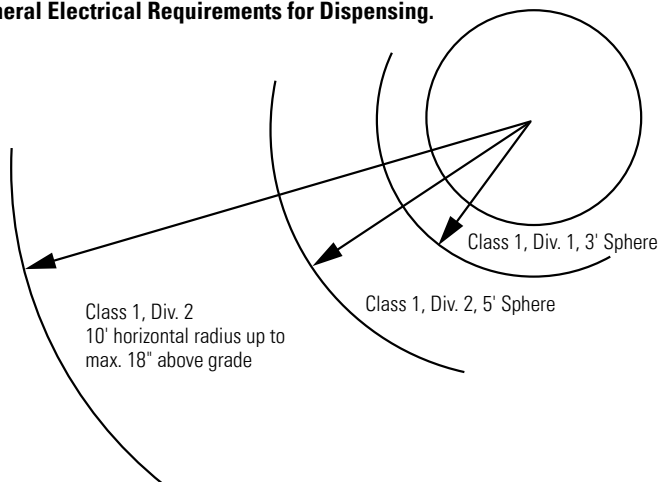
Class 1 Organic Peroxide Storage Enclosures can require deflagration panels due to the explosive hazards of the material stored.

Electrical Requirements for Chemical Storage and Dispensing

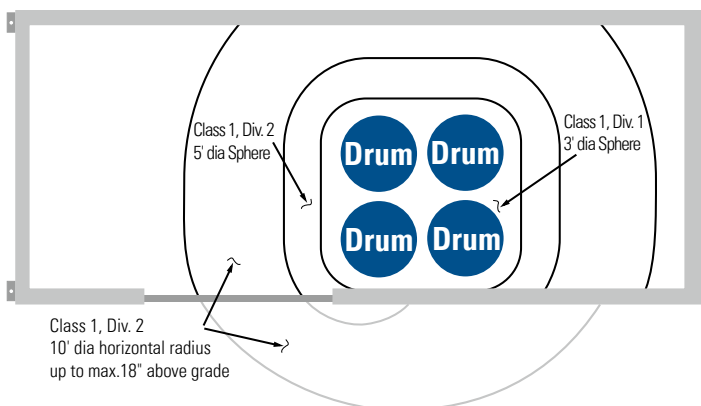
Where hazardous chemicals are stored or dispensed, special electrical requirements apply. In general for "storage only" applications where vapors may be present only in the case of a spill, the electrical classification of Class 1, Division 2 is acceptable.

In cases where dispensing of flammable liquids is taking place, the electrical requirements vary according to the distance from the point of dispensing (where the vapors are created). The diagrams below illustrate the requirements. A sphere is created around the dispensing point with a radius of 3'. Class 1, division 1 electrical requirements prevail within the sphere. A second sphere is created around the dispensing point with a radius of 5'. Everything within this sphere and outside of the 3' radius sphere is required to be class 1, Division 2. An area from the floor up to 18" above the floor and extending 10' in all directions is further included in the Class 1, Division 2 area. These principles are illustrated in the sketches below.

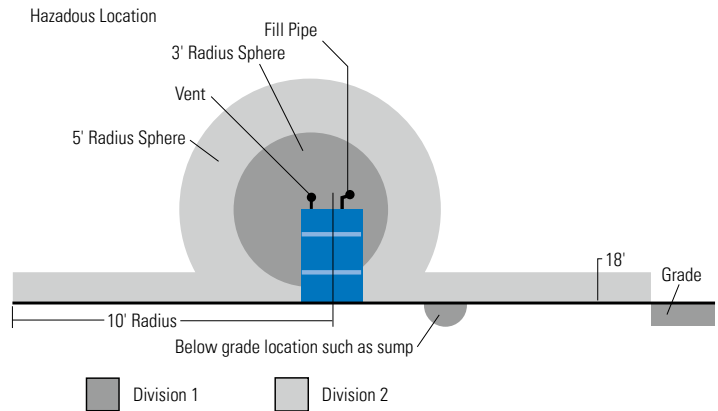
General Electrical Requirements for Dispensing.



Plan view of typical dispensing location and electrical requirements.



Elevation view of electrical requirements for dispensing.



Heating of Flammable and Combustible Liquids

Heating of flammable and combustible liquids is sometimes required to prevent freezing, manage viscosity, or condition the material for process use. Heaters used for this purpose should be explosion proof electric, steam, heated liquid or other system. Where explosion proof electric heaters are used, their set temperature is limited to 104° F by the NEC (National Electrical Code).

Explosion Proof Heaters (and other electrical appliances) should be chosen by their temperature classification, which should always be lower than the lowest auto-ignition temperature of all of the materials being stored. The table below shows the various temperature ratings available and their "T" number.

Temperature Ratings

Maximum Surface Temperature (°C)	Temperature Degrees (°F)	Identification "T" Number
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

An Overview for Safely Separating and Segregating Stored Chemicals

Whenever storing chemicals of any kind it is important to consider which chemicals can be stored together and which should definitely be separated. There are a number of schemes for separating chemicals. Some with as many as fifteen different classifications.

While this may be too complicated for most situations, it does illustrate the potential complexities in storing multiple chemicals.

As a minimum, stored chemicals should be separated into the following categories:

- I. Flammables
- II. Oxidizers
- III. Corrosives
- IV. Acids
- V. Bases
- VI. Highly Reactives (such as organic peroxides)
- VII. Extreme Toxics
- VIII. Low Hazard

While this system is simple to implement, it is important to take the actual hazards of the various chemicals into account when determining storage hierarchy. Many chemicals have multiple hazards.

The required safety data sheet (SDS) should be consulted to determine the most severe hazard so the correct storage location can be determined. Flammability is the first component to consider. Flammables should always be segregated from other chemicals. In addition oxidizers and water reactives should be further segregated so they would not contribute to a potential fire and so any fire with common flammables can be extinguished using common suppression methods i.e. water. Attention should also be paid to any chemicals that have temperature sensitivity either high or low. This is especially true for organic peroxides some of which become unstable at normal ambient temperatures.

Corrosives should be evaluated and separated accordingly. Acids and bases should be separated.

Toxics should be evaluated more stringently. This is especially true in the case of a flammable toxic which should be isolated even within its storage area to prevent accidental release.

Some chemicals do not fit neatly into a specific class but careful review of the SDS Sheet should give sufficient information to allow a measured decision as to how to segregate each chemical being stored.



What they are and why they are important. Setting the record straight.

Third party approvals for Hazardous Material Occupancy Buildings have been around since 1991 in the form of FM class 6049. FM began approving hazardous material storage buildings with the first edition of CLASS 6049 in that year. This FM "standard" has remained the defacto standard in the US, unchallenged since that time. Manufacturers that receive FM approval have submitted their designs to a third party and then to FM for review in accordance with the standard. This includes reviewing the structural integrity including floor and snow loads in accordance with the standards and the ability of the building to withstand a specific wind which is especially important in coastal areas of the US. The standard further evaluates the integrity of fire rated walls and ceiling and certifies the stated containment sump capacity. Contrary to popular opinion, UL (Underwriters Laboratories) does not have a standard for these buildings, so no manufacturer can use the "UL listed" moniker with reference to their buildings.

A FM approved Occupancy Building should be labeled as such by the manufacturer. The text of the approval document prescribes what must be on the label. This includes place of manufacture, model no., design floor, wind and snow loads, and if applicable, the fire rating of the walls. It also includes whether the building is constructed with damage limiting construction (DLC) also known as deflagration panels, and the electrical classification and temperature classification of any and all electrical equipment installed on the building.



DENIOS' FM Approved fire rated Non-Occupancy Building.

It is important to note that, even though a manufacturer has multiple items in their approval listing, there may be variations of those products that cannot be labeled as “approved”. This is because the approval listing contains specific construction parameters and characteristics that may or may not be available in a particular model series or combination of accessories.

A third party approval is important because it sets a standard of consistent quality, performance, and construction that is guaranteed by the fact that the building carries the approval. Further, in this case of FM, periodic follow up inspections of the approved company’s manufacturing site(s) are conducted by FM engineers to assure that the approved products are being manufactured in the same manner as was initially examined. Repeated violations can result in the withdrawal of the approval. While the third party approval certifies a level of engineering, quality and construction, it does not certify a fitness for a specific use nor placement in a specific location. Suitability for use and location are best determined in consultation with your local authority having jurisdiction.

While significant, the approval should be considered a minimum acceptable standard as many manufacturers go above and beyond that required for the approval. At the same time, all FM approved manufacturers may not be equal. While the FM approved moniker denotes a specific level of manufacture for basic standard Occupancy Buildings, the manufacturer’s expertise in building the actual requirements dictated by the application should also be taken into account when evaluating a particular project. For instance, experience in building heated enclosures with specific heating mediums i.e. steam, electric or oil should be evaluated if these characteristics are requirements of the project as they are not a part of the FM approval process. Further, experience in cooled or refrigerated units should be evaluated if these features are needed in the scope of the contemplated project. These characteristics are also not contemplated by the FM Approval Process.

16 x 8 storage Occupancy Building can be engineered for the storage of chemicals or housing of chemical processes.



Other drum/IBC storage enclosures approved by FM include Lockers (left) and modular Occupancy Buildings



Third Party Approvals

While the previous section details the importance and the role of 3rd party approval agencies such as FM Global, there are applications that can be contradictory. For example, FM Global's Standard 6049-2013 has greatly impacted indoor placement of chemical storage buildings. The standard calls for:

- 1-Hour Fire Rated Construction (Minimum Required)
- 25% Sump Capacity with Drain Valve
- Piping and Sprinkler Heads for Hook-Up to Plant's Fire Suppression System
- All Stored Chemicals to be Kept at Least Half the Storage Height of the Container from Any Door Opening
- An Acceptable Means of Egress by Way of a Man Door (Roll Up Doors can be Used for Loading/Unloading purposes but is not Consider a Means of Egress)



Under the new 6049, building designs like this will no longer be approved for interior placement by FM due to the use of dry chemical fire suppression.

On its face, these requirements for indoor placement could be viewed as contradicting NFPA and other accepted guidelines which only require 10% sump capacity and allow for the use of dry chemical fire suppression systems. This could be quite problematic for FM Global customers. Chemical Storage Occupancy Building manufacturers can offer solutions to meet these challenges. But the impetus falls on the end-user to make certain what is going in the facility receives the approval of the Local Authority. Again, presumably, the solution, which will satisfy both Local Authorities and FM Global, is for the chemical storage building to be placed outside of the facility.



Modular buildings are becoming more sophisticated and customized to address hazardous chemical processing applications.



Introduction

Governmental codes and regulations dictate the correct selection and placement of hazardous chemical storage Lockers, Non-Occupancy Buildings and Occupancy Buildings. The characteristics of the stored material i.e. flammability, pH, material storage temperature, the size and type of container(s), the total quantity stored, and the storage location in relation to other structures will determine which code(s) and regulations pertain to your application.

Regulations and Codes of note that may affect your storage application are NFPA 30 "Storage of Flammable Liquids", the IBC and IFC.

"International Building Code" and International Fire Code", as well as the code of Federal regulations 40 CFR 264.175 concerning containment and 29 CFR 1910 (OSHA). Additionally independent third party testing agencies such as Factory Mutual have developed standards for the storage of flammable and other hazardous materials. DENIOS sells and produces Factory Mutual approved products.

DENIOS sales and engineering professionals are well versed in the requirements of applicable codes as they pertain to the storage of hazardous chemicals. However, the local code enforcement official or "Authority Having Jurisdiction" is the official closest to the situation with the responsibility to interpret the applicable codes in the light of all local factors. The local "AHJ" should always be consulted before purchasing any type of hazardous material storage equipment. DENIOS is always available to assist its customers with supplementary information to support approval process.

DENIOS' Quality Assurance Program

As part of our ongoing commitment to quality, DENIOS maintains a formalized, structured Quality Assurance Program. This program mandates that designs are checked and rechecked by 3rd Party Engineering firms for structural loading, seismic, and other code compliance factors.

DENIOS equipment is also engineered to satisfy any number of regulatory agencies including:

- NFPA – National Fire Protection Association
- IBC – International Building Code
- EPA – Environmental Protection Agency
- OSHA – Occupational Safety and Health Administration
- FM / FM Global

Concerning equipment manufacture, our Quality Assurance Program also ensures all products are thoroughly inspected and tested before shipping. Tests range from, but are not limited to, pre-paint sump weld leak tests to temperature control tests for our heated and cooled structures. Testing is documented and witnessed by our Engineering, Technical Sales, and Production staffs.

The DENIOS System

The DENIOS System of storage Lockers, Occupancy Buildings, and Non-Occupancy Buildings specifically address the material handling and processing needs of the client. All our structures are designed for placement indoors or out and can be easily relocated via crane or forklift. All provide options for fire rating, explosion protection, and temperature control. All designs address what and how much is being stored and how often it needs to be handled. And all are compliant.

Lockers:

Engineered for small volume storage and processing, Lockers will accommodate 2-14 drums or 1-2 intermediate bulk containers. Available door styles allow for easy access to the chemicals by forklift. Typical uses include exterior storage of flammables and combustibles, remote storage and dispensing stations for truck and rail terminals, and insulated and heated storage for processing and freeze protection.

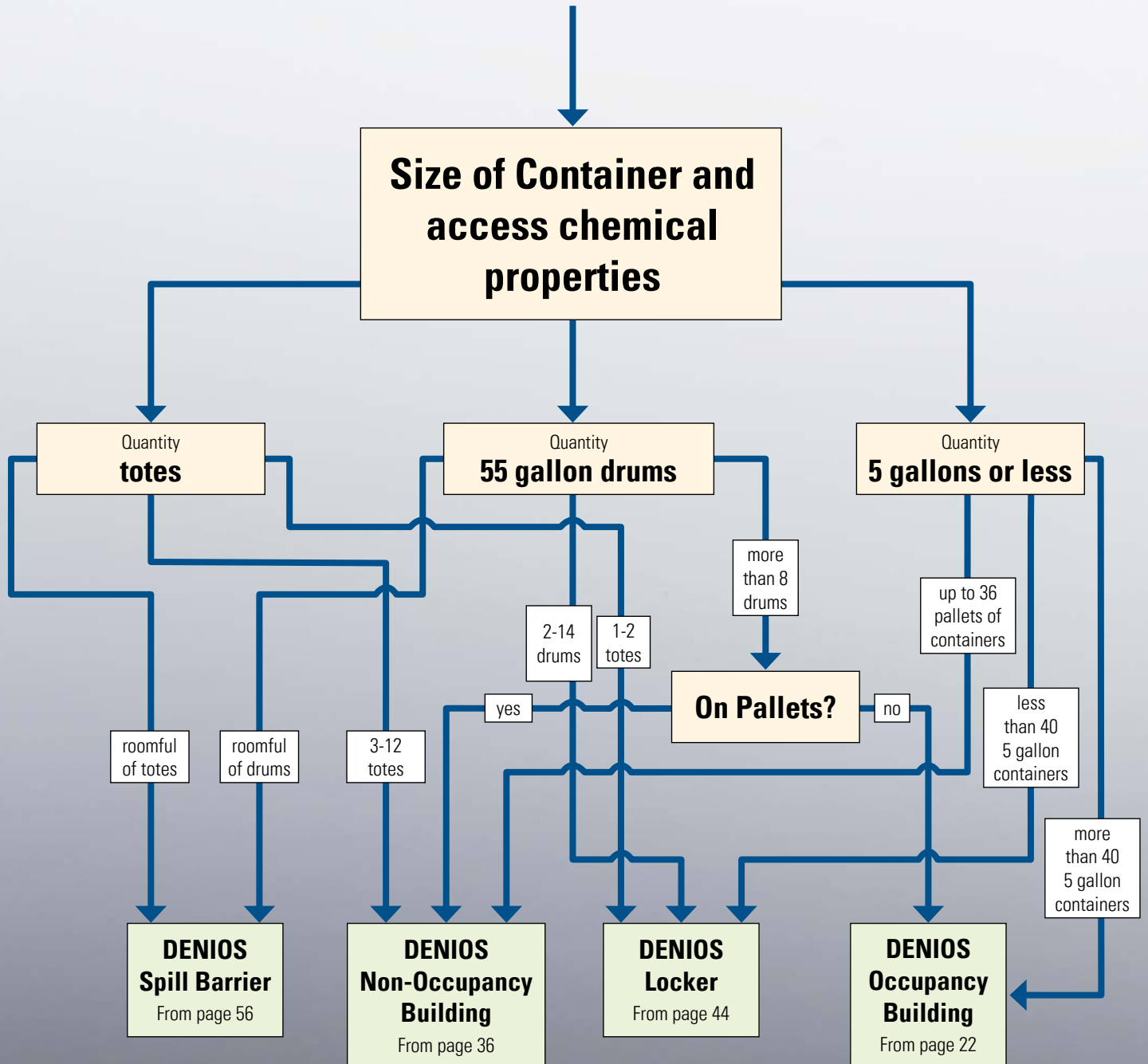
Non-Occupancy Buildings:

Designed for large volume storage needs, Non-Occupancy Buildings come with single- or double-sided access and provide up to three tiers and 12 bays of storage space. A variety of door styles all allow for forklift access to every stored pallet of drums, thus simplifying handling and eliminating any personnel exposure to chemicals or fumes inside the Non-Occupancy Building.

Occupancy Buildings:

Often utilized for housing dangerous processes such as mixing and pumping flammable paints and resins, Occupancy Buildings provide a secure enclosure isolating any hazardous chemical dispensing, mixing, and processing away from personnel and the rest of the facility.

Chemical Storage Requirement



A Safer Storage Alternative

DENIOS is the pioneer in the development of Drum and IBC Non-Occupancy Storage Buildings as a safer and more efficient alternative to walk-in buildings for chemical storage.

The non-occupancy design of Non-Occupancy Buildings, featuring full-face opening door styles, allows all materials to be moved via forklift, relieving personnel from having to enter a potentially hazardous environment.

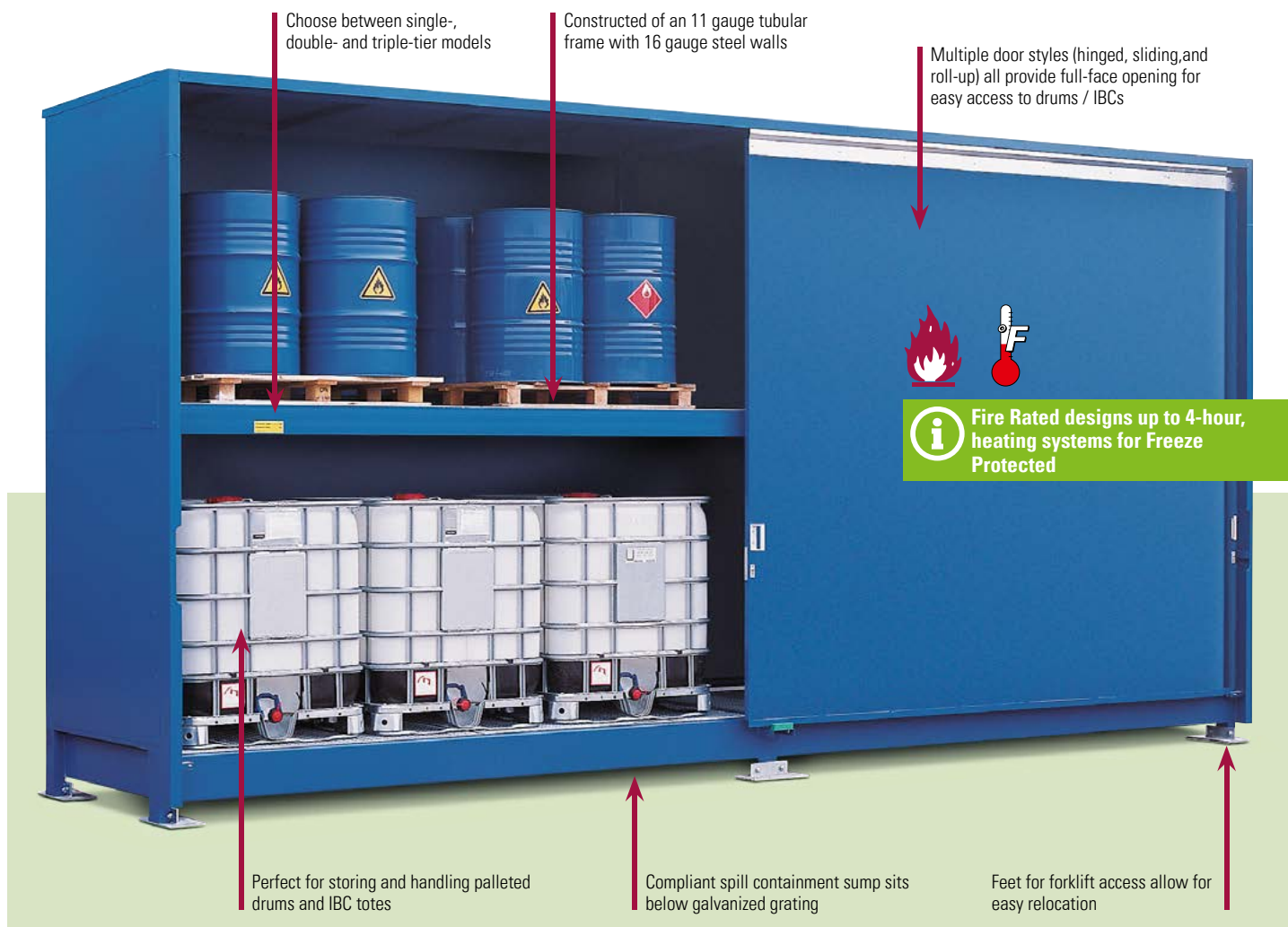
DENIOS manufactures the widest variety of styles of Non-Occupancy Buildings available on the market today. Choose between single- or multi-tiered designs with either single- or double-sided access. Non-Occupancy Buildings are suitable for indoor or outdoor placement and provide complete physical separation of stored chemicals from the surrounding facility and / or from other incompatible chemicals or ignition sources.

Sizes and Styles:

- 48 standard configurations of base models
- Individual storage bays sized for 2 or 3 pallets of drums or 2 or 3 IBC's
- Bays are arranged in configurations offering single-, double- or triple-tier heights
- Models are available with single-sided or double-sided access (back-to-back bays)
- All units are built to accommodate outdoor placement

Common Applications for Non-Occupancy Buildings:

- Segregated indoor or outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of raw materials
- Higher volume waste accumulation and storage areas



Applicable Regulations

DENIOS Non-Occupancy Buildings meet the federal requirements for spill containment of hazardous liquids as regulated by the EPA (40 CFR).

DENIOS follows NFPA 30 regulations for specification compliance for outdoor (Flammable Storage Lockers) as well as indoor (Inside Liquid Storage Rooms) placement.

Although not designated as Occupancies or Structures, load ratings for Non-Occupancy Buildings (seismic, wind and roof) generally follow the same guidelines as provided for pre-fabricated Occupancy Buildings.

Non-Occupancy Building designs are able to be provided with 3rd Party Engineering Approvals.

Due to local code variance and different enforcement philosophies, DENIOS always recommends checking with the local Authority Having Jurisdiction to verify that a specific configuration will comply with local codes.

For your further reference

Hazardous materials storage is regulated by EPA at the federal level by the Code of Federal Regulations (40 CFR).

At the state and local level, Fire Codes such as IFC, UFC, NFPA 30 (Storage and Handling of Flammable Liquids), Building Codes (UBC & IBC) and other requirements specific to State and Local jurisdictions may also apply. Typical local code issues include: wind load, snow load, seismic zone, fire rating and separation of flammable storage from the nearest building.

Benefit from our Experience

DENIOS has been designing and manufacturing chemical storage enclosures for over 25 years.

By working closely with customers in solving their unique storage challenges, we have been able to translate those solutions into standard products which can provide compliant storage for a majority of industries and applications.

How should substances be stored?



Storing drums directly



Storing IBCs



Insulated system

Range of door options- all doors lockable



Sliding doors



Hinged doors



Roll-up doors



Roofing systems can be added to Non-Occupancy Buildings or Occupancy Buildings to create covered storage warehouses.

- International Fire Code (IFC)
- International Building Code (IBC)
- Code of Federal Regulations (CFR)
- Environmental Protection Act (EPA)
- National Fire Protection Assn. (NFPA)
- Uniform Fire Code (UFC)
- Uniform Building Code (UBC)
- FM 6049

Exclusive to DENIOS, FM Approval (Class 6049) Non-Occupancy Storage Buildings The First Non-Occupancy Building to Meet the Standard

Third party approvals for Hazardous Material Occupancy Buildings have been around since 1991 in the form of FM class 6049. FM began approving hazardous material storage Occupancy Buildings with the first edition of CLASS 6049 in that year. This FM "standard" has remained the defacto standard in the US, unchallenged since that time. Manufacturers that receive FM approval have submitted their designs to a third party and then to FM for review in accordance with the standard. This includes reviewing the structural integrity including floor and snow loads in accordance with relevant building codes. This becomes essential in certain coastal areas and mountainous locations. The standard further evaluates the integrity of fire rated walls and ceiling and certifies the stated containment sump capacity.

A FM approved Occupancy Building should be labeled as such by the manufacturer. The text of the approval document prescribes what must be on the label.

DENIOS Buildings are labeled via data plate with following info:

- Place of manufacture
- Model number
- Design floor
- Wind and Snow Loads
- Fire rating of walls

It also includes whether the Occupancy Building is constructed with damage limiting construction (DLC) also known as deflagration panels, and the electrical classification and temperature classification of any and all electrical equipment installed on the building.



DENIOS' FM Approved fire rated Non-Occupancy Building.



- Vent hoods included
- Bays are arranged in configurations offering single- or double- heights
- Models are available with single-sided access
- Multiple door choices include hinged and sliding designs
- All units are built to accommodate outdoor placement
- Segregated outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of liquid chemicals
- Higher volume waste accumulation and storage areas

Contact Us!

For questions about any of your hazardous chemicals storage or processing needs, contact us at:



800-216-7776

info@denios-us.com



The sliding doors open, providing easy access to the stored drums, Order no. L30-3202-E0

Tiers / Bays Structure	Order number*	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/IBCs)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight
	L30-0801-E0	138 x 65 x 99	8 Drums	1	1	1	108 x 50 x 80	141	HD	2,000
	L30-1602-E0	251 x 65 x 95	16 Drums	1	1	2	108 x 50 x 80	289	SD	3,600
	L30-1611-E0	138 x 65 x 129	16 Drums	1	2	2	108 x 50 x 50	230	HD	2,900
	L30-2402-E0	343 x 65 x 95	24 Drums	1	1	2	154 x 50 x 80	409	SD	4,600
	L30-3202-E0	251 x 65 x 126	32 Drums	1	2	4	108 x 50 x 50	470	SD	5,100
	L30-4802-E0	343 x 65 x 126	48 Drums	1	2	4	154 x 50 x 50	665	SD	6,600

*More sizes and configurations available - call for details

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

- Vent hoods included
- Individual storage bays sized for 2 or 3 pallets of drums or 2 or 3 IBC's
- Bays are arranged in configurations offering single- or double-tier heights
- Models are available with single-sided access
- Roll-up doors are 3-hour fire rated

- All units are built to accommodate outdoor placement
- Segregated indoor and/or outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of liquid chemicals



FM Approved Non-Occupancy Buildings — Non-Combustible, IBCs

Tiers / Bays Structure	Order number*	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/IBCs)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L31-0402-E0	251 x 65 x 100	4 IBCs	1	1	2	108 x 50 x 61	470	SD	3,800
	L31-0411-E0	138 x 65 x 158	4 IBCs	1	2	2	108 x 50 x 80	371	HD	3,200
	L31-0602-E0	343 x 65 x 100	6 IBCs	1	1	2	154 x 50 x 80	660	SD	4,800
	L31-0611-E0	184 x 65 x 158	6 IBCs	1	2	2	154 x 50 x 61	529	HD	4,100
	L31-0802-E0	251 x 65 x 154	8 IBCs	1	2	4	108 x 50 x 61	759	SD	5,200
	L31-1202-E0	343 x 65 x 154	12 IBCs	1	2	4	154 x 50 x 61	1,076	SD	7,300

*More sizes and configurations available - call for details

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

2-Hour and 4-Hour Fire Rated, Single-Sided Access



Fire-rated design options for either 2 or 4 hour duration




DENIOS – Leading Supplier of FM Approved Chemical Containment Products.








Note: 150 MPH construction available for high wind areas. Contact us for details.





Tiers / Bays Structure	Order number*	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/IBCs)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
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
FM Approved Non-Occupancy Buildings — 2-Hr Fire Rated, Drums/IBCs

	L32-0823-E0	156 x 89 x 125	8 Drums / 2 IBCs	1	1	1	115 x 51 x 80	353	RD	5,800
	L32-1233-E0	213 x 89 x 121	12 Drums / 3 IBCs	1	1	1	172 x 51 x 80	352	RD	7,400
	L32-1643-E0	289 x 91 x 119	16 Drums / 4 IBCs	1	1	2	115 x 51 x 80	364	RD	11,900
	L32-2463-E0	403 x 91 x 119	24 Drums / 6 IBCs	1	1	2	172 x 51 x 80	535	RD	17,100





FM Approved Non-Occupancy Buildings — 2-Hr Fire Rated, Drums

	L32-3203-E0	289 x 91 x 149	32 Drums	1	2	4	108 x 50.5 x 50	479	RD	14,600
	L32-4803-E0	403 x 91 x 149	48 Drums	1	2	4	162 x 50.5 x 50	706	RD	20,800



FM Approved Non-Occupancy Buildings — 2-Hr Fire Rated, IBCs

	L33-0403-E0	156 x 89 x 173	4 IBCs	1	2	2	108 x 50.5 x 60	353	RD	7,600
	L33-0803-E0	289 x 91 x 173	8 IBCs	1	2	4	108 x 50.5 x 60	744	RD	15,700
	L33-1203-E0	403 x 91 x 173	12 IBCs	1	2	4	162 x 50.5 x 60	1,059	RD	22,300




FM Approved Non-Occupancy Buildings — 4-Hr Fire Rated, Drums/IBCs

	L34-0823-E0	157 x 91 x 125	8 Drums / 2 IBCs	1	1	1	115 x 50.5 x 80	353	RD	9,600
	L34-1233-E0	214 x 91 x 121	12 Drums / 3 IBCs	1	1	1	172 x 50.5 x 80	352	RD	11,900
	L34-1643-E0	293 x 91 x 119	16 Drums / 4 IBCs	1	1	2	115 x 50.5 x 80	364	RD	17,400
	L34-2463-E0	407 x 91 x 119	24 Drums / 6 IBCs	1	1	2	172 x 50.5 x 80	353	RD	23,000

FM Approved Non-Occupancy Buildings — 4-Hr Fire Rated, Drums

	L34-3203-E0	293 x 91 x 149	32 Drums	1	2	4	108 x 50.5 x 50	479	RD	21,500
	L34-4803-E0	407 x 91 x 149	48 Drums	1	2	4	162 x 50.5 x 50	706	RD	28,300

FM Approved Non-Occupancy Buildings — 4-Hr Fire Rated, IBCs

	L35-0403-E0	157 x 91 x 173	4 IBCs	1	2	2	108 x 50.5 x 60	353	RD	13,100
	L35-0803-E0	293 x 91 x 173	8 IBCs	1	2	4	108 x 50.5 x 60	744	RD	23,700
	L35-1203-E0	407 x 91 x 173	12 IBCs	1	2	4	162 x 50.5 x 60	1,059	RD	31,100

*More sizes and configurations available - call for details

Non-Combustible Non-Occupancy Chemical Storage Buildings - Single-Sided Access

DENIOS has the most complete line of Non-Occupancy Buildings for storing drums.

Non-Occupancy Buildings provide highly efficient storage. All products can be accessed from outside the Non-Occupancy Building. No need to manhandle individual drums.



Double-tiered storage Non-Occupancy Building with custom paint color and hinged doors holds 16 drums.



All Non-Occupancy Building door styles provide easy access to stored drums or totes.

- Vent hoods included
- Individual storage bays sized for 2 or 3 pallets of drums
- Bays are arranged in configurations offering single or double-tier heights
- Multiple door choices include hinged, sliding, and roll-up designs

- Segregated outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of liquid chemicals
- Higher volume waste accumulation and storage areas

Note: 150 MPH construction available for high wind areas. Contact us for details.



Double-tiered storage Non-Occupancy Building with hinged doors holds 16 drums.

Optional Accessory



Heating



Sprinkler Systems for wet



Dry Chem System








Temperature Regulators



Cooling Systems



Exhaust Fans

Tiers / Bays Structure	Order number	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/ IBCs)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L80-0801-E0	150 x 56 x 106	8 Drums	1	1	1	120 x 50 x 88	158	HD	2,200
	L80-1601-E0	275 x 56 x 106	16 Drums	1	1	2	120 x 50 x 88	323	HD	4,000
	L80-2401-E0	343 x 56 x 106	24 Drums	1	1	2	154 x 50 x 50	411	HD	4,800
	L80-3201-E0	275 x 56 x 122	32 Drums	1	2	4	120 x 50 x 50	323	HD	5,400
	L80-7211-E0	502 x 56 x 122	72 Drums	1	2	6	154 x 50 x 50	600	HD	8,800

Note: Not all models shown. Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

Single-Sided Access

These Storage Non-Occupancy Buildings have been specially designed for Intermediate Bulk Containers (IBCs).



Single-tiered storage Non-Occupancy Building with sliding doors (standard) for 4 IBC totes saves facility space. Building in picture features optional fire-rated design and fire suppression system.

- The sump volume exceeds mandatory Federal Regulations
- Full-face opening doors provide access to IBCs without the need to physically enter the structure
- Sump of heavy gauge steel for extended life
- Sump welds are 100% inspected with a low-viscous test to insure leaktightness
- Sump volumes meet EPA & NFPA requirements
- Removable grating for easy clean-up
- Extra strength, tubular steel construction
- Coated with a durable, corrosion and weather resistant finish
- Grounding package includes grounding lug, connection wire, and rod








Added tier height and spill pallet capacity make IBC Tote Non-Occupancy Buildings also suitable for drum storage.



Note: Not all models shown. Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.

Single-Sided, Non-Occupancy Buildings — Non-Combustible (NOTE: Where two different bay dimensions are given, both sizes are incorporated in the design. Contact factory for details.)


Tiers / Bays Structure	Order number	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/ IBCs)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L81-0201-E0	150 x 56 x 106	2 Drums	1	1	1	120 x 50 x 81	388	HD	2,300
	L81-0401-E0	150 x 56 x 153	4 Drums	1	2	2	120 x 50 x 61	388	HD	2,650
	L81-0611-E0	343 x 56 x 106	6 Drums	1	1	2	154 x 50 x 88	465	HD	4,800
	L81-0801-E0	275 x 56 x 147	8 Drums	1	2	4	120 x 50 x 61	388	HD	5,500
	L81-1201-E0	343 x 56 x 147	12 Drums	1	2	4	154 x 50 x 61	465	HD	6,500

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

Optional Accessory


Smoke / Heat Detectors & Fire Alarms

For the protection of fire proof containers it is important that an early warning system is installed. DENIOS uses certified multi sensors for this purpose. Smoke and fire detection is quick, reliable and can be installed in conjunction with a siren. The alarm system can be connected to the main alarm system.




Alarm Lights

In addition to audible alarms, DENIOS can provide alarm lights to work in conjunction with the main alarm system. Thus enhancing the warnings effectiveness to personnel.




LLDPE and Stainless Steel Sump Liners

When storing acids, alkalis or other aggressive substances, it is recommended that sump liners be installed. These can be manufactured both in PE and stainless steel.



Grounding Kits

Grounding kits are required to avoid an electric discharge between the container and other conductive units. All DENIOS HazMat containers can be fitted with an accessory to avoid discharges. These are highly recommended for containers storing explosive materials.



Great for facilities with inventories of flammable products / chemicals. Non-Occupancy Buildings can easily be placed in existing storage aisles – easing material handling and eliminating the need for costly reconstruction. Modular designs also ease relocation when space/storage needs change.

Contact Us!

For questions about any of your hazardous chemicals storage or processing needs, contact us at:



800-216-7776

info@denios-us.com



Note: 150 MPH construction available for high wind areas. Contact us for details.



2-Hour Fire-Rated Non-Occupancy Chemical Storage Buildings with Single-Sided Access

(NOTE: Where two different bay dimensions are given, both sizes are incorporated in the design. Contact factory for details.)

Tiers / Bays Structure	Order number	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/IBC's)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L82-0801-E0	160 x 60 x 112	8 Drums	1	1	1	120 x 50 x 88	158	HD	4,200
	L82-1601-E0	285 x 60 x 112	16 Drums	1	1	2	120 x 50 x 88	323	HD	8,800
	L82-2401-E0	353 x 60 x 112	24 Drums	1	1	2	154 x 50 x 50	411	HD	10,500
	L82-3201-E0	285 x 60 x 128	32 Drums	1	2	4	120 x 50 x 50	323	HD	10,500
	L82-7211-E0	512 x 60 x 128	72 Drums	1	2	6	154 x 50 x 50	600	HD	17,700



Note: Not all models shown. Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

- Individual storage bays sized for 2 or 3 pallets of drums
- Bays are arranged in configurations offering single- or double-tier heights
- Multiple door choices include hinged, sliding, and roll-up designs
- Hinged and sliding doors employ fire resistant construction
- Roll-up doors are 3-hour fire rated
- Fire-Rated units are built to accommodate both indoor and outdoor placement






- Segregated outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of liquid chemicals
- Higher volume waste accumulation and storage areas
- Passive vent and hood included


**Comprehensive and worry-free.
Service & maintenance from DENIOS.
Request more information now!**
www.denios-us.com/expertise-advice



4-Hour Fire-Rated Non-Occupancy Chemical Storage Buildings with Single-Sided Access

(NOTE: Where two different bay dimensions are given, both sizes are incorporated in the design. Contact factory for details.)

Tiers / Bays Structure	Order number	External Dimensions (vent hoods included) W x D x H [in]	Total Capacity per Unit (Drums/IBC's)	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L84-0801-E0	162 x 61 x 112	8 Drums	1	1	1	120 x 50 x 88	158	HD	7,000
	L84-1601-E0	287 x 61 x 112	16 Drums	1	1	2	120 x 50 x 88	323	HD	13,100
	L84-2401-E0	355 x 61 x 112	24 Drums	1	1	2	154 x 50 x 50	411	HD	15,800
	L84-3201-E0	287 x 61 x 128	32 Drums	1	2	4	120 x 50 x 50	323	HD	15,400
	L84-7211-E0	514 x 61 x 128	72 Drums	1	2	6	154 x 50 x 50	600	HD	26,000



Note: Not all models shown. Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.




Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

- Vent hoods included
 - Individual storage bays sized for 2 or 3 pallets of drums or 2 or 3 IBC's
 - Bays are arranged in configurations offering single-, double- or triple-tier heights
- Models are available with single-sided or double-sided access (back-to-back bays)
 - Multiple door choices include hinged, sliding, and roll-up designs
 - Hinged and sliding doors employ fire resistant construction

Great for facilities with inventories of flammable products / chemicals. Non-Occupancy Buildings can easily be placed in existing storage aisles – easing material handling and eliminating the need for costly reconstruction. Modular designs also ease relocation when space/storage needs change.

2-Hour Fire Rated, Single-Sided Access



Tiers / Bays Structure	Order number*	Total IBC Capacity per Unit	External Dimensions (vent hoods included) W x D x H [in]	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L83-0801-E0	8	285 x 60 x 152	1	2	4	120 x 50 x 61	388	HD	11,500
	L83-1601-E0	16	285 x 108 x 152	2	2	8	120 x 50 x 61	715	HD	17,980
	L83-2401-E0	24	353 x 108 x 152	2	2	8	154 x 50 x 61	867	HD	24,000

*More sizes and configurations available - call for details

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

- Roll-up doors are 3-hour fire rated
- All units are built to accommodate both indoor and outdoor placement
- Segregated outdoor storage of flammable or other process chemicals
- Separation of flammable liquids from general warehousing areas
- Temperature controlled outdoor storage of liquid chemicals
- Higher volume waste accumulation and storage areas

Engineered options for DENIOS 2 and 4 hour fire rated enclosures may include: 1. Deflationary panels to redirect destructive forces in case of an explosion, 2. Fire, fume or leak detection alarms, 3. Dry or wet fire suppression systems, 4. Ventilation systems to remove noxious or ignitable fumes, 5. Spill containment sumps which meet/exceed EPA, UFC, NFPA and OSHA regulations, 6. Heating and cooling options for temperature sensitive chemicals, 7. Special coating and materials for the storage of acids, caustics or corrosives.




4-Hour fire rated, Double-Sided Access


Go online! Discover even more exciting product highlights!
www.denios-us.com/shop



Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.



All Buildings are also available with Access from both sides

Tiers / Bays Structure	Order number*	Total IBC Capacity per Unit	External Dimensions (vent hoods included) W x D x H [in]	Access Sides	Number of Storage Tiers	Number of Storage Bays	Bay Dimensions W x D x H (in)	Sump Capacity [gal]	Door Type	Shipping Weight [lbs]
	L85-0801-E0	8	287 x 61 x 152	1	2	4	120 x 50 x 61	388	HD	17,300
	L85-1601-E0	16	287 x 108 x 152	2	2	8	120 x 50 x 61	715	HD	22,400
	L85-2401-E0	24	355 x 108 x 152	2	2	8	154 x 50 x 61	867	HD	27,000

*More sizes and configurations available - call for details


Note: Not all models shown. Models shown are for hinged doors only, sliding and roll-up door styles also available. Please visit www.denios-us.com or call factory for details.

Door Types: HD = Hinged Door
SD = Sliding Door
RD = Roll-Up Door

Secure and Store Hazardous Chemicals and Processes Away from Personnel / Facilities

DENIOS Occupancy Chemical Storage Building designs provide more storage flexibility, enhancing the efficiency of the structure over competitive models. Choose from over 25 standard sizes to provide the optimal space for storing your hazardous chemicals or processes.

Designed for occupancy by personnel, DENIOS also provides numerous options to enhance safety, efficiency, and security in all our Occupancy Buildings. DENIOS Chemical Storage Occupancy Buildings carry FM Approval.

Sizes and Styles

- Available in 8, 10 and 12 foot widths with lengths from 8 to 52 feet
- All units are built to accommodate indoor or outdoor placement. Door styles include hinged doors and roll-up doors and can be designed in multiple configurations
- Non-Combustible, fire rated, and temperature controlled models available

Popular Applications

- Process enclosures: Pumping, mixing, dispensing, paint kitchen
- Remote storage: Waste collection, fuel dispensing
- Agricultural chemical storage: Parks and recreation, golf courses
- Secured storage and separation: Toxic, dangerous, valuable materials
- HazMat storage of drums handled by hand
- Fuel component enclosures
- Battery storage & test enclosures
- HHHW - Household hazardous waste

Occupancy Building with optional shelving and door sets for oils and lubricants storage and processing



DENIOS - Leading Supplier of FM Approved Chemical Containment Products.



Applicable Regulations

DENIOS designs its HazMat storage Occupancy Buildings to be compliant with all recognized National Codes and generally accepted national standards.

In addition to federal and local regulations, risk management organizations such as Factory Mutual (FM Global) have developed their own standards.

Most DENIOS HazMat storage Occupancy Buildings for outdoor placement can be shipped bearing the FM approval label.

Industries

- Food
- Automotive
- Pharmaceutical
- Cannabis
- Chemical and Allied
- Building Material
- Warehouse and Distribution

For your further reference

Hazardous materials storage is regulated by EPA at the federal level by the Code of Federal Regulations (40 CFR).

At the state and local level, Fire Codes such as IFC, UFC, NFPA 30 (Storage and Handling of Flammable Liquids), Building Codes (UBC & IBC) and other requirements specific to State and Local jurisdictions may also apply.

Typical local code issues include: wind load, snow load, seismic zone, fire rating and separation of flammable storage from the nearest building.

Due to local code variance and different enforcement philosophies, DENIOS always recommends checking with the local Authority Having Jurisdiction to verify that a specific configuration will comply with local codes.



Fire Rated designs up to 4-hour, heating systems for Freeze Protected



Introduction to Occupancy Chemical Storage Buildings



DENIOS Occupancy Building designs include 2- and 4-hour fire rated construction.



This 28 x 8 storage Occupancy Building holds up to 39 drums. Seen here with optional door sets and integrated shelving package.

Non-Combustible

Your Solution to Securing and Storing Hazardous Chemicals and Processes

Walk-In / Occupancy Buildings are ideal for storing drums and smaller containers when frequent access is required to store, mix or dispense. Once inside, you are able to work with the materials over an internal spill sump. These Premium non-combustible structures feature solidly welded frame construction and can be fire rated, insulated, heated or cooled as individual requirements dictate.

Maximize your storage capabilities by adding shelving around the perimeter of the Walk-In Occupancy Building to store small containers along with your 55-gallon drums.



DENIOS – Leading Supplier of FM Approved Chemical Containment Products.



Note: 150 MPH construction available for high wind areas. Contact us for details.




- Vent hoods included
- All units are built to accommodate indoor or outdoor placement
- Hinged Man doors are standard, optional door sets available
- Buildings come ready for placement/use and can be moved via fork truck or crane
- Process enclosures: Pumping, mixing, dispensing, paint mixing rooms
- Remote storage: Waste collection, fuel dispensing

- Secured storage and separation: Toxic, dangerous, valuable materials
- HazMat storage of drums handled by hand
- Fuel component enclosures
- Battery testing enclosures
- Available in 8, 10 and 12 foot widths with lengths from 8 to 52 feet

Contact Us!

For questions about any of your hazardous chemicals storage or processing needs, contact us at:


800-216-7776
info@denios-us.com



16 x 8 storage Occupancy Building can be engineered for the storage of chemicals or housing of chemical processes.



Occupancy Buildings provide compliant secondary containment sumps below a grated surface.

Order number	Total Capacity per Unit (8 Ft Wide 3 Drums Deep)	Floor Load Capacity [psf]	Sump Capacity [gal]	Internal Dimensions W x D x H [in]	External Dimensions (vent hoods included) W x D x H [in]	Shipping Weight [lbs]
L53-0808-E0	9 Drums	250	205	89 x 88.5 x 86	120 x 96 x 108	3,400
L53-1608-E0	21 Drums	250	425	185 x 88 x 86	216 x 96 x 108	5,800
L53-2408-E0	33 Drums	250	646	281 x 88 x 86	312 x 96 x 108	8,300
L53-3208-E0	45 Drums	250	867	377 x 88.5 x 86	408 x 96 x 108	10,700
L53-3608-E0	51 Drums	250	977	425 x 88.5 x 86	456 x 96 x 108	11,900
L53-4408-E0	63 Drums	250	1,198	521 x 88.5 x 86	552 x 96 x 108	14,400
L53-5208-E0	75 Drums	250	1,418	617 x 88.5 x 86	648 x 96 x 108	16,800


2-Hour Fire Rated, 4-Hour Fire Rated, and Hurricane Rated models available.

Engineered Solutions For Your Application

DENIOS Engineering leads the industry in the design and manufacture of customized enclosures designed for the safe storage of chemicals.

We provide solutions for the safe storage of:

- Flammables or flammable / explosive processes
- Acids or caustic chemicals
- Temperature sensitive chemicals, whether for preservation heating / cooling or process heating / cooling
- Completely customized enclosures provide added access for personnel, material handling equipment, or the incorporation of the structure into your existing processes or facilities



Fire rated Occupancy Building with custom door set to improve access.

Contact Us!
For questions about any of your hazardous chemicals storage or processing needs, contact us at:



800-216-7776
info@denios-us.com



Modular buildings are becoming more sophisticated and customized to address hazardous chemical processing applications.



This engineered Occupancy Building for the storage and processing of acids includes personnel showers, material handling crane, manway door and fiberglass grating.

Occupancy Buildings for housing hazardous processes - Process Buildings

With the addition of standard and custom options and engineered construction, DENIOS Occupancy Buildings are frequently utilized to house hazardous processes like pumping, mixing, heating, and dispensing. Designs include 2- and 4-hour fire rated construction as well as damage limited wall panels.

Process Applications include:

- Paint kitchens
- Pumping operations
- Battery testing enclosures
- Fuel component enclosures

DENIOS Engineering provides you:

- A complete understanding of hazardous chemicals and chemical processes
- Expert knowledge of regulations and fire codes
- A technical sales staff and engineering department working with you every step of the way in designing a safe storage solution for your unique application



Customized oil storage unit provides access to drums via forklift as well as a manway.



Occupancy Buildings allow for remote placement, while still providing ample work space for periodic occupancy of personnel.

Smoke / Heat Detectors & Fire Alarms

For the protection of fire proof containers it is important that an early warning system is installed. DENIOS uses certified multi sensors for this purpose. Smoke and fire detection is quick, reliable and can be installed in conjunction with a siren. The alarm system can be connected to the main alarm system.



Temperature Regulators

DENIOS uses the most up-to-date temperature regulators to ensure user friendly programming of required temperatures. The majority of DENIOS regulators can be programmed and adjusted on the main control box on the exterior of the container.



Alarm Lights

In addition to audible alarms, DENIOS can provide alarm lights to work in conjunction with the main alarm system. Thus enhancing the warnings effectiveness to personnel.



Gas Detectors

If poisonous gases are allowed to escape then early detection is a vital requirement. DENIOS can provide gas warning detectors where a pre-set level can be set and when reached an audible or visual alarm or both will occur.



Sprinkler Systems

Sprinkler systems provide extra safety in containers used to store flammable and non-flammable substances. DENIOS offers several types of sprinkler systems. We can provide, standard, heavy foam, powder, Novec or CO2 systems.



Dry Chem systems

Dry Chem systems provide extra safety in containers used to store flammable and non-flammable substances. DENIOS offers a wet or dry system.



Fire Dampers

Where air circulation is required, fire dampers can be installed featuring automatic closing air vent mechanisms. These close automatically as soon as fire is detected, thus cutting off the supply of oxygen to the fire source in the container.



Leak Detector

Leak detectors can be installed in sumps to detect any leakage from container contents. The alarm can be audible, visual or both. Early detection allows prompt action to be taken.



Explosion Relief Panels

Explosion Relief Panels are built into the rear of a Building. In case of an ignition / explosion of the stored drums, relief panel detaches from the Building, diverting destructive forces away from personnel and facilities, protecting the integrity of the Building and preventing any explosion caused shrapnel.



Cooling

DENIOS engineering provides precise solutions to temperature control, such as cooling units and air conditioning systems. With DENIOS expertise, we always have a solution for your needs.



Grating

DENIOS fire proof containers are fitted with galvanized grating as standard. Alternative grating are available: when storing aggressive substances, stainless steel grating or fiberglass grating can be provided.



Fire Prevention Air Vents

Where air circulation is required, fan-forced air vents can be installed featuring automatic closing air vent mechanisms. These close automatically as soon as fire is detected, thus cutting off the supply of oxygen to the fire source in the container.



Heating

Many substances require optimal heating to maintain quality. DENIOS provides heating systems using electric or steam heat.



Sump Liners

When storing acids, alkalis or other aggressive substances, it is recommended that sump liners be installed. These can be manufactured both in PE and stainless steel.



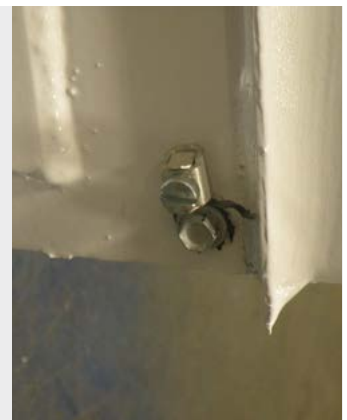
Insulation

The walls of our HazMat insulated system containers guard against loss of energy, temperature and frost damage. DENIOS uses different types of material ranging from a thickness of 60 to 125 mm.



Grounding Kits

Grounding kits are required to avoid an electric discharge between the container and other conductive units. All DENIOS HazMat containers can be fitted with an accessory to avoid discharges. These are highly recommended for containers storing explosive materials.



Non-Combustible IBC Chemical Storage Lockers

- These Non-Combustible designs with 150 mph Wind Rating provide secure, spill contained storage for 1-2 IBC Totes
 - Provides a spill compliant sump, meeting EPA and UFC requirements
 - FM Approved - Class 6049
- Lockable hinged doors provide full face opening, easing material handling in and out of the locker
 - Full-face opening eases access for material handling
 - Built to carry higher loads from IBCs

Non-Combustible IBC Storage Locker - 150 mph Construction



Comprehensive and worry-free.
Service & maintenance from DENIOS.
Request more information now!


» www.denios-us.com/expertise-advice



Non-Combustible Designs provide secure, spill contained storage for 1-2 IBC Totes, Order no. P19-2055-E0



DENIOS – Leading Supplier of FM Approved Chemical Containment Products.



Note: Two 13” vent hoods ship unattached but are included in length dimension.



Lockers come in 150 MPH Hurricane Rated Design.


Order number	Total Capacity per Unit (Drums/IBCs)	External Dimensions (vent hoods included) W x D x H [in]	Bay Dimensions W x D x H (in)	Door Type	Door Opening Width [in]	Door Opening Height [in]	Shipping Weight [lbs]	Load Capacity per Bay [lbs]	Sump Capacity [gal]
P19-2050-E0	1 IBC	99 x 70 x 100	87 x 61 x 61	HD	54	80	2,300	5,000	506
P19-2055-E0	2 IBCs	153 x 70 x 88	121 x 61 x 64	HD	54	80	2,900	10,000	501

- Locker options include: dry chemical fire suppression system, 1.8 or 3.6 kw electric heater with R-10 insulation, 14,000 BTU air conditioner with R-10 insulation, exterior light (500 W) with photo eye, fiberglass grating and poly sump liner for storing acids and corrosives

- Choose between Blue, Tan, or White
- Custom colors available upon request and for an additional fee

2-Hour Fire Rated IBC Storage Locker - 150 mph Construction

Contact Us!
For questions about any of your hazardous chemicals storage or processing needs, contact us at:

 **800-216-7776**
info@denios-us.com



Lockers for 1-2 IBC, 2-hour fire rated design is constructed with UL Approved firewalls. Roll-up doors includes fuse link and will automatically close in case of fire.
Order no. P19-2150-E0

Order number	Total Capacity per Unit (Drums/IBCs)	External Dimensions (vent hoods included) W x D x H [in]	Bay Dimensions W x D x H (in)	Door Type	Door Opening Width [in]	Door Opening Height [in]	Shipping Weight [lbs]	Load Capacity per Bay [lbs]	Sump Capacity [gal]
P19-2150-E0	1 IBC	99 x 81 x 117	55 x 56 x 71	RD	53	60	3,900	5,000	438
P19-2155-E0	2 IBCs	153 x 81 x 102	112 x 56 x 71	RD	108	60	5,200	10,000	423



Non-Combustible 4 Drum Locker
Order no. N05-3109-E0

Non-Combustible Drum Storage Locker – 150 mph Construction

- The DENIOS Non-Combustible N-Series Locker lines provides a wide range of storage capacities (2-14 drums) with numerous options
- Made of durable 11-gauge welded, steel and 150 mph construction
- Provides a spill containment sump, meeting EPA and UFC requirements
- FM Approved - Class 6049
- Lockable, hinged doors with inside release provides added safety
- All models come standard with galvanized grating above a spill compliant sump, passive ventilation, exterior grounding lug, anchoring point, NFPA 704 placard
- Choose between Blue, Tan, or White painted finished
- Custom colors also available upon request and for an additional fee
- Locker Options include ramp and shelves, water sprinkler, fire bottle (FE-241), dry chemical fire suppression system, 1.8kw and 3.6kw electric heater with R-10 insulation, 14,000 BTU air conditioner with R-10 insulation, interior light (300W) with fan (350 CFM), exterior light (500W) with photo eye, fiberglass grating and poly sump liner for storing acids and corrosives



Note: Two 13" vent hoods ship unattached but are included in length dimension.



DENIOS – Leading Supplier of FM Approved Chemical Containment Products.



Lockers come in 150 MPH Hurricane Rated Design.

Order number	Total Capacity per Unit (Drums/IBCs)	No. of Doors	External Dimensions (vent hoods included) W x D x H [in]	Bay Dimensions W x D x H (in)	Door Opening Width [in]	Door Opening Height [in]	Shipping Weight [lbs]	Load Capacity per Bay [lbs]	Sump Capacity [gal]
N05-3104-E0	2 Drums	1	96 x 58 x 98	61 x 49 x 82	54	80	1,700	1,200	96
N05-3109-E0	4 Drums	1	96 x 70 x 98	64 x 61 x 82	54	80	1,900	2,400	121
N05-3115-E0	6 Drums	1	118 x 70 x 98	86 x 61 x 82	54	80	2,400	3,600	162
N05-3120-E0	8 Drums	1	143 x 70 x 98	111 x 61 x 82	54	80	2,900	4,800	209
N05-3130-E0	10 Drums	2	168 x 70 x 98	136 x 61 x 82	54	80	3,400	6,000	256
N05-3135-E0	12 Drums	2	193 x 70 x 98	161 x 61 x 82	54	80	3,800	7,200	304
N05-3140-E0	14 Drums	2	236 x 70 x 98	204 x 61 x 82	54	80	5,100	8,400	388

2-Hour Fire Rated Drum Storage Locker – 150 mph Construction

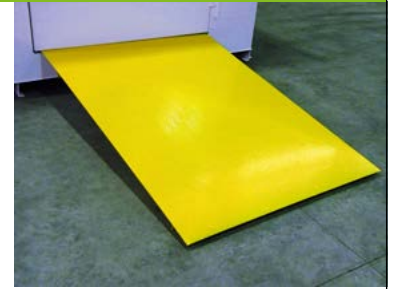
Our fire rated N-Series Lockers provide 2-hour fire rated construction with a variety of options and capacities of 2-14 drums.

- Constructed with 2-hour rated firewall design
- Complies with fire rating requirements for storage of flammables within 10 feet of your facility
- Provides a spill compliant sump, meeting EPA and UFC requirements
- FM approved
- Lockable, hinged doors with inside release provides added safety

Optional Accessory

Ramp

- Ramp secures to doors sill without effecting door performance



Ramp,
Order no. N05-3910-E0

Ramp for N-Series Lockers secures to door sill without effecting door performance



14 drum, 2-hour fire rated design features three door sets to ease material handling,
Order no. N05-4140-E0

Optional Accessory

Shelving Packages	Order number
Shelving for 2-4 Drum Locker	N05-7271-E0
Extra Shelf for 2-4 Drum Locker	N05-7272-E0
Shelving for 6-8 Drum Locker	N05-7273-E0
Shelving for 10-14 Drum Locker	N05-7275-E0
Extra Shelf for 10-14 Drum Locker	N05-7276-E0

Order number	Total Capacity per Unit (Drums/IBCs)	No. of Doors	External Dimensions (vent hoods included) W x D x H [in]	Bay Dimensions W x D x H (in)	Door Opening Width [in]	Door Opening Height [in]	Shipping Weight [lbs]	Load Capacity per Bay [lbs]	Sump Capacity [gal]
N05-4104-E0	2 Drums	1	96 x 58 x 98	54 x 41 x 81	52	79	3,000	1,200	77
N05-4109-E0	4 Drums	1	96 x 70 x 98	54 x 50 x 81	52	79	3,400	2,400	99
N05-4115-E0	6 Drums	1	118 x 71 x 98	75 x 50 x 81	52	79	4,000	3,600	125
N05-4120-E0	8 Drums	1	143 x 71 x 98	100 x 50 x 81	52	79	4,800	4,800	165
N05-4130-E0	10 Drums	2	168 x 71 x 98	125 x 50 x 81	52	79	6,400	6,000	205
N05-4135-E0	12 Drums	2	193 x 71 x 98	150 x 50 x 81	52	79	6,400	7,200	245
N05-4140-E0	14 Drums	2	236 x 71 x 98	193 x 50 x 81	52	79	7,900	8,400	315



Order no. K17-3503-E0

DENIOS HazMat Stations are designed to provide a safe, secure environment for storage, dispensing, and mixing of small volumes of chemicals. Featuring a weather-proof, lockable hinged lid and doors, they provide personnel easy access to the tops of drums and other stored chemicals for dispensing and mixing operations. When dispensing, any spills or drips are contained by a built-in, compliant spill sump.

i Gas cylinder supported lid lifts to allow access to drum tops for attachment of pumps. Closes easily for secured, weather-tight storage.



Order no. K17-3502-E0

HazMat Station for 2 Drums

- Enclosed HazMat Stations are complete with lockable, hinged lid and doors
- For access to tops of drums, lid lifts easily and is supported by heavy duty gas cylinders
- Solidly welded steel construction for extended life
- Sump welds are 100% inspected with a low-viscous test to insure leaktightness
- 66 Gallon Sump volumes meet EPA & UFC requirements
- Passive ventilation is standard
- Coated with a durable, corrosion and weather resistant finish
- Removable galvanized steel grating for easy clean-up
- Four-way forkliftable
- SPCC Compliant



Storage Capacity	2 Drum	4 Drum
External Dimensions W x D x H [in]	54 x 34 x 55	56 x 56 x 55
Sump Capacity [gal]	66	66
Total Load Capacity [lbs]	1,200	2,400
Shipping Weight [lbs]	425	585
Order number	K17-3502-E0	K17-3503-E0

- Optional shelving packages provide efficient, secured exterior storage for smaller containers
- Add drum cradles to create a mixing and dispensing station which provides compliant spill containment



Order no. K17-3745-E0

4 Drum HazMat Station with half width shell package



Order no. K17-3743-E0

4 Drum HazMat Station with half width shell package and drum cradle

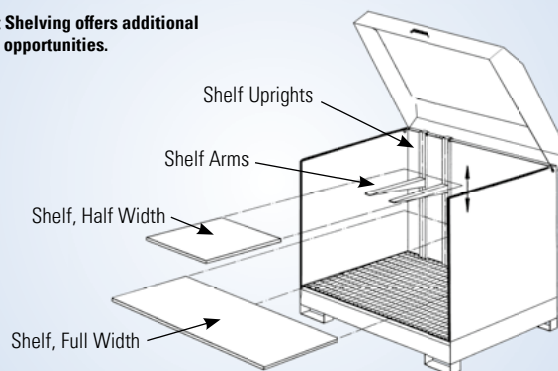


Order no. K17-3741-E0

4 Drum HazMat Station with full width shell package and full width shelf adder

HazMat Shelving

HazMat Shelving offers additional storage opportunities.

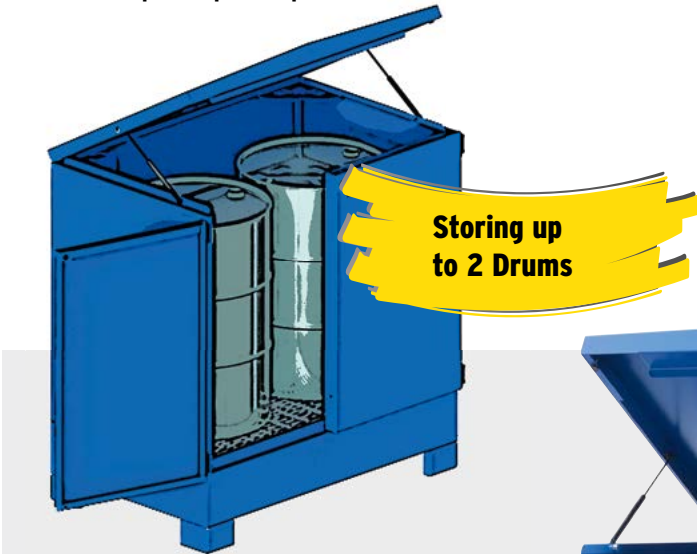


Version	Half Width Shelf Package	Half Width Shelf Adder
Contents	1 Pair Shelf Arms1 Pair Shelf Uprights	1 Pair Shelf Arms
External Dimensions W x D [in]	23 x 18.5	23 x 18.5
Shipping Weight [lbs]	60	50
Order number	K17-3701-E0	K17-3702-E0

Version	Full Width Shelf Package
Contents	1 Pair Shelf Arms1 Pair Shelf Uprights
External Dimensions W x D [in]	46 x 18.5
Shipping Weight [lbs]	90
Order number	K17-3711-E0

Enclosed HazMat Station for 2 Drums

DENIOS HazMat Stations are designed to provide a safe, secure environment for storage of hazardous materials. Featuring a weather-proof, lockable hinged lid and doors, they provide personnel easy access to the tops of drums and other stored chemicals for dispensing and mixing operations. When dispensing, any spills or drips are contained by a built-in, compliant spill sump.



- Modern Design while using most up to date production methods
- Extremely sturdy design for long life use through many years
- Hinged Doors with Safety Lock
- Four-way forkliftable
- Sealed sump in the bottom of the HazMat station, 100% inspected with a low-viscous test to insure leaktightness
- For direct access to tops of drums, lid lifts easily and is supported by heavy duty gas cylinders
- Meet EPA & UFC requirements, SPCC Compliant
- Passive ventilation is standard
- Coated with a durable, corrosion and weather resistant finish
- Removable galvanized steel grating for easy clean-up
- Available for storing 2 or 4 Drums or small Containers



Enclosed HazMat Station for 2 Drums,
Order no. K17-4500-E0

Storage Capacity	2 Drums
External Dimensions W x D x H [in]	54 x 35 x 58
Internal Dimensions W x D x H [in]	53.9 x 32 x 40.3
Sump Capacity [gal]	66
Total Load Capacity [lbs]	1,200
Shipping Weight [lbs]	415
Order number*	K17-4500-E0

*Call for Details and Prices

Spill Containment Pallets





Enclosed HazMat Station storing small containers on two levels, Order no. K17-4501-E0



Enclosed HazMat Station storing small containers on three levels, Order no. K17-4502-E0

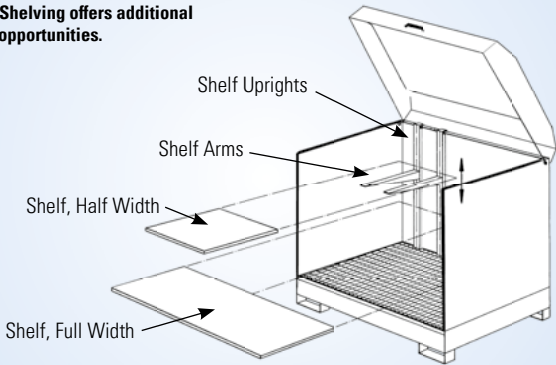


Enclosed HazMat Station for 2 Drums



Enclosed HazMat Station for storing 2 drums directly on the grating or together with a pallet

HazMat Shelving offers additional storage opportunities.



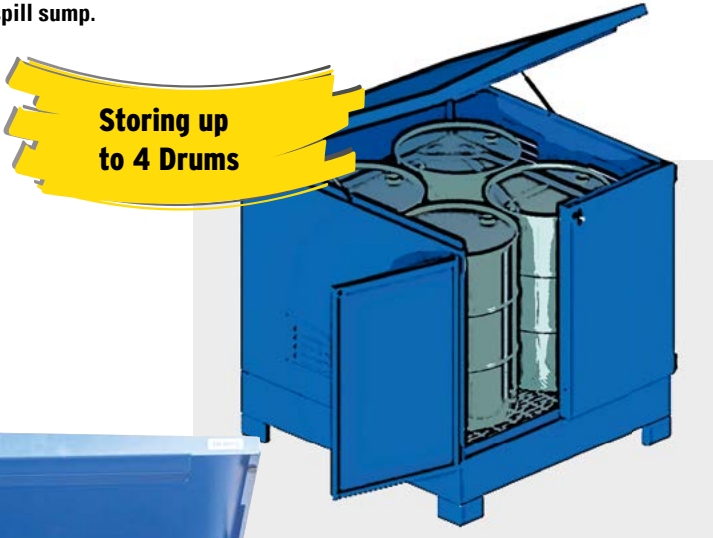
Product Description	Shelf, Half Width, Package	Shelf, Half Width, Adder
External Dimensions W x D [in]	23 x 18.5	23 x 18.5
Total Load Capacity [lbs]	265	265
Shipping Weight [lbs]	60	45
Order number	K17-4510-E0	K17-4511-E0

Product Description	Shelf, Full Width, Package	Shelf, Full Width, Adder
External Dimensions W x D [in]	46 x 18.5	46 x 18.5
Total Load Capacity [lbs]	530	530
Shipping Weight [lbs]	110	95
Order number	K17-4515-E0	K17-4516-E0

Enclosed HazMat Station for 4 Drums

DENIOS HazMat Stations are designed to provide a safe, secure environment for storage of hazardous materials. Featuring a weather-proof, lockable hinged lid and doors, they provide personnel easy access to the tops of drums and other stored chemicals for dispensing and mixing operations. When dispensing, any spills or drips are contained by a built-in, compliant spill sump.

- Modern Design while using most up to date production methods
- Extremely sturdy design for long life use through many years
- Hinged Doors with Safety Lock
- Four-way forkliftable
- Sealed sump in the bottom of the HazMat station, 100% inspected with a low-viscous test to insure leaktightness
- For direct access to tops of drums, lid lifts easily and is supported by heavy duty gas cylinders
- Meet EPA & UFC requirements, SPCC Compliant
- Passive ventilation is standard
- Coated with a durable, corrosion and weather resistant finish
- Removable galvanized steel grating for easy clean-up



Enclosed HazMat Station for 4 Drums,
Order no. K17-4505-E0

Storage Capacity	4 Drums
External Dimensions W x D x H [in]	54.0 x 57.0 x 58.0
Internal Dimensions W x D x H [in]	53.9 x 54.0 x 40.3
Sump Capacity [gal]	66
Total Load Capacity [lbs]	2,400
Shipping Weight [lbs]	575
Order number*	K17-4505-E0

*Call for Details and Prices

Safety Cans





Enclosed HazMat Station for storing small containers, plus drum cradle for one horizontal drum, Order no. K17-4507-E0



Enclosed HazMat Station storing small containers together with 2 drums, Order no. K17-4506-E0

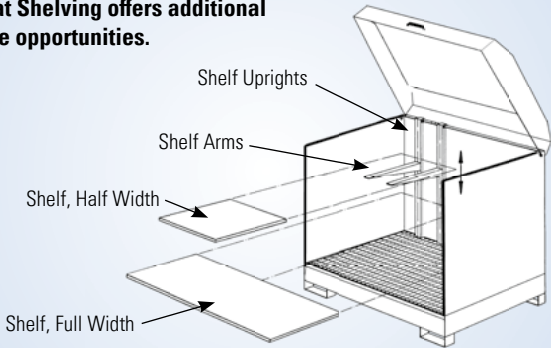


Enclosed HazMat Station for 4 Drums



Enclosed HazMat Station for storing 4 drums directly on the grating or together with a pallet

HazMat Shelving offers additional storage opportunities.



Product Description	Shelf, Half Width, Package	Shelf, Half Width, Adder
External Dimensions W x D [in]	23 x 18.5	23 x 18.5
Total Load Capacity [lbs]	265	265
Shipping Weight [lbs]	60	45
Order number	K17-4510-E0	K17-4511-E0

Product Description	Shelf, Full Width, Package	Shelf, Full Width, Adder
External Dimensions W x D [in]	46 x 18.5	46 x 18.5
Total Load Capacity [lbs]	530	530
Shipping Weight [lbs]	110	95
Order number	K17-4515-E0	K17-4516-E0

PolySafe Depots

DENIOS Environmental PolySafe Depots allow you to store non-flammable liquids like Oil, Lubricants and Coolants as well as aggressive bases or acids. Use them to ensure the safe, legally compliant storage of water-polluting and aggressive liquids.



PolySafe Depot with shelf, allowing safe storage of small containers



PolySafe Depots can also be used as a dispensing station



PolySafe Depot, allowing safe storage of up to 2 drums (55 gal.)

Storage Capacity	Small Containers	2 Drums
Included in delivery	3 Shelf System with trays	Poly grid
External Dimensions W x D x H [in]	61.5 x 42.6 x 78	61.5 x 42.6 x 78
Internal Dimensions W x D x H [in]	53.9 x 35.8 x 59	53.9 x 35.8 x 59
Sump Capacity [gal]	66	66
Total Load Capacity [lbs]	1,665	1,760
Shipping Weight [lbs]	381	276
Order number	K22-0540-E0	K22-0545-E0
Accessories	Mounting Kit	
Order number	K22-0551-E0	K22-0551-E0

- For the safe storage of water-polluting and aggressive liquids
- High chemical resistance because of manufactured entirely from environmentally friendly polyethylene
- Modern design with housing in gray and hinged double wing doors blue
- The transparent pocket in the door can be used for storing safety data sheets, protective gloves, or goggles for example
- Doors with safety lock
- Rugged, corrosion free, and weather resistant

- Integrated spill pallet
- Integrated forklift pockets
- Choose between models for 2 or 4 drums, 1 IBC or small containers stored in a shelf



PolySafe Depots come with Safety Lock and T-Handle



The transparent pocket in the door can be used for storing Safety data Sheets, protective gloves, or goggles for example



Storage Surface for easy and safe storage of Drums and IBC Containers



PolySafe Depot, allowing safe storage of up to 4 drums (55 gal.)



PolySafe Depot

Storage Capacity	4 Drums or 1 IBC
Included in delivery	Storage Surface
External Dimensions W x D x H [in]	61.5 x 61.1 x 91.8
Internal Dimensions W x D x H [in]	53.9 x 52.3 x 59
Sump Capacity [gal]	275
Total Load Capacity [lbs]	4,410
Shipping Weight [lbs]	431
Order number	K22-0550-E0
Accessories	Mounting Kit
Order number	K22-0551-E0

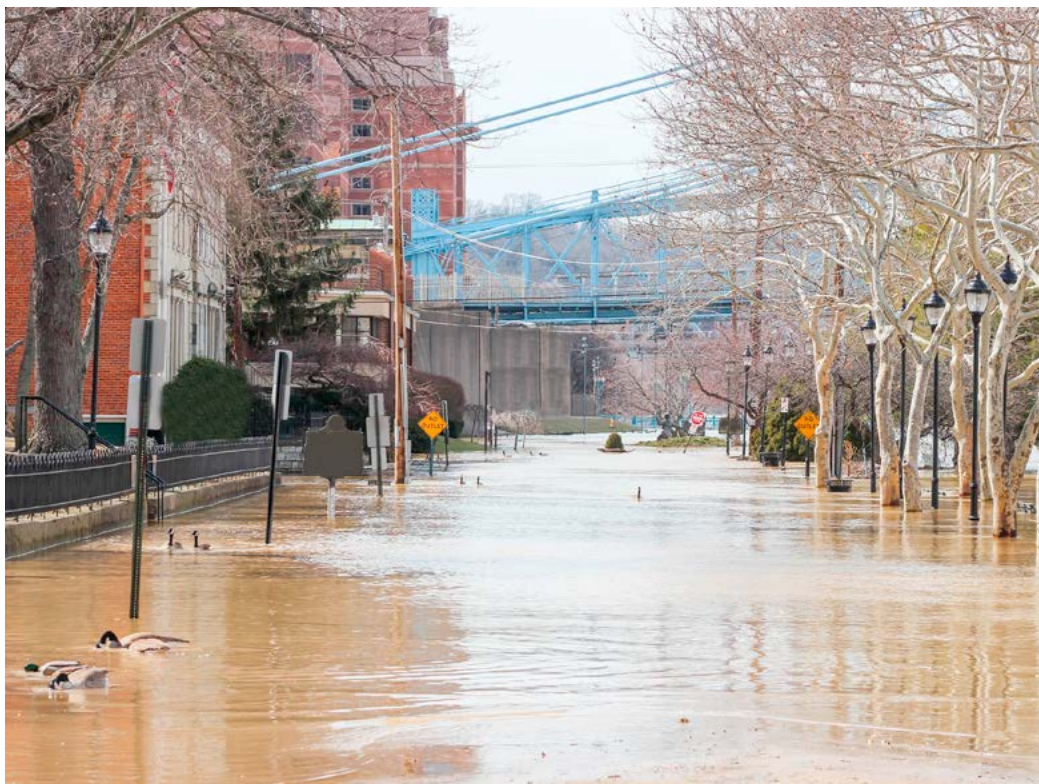
Protect Facilities in Events of Flash Floods (FM Approvals Class 2510)

One inch of water can cause \$25,000 in damage. Flooding is the most common and costly natural disaster in the United States. Within the last five years, all 50 states have experienced flash floods.

As a result, flooding is the number one insurance damage claim. More than 20 percent of flood claims come from properties outside of high-risk zones.

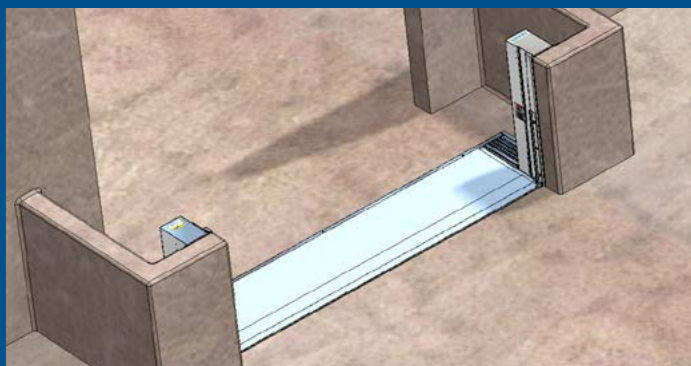
The Doorway Flood Barrier installs easily in existing doorways, and stores horizontally, permitting normal vehicular and personnel traffic, until a flood occurs.

With the first flow of water the Passive Barrier automatically closes. Your facility is protected 24/7 without the need of any personnel or electricity.

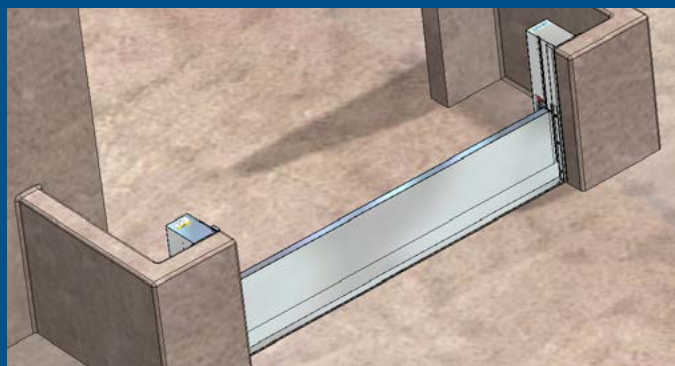


Only a few inches of water can result in thousands of dollars in damage.

- **90%** of all U.S. natural disasters involve flooding
- Floods cause an average \$8 billion in damages each year
- One inch of water can cause \$25,000 in damage
- **98%** of U.S. counties have been impacted by a flooding event
- **\$42,000** is the average flood claim payout
- All **50** states experience flash flooding
- **6 inches** of fast-moving flood water can knock you off your feet
- **40%** of small businesses never reopen their doors following a flooding disaster
- Flash floods can bring walls of water from **10 to 20 feet** high



When not deployed, the Doorway Flood Barrier stores flat in the floor, eliminating the need for ramps or berms. The Doorway Flood Barrier permits normal vehicular and personnel traffic, until a flood occurs. With the first flow of water the Barrier automatically closes.



Fully automatic operation, no external power source or compressed air required.



Passive Flood Barrier

Provides all the durable construction and operational characteristics of our doorway spill barrier but is designed specifically for flood waters.

- Solid welded stainless-steel construction
- Self-contained one-piece system design
- Fully automatic operation, no external power source or factory compressed air required
- While lying flat, Barrier provides up to 6.5 tons axle weight capacity
- Door heights of 12, 18, and 24 inches. Widths from 3 to 12 feet
- Flexible design allows installation either inside or outside exterior doors
- FM Approved



Liquid Retention Height — 12 inch

Nominal Width of Door	Opening Span	Sealed Width	Order number
3 ft	36 in	40 in	R11-0312-E0
4 ft	48 in	52 in	R11-0412-E0
6 ft	72 in	76 in	R11-0612-E0
8 ft	96 in	100 in	R11-0812-E0
10 ft	120 in	124 in	R11-1012-E0
12 ft	144 in	148 in	R11-1212-E0

Liquid Retention Height — 18 inch

Nominal Width of Door	Opening Span	Sealed Width	Order number
3 ft	36 in	40 in	R11-0318-E0
4 ft	48 in	52 in	R11-0418-E0
6 ft	72 in	76 in	R11-0618-E0
8 ft	96 in	100 in	R11-0818-E0
10 ft	120 in	124 in	R11-1018-E0
12 ft	144 in	148 in	R11-1218-E0

Liquid Retention Height — 24 inch

Nominal Width of Door	Opening Span	Sealed Width	Order number
3 ft	36 in	40 in	R11-0324-E0
4 ft	48 in	52 in	R11-0424-E0
6 ft	72 in	76 in	R11-0624-E0
8 ft	96 in	100 in	R11-0824-E0
10 ft	120 in	124 in	R11-1024-E0
12 ft	144 in	148 in	R11-1224-E0



Automatic Doorway Spill Barriers

Contain Large Spills to a Single Room

DENIOS prides itself on leading the spill control and containment industry in product development.

Spill containment or Secondary Containment systems are generally conceived to hold a pre-defined volume of liquid in a containment or spill sump sized for the specific volume or product being stored. These products confine a spill in the sump to prevent the spill from spreading.

Many situations do not lend themselves to common secondary containment equipment. What options are there for containing larger spills that threaten wide areas?

Automatic Doorway Spill Barriers require no power source and provide the protection to contain large spills by closing off any doorway or opening in the affected room at the first sign of flowing liquids.



Automatic Doorway Spill Barriers quickly seal off a room, preventing any spill from contaminating other parts of your plant. The ADSB operates without any power assist and lays flat until triggered by a spill.

Fully automatic operation ensures barrier will close even in cases of power loss



When not deployed, Barrier door stores flat in floor, eliminating the need for ramps or berms. Automatically closes with introduction of liquid in the built-in collection sump, creating a liquid tight seal and containing the spill in the room where it originated

Federal Regulations along with Local Jurisdictions require that sprinkler water in combination with regulated or hazardous materials be prevented from being released into the environment via sewers, streams, or ground contamination. When a release occurs, fines and clean-up costs can be staggering.

■ OSHA 1910.106 (d) (4) (i)

Openings to other rooms or buildings shall be provided with non-combustible liquid-tight raised sills or ramps at least 4" in height

■ IFC-2704.2.2.3 (2009)

Secondary containment for indoor storage are as shall be designed to contain a spill from the largest vessel plus the design flow volume of fire-protection water calculated to discharge from the fire-extinguishing system over the minimum required system design area or area of the room... for a period of 20 minutes.

■ NFPA-30 9.13.3

Curbs, scuppers, special drains, or other suitable means shall be provided to prevent the flow of liquids under emergency conditions into adjacent building areas.

■ OSHA 1910.106 (e) (3) (iv) (a)

Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire.

Automatic Doorway Spill Barrier

Features of the Automatic Doorway Spill Barrier Include:

- Solid welded stainless-steel construction
- Self-contained one-piece system design
- Fully automatic operation, no external power source or factory compressed air required
- Easy installation in existing doorways; stores horizontally in the floor, permitting unobstructed vehicular and personnel traffic until a spill occurs
- While lying flat, Barrier provides up to 6.5 tons axle weight capacity
- Designed to fit in doorways between 3 and 16 feet, with barrier heights of 12 to 24 inches (16' x 24" not available)



Liquid Retention Height — 12 inch

Order number	Nominal Width of Door	Opening Span	Sealed Width
R14-0312-E0	3 ft	36 in	40 in
R14-0412-E0	4 ft	48 in	52 in
R14-0612-E0	6 ft	72 in	76 in
R14-0812-E0	8 ft	96 in	100 in
R14-1012-E0	10 ft	120 in	124 in
R14-1212-E0	12 ft	144 in	148 in
R14-1412-E0	14 ft	168 in	172 in
R14-1612-E0	16 ft	192 in	196 in

Liquid Retention Height — 18 inch

Order number	Nominal Width of Door	Opening Span	Sealed Width
R14-0318-E0	3 ft	36 in	40 in
R14-0418-E0	4 ft	48 in	52 in
R14-0618-E0	6 ft	72 in	76 in
R14-0818-E0	8 ft	96 in	100 in
R14-1018-E0	10 ft	120 in	124 in
R14-1218-E0	12 ft	144 in	148 in
R14-1418-E0	14 ft	168 in	172 in
R14-1618-E0	16 ft	192 in	196 in

Liquid Retention Height — 24 inch

Order number	Nominal Width of Door	Opening Span	Sealed Width
R14-0324-E0	3 ft	36 in	40 in
R14-0424-E0	4 ft	48 in	52 in
R14-0624-E0	6 ft	72 in	76 in
R14-0824-E0	8 ft	120 in	100 in
R14-1024-E0	10 ft	144 in	124 in
R14-1224-E0	12 ft	168 in	148 in
R14-1424-E0	14 ft	168 in	172 in

Fully automatic operation ensures barrier will close even in cases of power loss

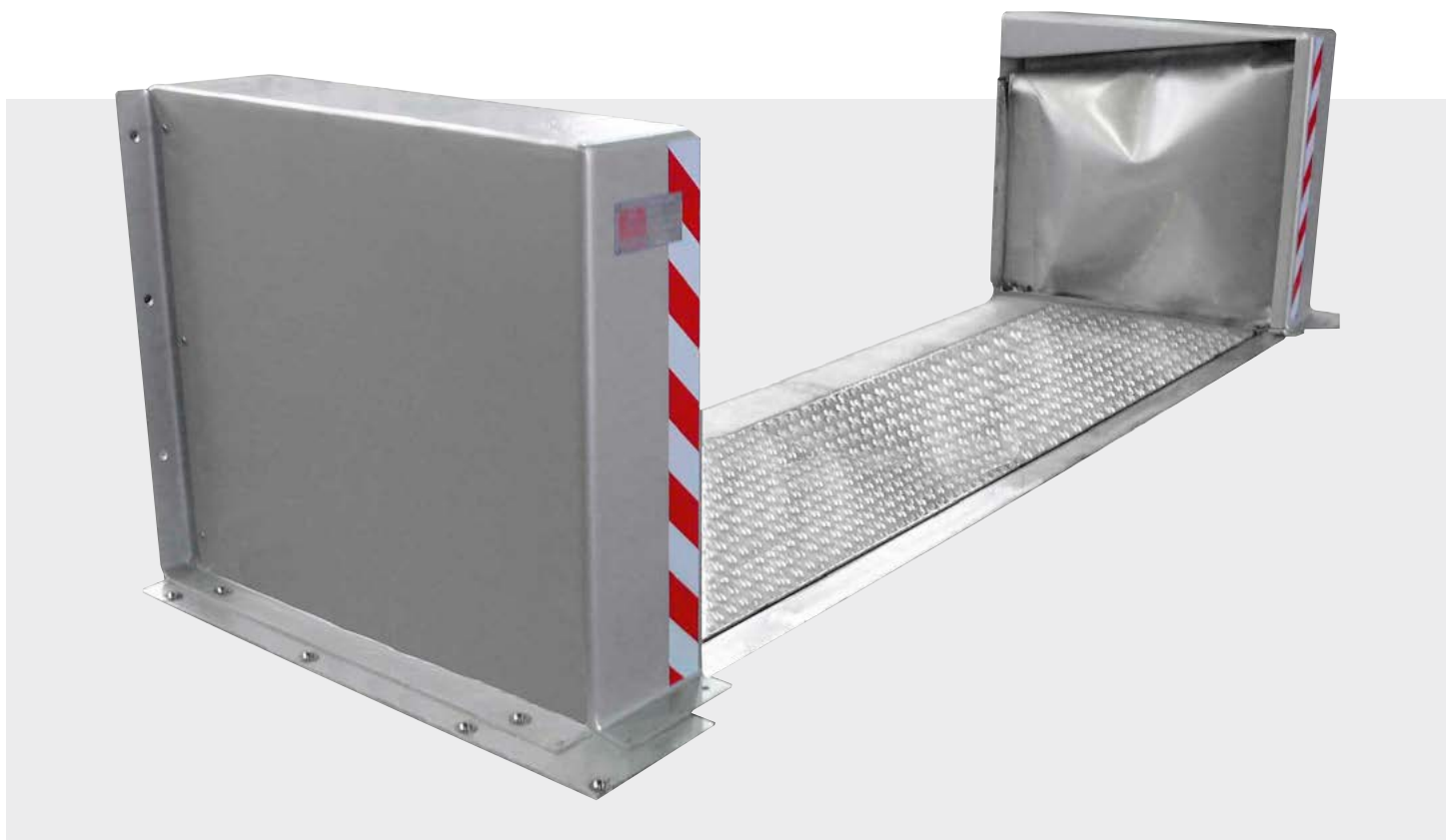
Operation – Flow of liquid triggers the Barrier to automatically shut
The door will automatically close with the introduction of liquid
in the built-in collection sump, creating a liquid tight seal and
containing the spill in the room where it originated.

Features of the Automatic Doorway Spill Barrier Include:

- Solid welded stainless-steel construction
- Self-contained one-piece system design
- Fully automatic operation, no external power source or factory compressed air required
- Easy installation in existing doorways; stores horizontally in the floor, permitting unobstructed vehicular and personnel traffic until a spill occurs
- While lying flat, Barrier provides up to 6.5 tons axle weight capacity
- Designed to fit in doorways between 3 and 16 feet, with barrier heights of 12 to 24 inches (16' x 24" not available)
- FM Approved



The Anhamm barrier is FM Approved for flammable liquid retention.



Liquid Retention Height — 12 inch

Order number	Nominal Width of Door	Opening Span	Sealed Width
R15-0312-E0	3 ft	36 in	40 in
R15-0412-E0	4 ft	48 in	52 in
R15-0612-E0	6 ft	72 in	76 in
R15-0812-E0	8 ft	96 in	100 in
R15-1012-E0	10 ft	120 in	124 in
R15-1212-E0	12 ft	144 in	148 in

Liquid Retention Height — 18 inch

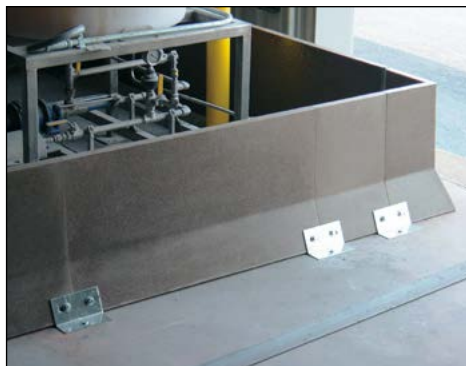
Order number	Nominal Width of Door	Opening Span	Sealed Width
R15-0318-E0	3 ft	36 in	40 in
R15-0418-E0	4 ft	48 in	52 in
R15-0618-E0	6 ft	72 in	76 in
R15-0818-E0	8 ft	96 in	100 in
R15-1018-E0	10 ft	120 in	124 in
R15-1218-E0	12 ft	144 in	148 in

Liquid Retention Height — 23 inch

Order number	Nominal Width of Door	Opening Span	Sealed Width
R15-0323-E0	3 ft	36 in	40 in
R15-0423-E0	4 ft	48 in	52 in
R15-0623-E0	6 ft	72 in	76 in
R15-0823-E0	8 ft	96 in	100 in
R15-1023-E0	10 ft	120 in	124 in
R15-1223-E0	12 ft	144 in	148 in

HazBerms

- Polymer concrete segments are highly chemical and fire resistant
- Available in tan or black
- Easy Installation - Does not require floor footers, forms, or on-site concrete pouring
- The HazBerm can be combined with DENIOS US Spill Barriers to provide easy entry or exit to the containment area
- Recommended for smaller footprints with level/well-maintained floors
- Easily relocated or altered as needs change - no need to jack-hammer and replace the existing system



The HazBerm is available in 1 and 3 foot segments as well as the 1 foot corner and reverse corner segments. (Reverse corner not shown. Hardware included, but not shown.)



HazBerm Segments — Tan

Order number*	Model	External Dimensions W x D x H [in]	Shipping Weight [lbs]
R05-0210-E0	1' Straight	12 x 4 x 18	27
R05-0230-E0	3' Straight	36 x 4 x 18	84
R05-0290-E0	1' Corner	12 x 4 x 18	51
R05-0292-E0	1' Reverse Corner	12 x 4 x 18	51

*Not to exceed 1,000 gallon capacity or 150 square feet.

HazBerm Segments — Black

Order number*	Model	External Dimensions W x D x H [in]	Shipping Weight [lbs]
R05-0211-E0	1' Straight	12 x 4 x 18	27
R05-0231-E0	3' Straight	36 x 4 x 18	84
R05-0291-E0	1' Corner	12 x 4 x 18	51
R05-0293-E0	1' Reverse Corner	12 x 4 x 18	51

*Not to exceed 1,000 gallon capacity or 150 square feet.

Manual Doorway Spill and Flood Barriers

Barriers clamp securely into preset piers mounted on either side of the opening.

Designed to contain spills, leaks, and / or sprinkler water releases.

By sealing off doorways or other openings, liquids are prevented from spreading beyond the immediate room or area.

Barriers may also be used on the exterior of doorways to prevent high water from storms or floods from entering critical areas and damaging, expensive equipment or inventory.

On-site installation is easily accomplished in new or existing facilities using the step-by-step installation instructions provided.

- Chemical-resistant gaskets maintain a tight seal in both hot and cold conditions
- Rigid design withstands extreme temperatures during a fire
- Unique clamping mechanism secures the barrier in place between piers
- Eliminates need for ramps/berms at doorways or other openings
- Deploys in Seconds!



Barrier piers are mounted on both sides of the doorway, allowing normal traffic when the barrier is not deployed.



Manual doorway spill barriers are great for low traffic areas. The door easily lifts out for access to the sealed area, otherwise the door is normally in place.

Order number	External Dimensions W x D x H [in]	Shipping Weight [lbs]
R12-0312-E0	36 x x 12	55
R12-0412-E0	48 x x 12	59
R12-0612-E0	72 x 10 x 12	365
R12-0812-E0	96 x 14 x 12	200
R12-1012-E0	120 x 130 x 12	260



At the first sign of an incident the barrier is lowered into position.



Within seconds the doorway is secured against flowing liquids.



When open, store the barrier close to the mounting piers for quick, easy deployment in the event of a spill.



Note: Other heights and widths available! Please call us: 800-216-7776



For over 30 years, DENIOS staff have studied chemical safety. We pride ourselves on being the experts in the industry you can partner with for your chemical storage and handling needs. We promise to deliver quality products that protect people and the environment.

On the next few pages we will explain some of the many different types of gases and some of their storage requirements. There are many different OSHA standards that apply to storage and handling of compressed gas cylinders. The Compressed Gas Association (CGA) also has regulations in regards to gas cylinders. The NFPA is another association that has codes dealing with flammable materials.

How do you know what regulations you need to comply with, or where to start? Let one of our friendly trained staff members help take the headache out of shifting through all the rules and regulations. We can help you come up with a comprehensive plan to meet your compressed gas cylinder storage and handling needs while staying safe and compliant.

Flammable Gas

A material that is a gas at 68°F or less at 14.7 psia, that is ignitable at 14.7 psia when in a mixture of 13% or less by volume with air, or that has a flammable range at 14.7 psia with air of at least 12% regardless of LFL.

Corrosive Gas

A gas that causes visible destruction of or irreversible alterations in living tissue by chemical action at the site of contact.

Pyrophoric Gas

A gas with an auto-ignition temperature in air at or below 130°F. Refer to NFPA 55 standard for the installation, storage, use and handling of compressed gases in portable or stationary cylinders. Compressed gas containers, cylinders and tanks in use or in storage shall be secured to prevent them from falling or being knocked over.

All tank valves shall be protected from physical damage by means of protective caps or similar devices.

Cylinders, containers and tanks containing liquid, flammable gases shall be stored in an upright position unless container capacity is 1.3 gal (5L) or less in which case horizontal stored position is allowed.

Where the quantities of compressed gases stored or used within an indoor control area exceed that shown in the following Table 3, the area shall require special provisions.

The special provisions include meeting requirements for Protection Level 1 through 5 in accordance with the building code and based on the hazard class of material involved. The values in the table are maximum quantities per control area. When multiple control areas are required, they must be separated by not less than a 1-hour fire-resistive separation. In addition, the number and design of control areas must be in accordance with the International Building Code Section 414 and Table 414.2.2 and the local AHJ.

Detached buildings for storing compressed gases are required when quantities of materials exceed the amounts shown in the following table 4:

Table 4

Minimum Material Allowable Quantities Requiring Detached Buildings		
Gas	Class	Quantity of Material m ³ (ft ³)
Unstable Reactive (Detonable)	4 or 3	Quantity thresholds for gases requiring special provisions
Unstable Reactive (Nondetonable)	3	57 (2000)
	2	283 (3000)
Pyrophoric Gas	N/A	57 (2000)

Table 3

Quantity Thresholds for Gases Requiring Special Provisions				
Material	Unsprinklered Areas		Sprinklered Areas	
	No Gas Cabinet, Gas Room or Exhausted Enclosure	Gas Cabinet, Gas Room or Exhausted Enclosure	No Gas Cabinet, Gas Room or Exhausted Enclosure	Gas Cabinet, Gas Room or Exhausted Enclosure
Flammable Gas	30 lb	60 lb	60 lb	120 lb
Liquified Nonliquified	1,000 ft ³	2,000 ft ³	2,000 ft ³	4,000 ft ³
Oxidizing Gas	30 lb	60 lb	60 lb	120 lb
Liquified Nonliquified	1,500 ft ³	3,000 ft ³	3,000 ft ³	6,000 ft ³
Pyrophoric Gas	0 lb	0 lb	4 lb	8 lb
Liquified Nonliquified	0 ft ³	0 ft ³	50 ft ³	100 ft ³

Storage of Gas Cylinders and Bottles

Outdoor storage for Corrosive Gases shall not be within 20 ft (6m) of other structures unless it has a 2-hour fire barrier in which case shall be permitted in lieu of the 20 ft (6m) requirement.

The 2-hour fire barrier shall be designed per requirements of NFPA 55 and local codes.

Outdoor storage buildings for Flammable Gases shall be located in accordance with Table 7.6.2.

If the building has a minimum 2-hour fire rating interrupting the line of sight between the container and exposure, then the minimum required distance is 5 ft (1.5m).

NFPA 55 Table 7.6.2

Distance from Storage to Exposures for Flammable Gases		
Average Quantity per Storage Area	Minimum Distances to Buildings, Storage Areas or Property Lines	
ft ³	m	ft
0 - 4,225	1.5	5
4,226 - 21,125	3	10
21,126 - 50,700	4.5	15
50,701 - 84,500	6	20
84,501 or >	7.5	25

NFPA 55 Table 7.7.2

Distance from Storage to Exposures for Flammable Gases		
Average Quantity per Storage Area	Minimum Distances to Buildings, Storage Areas or Property Lines	
ft ³	m	ft
0 - 4,225	1.5	5
4,226 - 21,125	3	10
21,126 - 50,700	4.5	15
50,701 - 84,500	6	20
84,501 or >	7.5	25

NFPA 55 Table 7.8.3

Distance from Storage to Exposures for Pyrophoric Gases				
Maximum Gas Quantity per Storage Area (x 3.785 for L)	Minimum Distances between	Gas Non-Occupancy Building, Gas Room or Exhausted Enclosure	Minimum Distance to Buildings on Same Property and No Openings within 25 ft	
ft ³	ft	ft	2 hr	4 hr
0 - 250	5	25	0	0
250.1 - 2,500	10	50	5	0
2500.1 - 7,500	20	100	10	0

Outdoor storage buildings for Oxidizing Gases shall be located in accordance with Table 7.7.2.

If the building has a minimum 2-hour fire rating interrupting the line of sight between the container and exposure, then the minimum required distance is 5 ft (1.5m).

Outdoor storage buildings for Pyrophoric Gases shall be located in accordance with Table 7.8.3.

If the building has a minimum 2-hour fire rating interrupting the line of sight between the container and exposure, then the minimum required distance is 5 ft (1.5m).

Pyrophoric gases have auto ignition temperatures at or below 130°F. Some typical examples of pyrophoric gases are Silane, Diborane or Arsine.



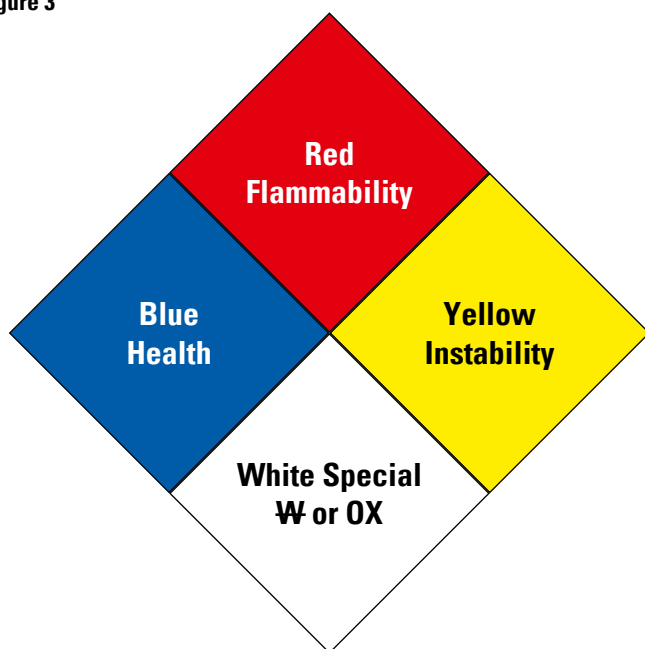
DENIOS Gas Cylinder storage structure utilizing 2-hr fire rated walls.

Identification of the Hazards of Materials for Emergency Response - NFPA 704

NFPA 704 standard provides a readily recognized, easily understood placard system for identifying specific hazards along with their severity using spatial, visual, and numerical methods to describe in simple terms the relative hazards of a material. It addresses the health, flammability, instability, and related hazards that may be presented as short-term, acute exposures that are most likely to occur as a result of fire, spill, or similar emergency.

The system is characterized by a “diamond shape” that is actually a “square-on-point” shape consisting of four smaller diamond shapes. It identifies the hazards of a material and the degree of severity of the health, flammability, and instability hazards. The standard identification symbol for hazards of materials is shown in Figure 3 as follows:

Figure 3



In accordance with the identification symbol, the hazards are spatially arranged with four smaller diamonds as follows: flammability at twelve o'clock position (Red), instability at three o'clock position (Yellow), special hazards at six o'clock position (White) and health at nine o'clock position (Blue).

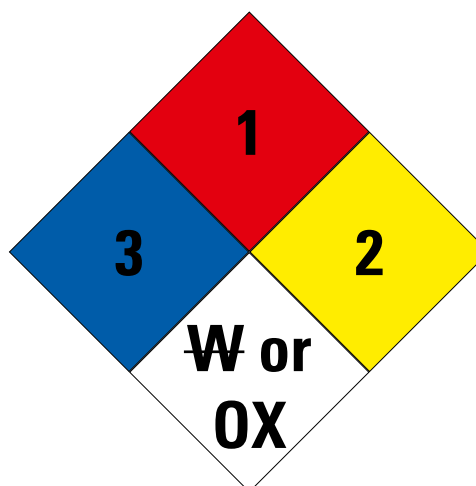
The special hazards in use are W and Ox. W indicates unusual reactivity with water and is a caution about the use of water in either fire fighting or spill control response and Ox indicates that the material is an oxidizer.

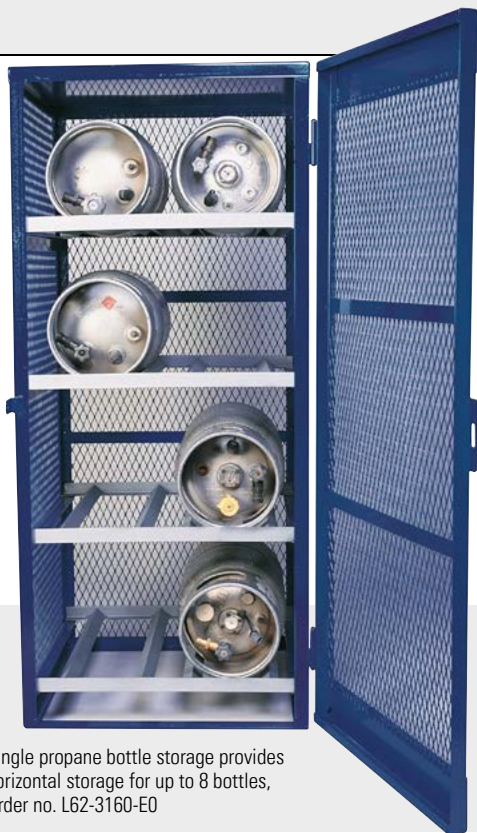
In addition, the numerical rating system describes the relative hazards of a material based upon the hazard severity rating as indicated below:

Fire Hazard (Red)	
Flash Points	
4 – Class IA liquids	
3 – Class IB and/or IC liquids	
2 – Class II and/or IIIA liquids	
1 – Class IIIB liquids	
0 – Will not burn	
Reactivity (Yellow)	
4 – May detonate	
3 – Shock and heat may detonate	
2 – Violent chemical change	
1 – Unstable if heated	
0 – Stable	
Health Hazard (Blue)	
4 – Deadly	
3 – Extreme danger	
2 – Hazardous	
1 – Slightly hazardous	
0 – Normal material	
Specific Hazard (White)	
Ox – Oxidizer	
W – Use no water	

The NFPA 704 Placard should be placed on the exterior face of storage systems where visible to emergency responders. A typical compliant placard is shown in Figure 4 below:

Figure 4





Single propane bottle storage provides horizontal storage for up to 8 bottles, Order no. L62-3160-E0



Single section cage for 5-10 cylinders, Order no. L62-3180-E0

Storage Cages without Floor

- Secure gas cylinders and bottles in pad-lockable cages
- Limit access to authorized personnel
- Solid welded angle frame construction provides years of service
- Easily relocated
- Shipped fully assembled
- Open steel mesh from sturdy expanded metal construction prevents gases from accumulating
- Construction provides compliance with NFPA codes and OSHA regulations
- Use different sizes and multiple cages to provide proper separation between incompatible gases



Double section cage for storing a combination of bottles vertically and horizontally, Order no. L62-3187-E0



Add a floor plate to these cages to allow easy relocation/positioning by forklift as well as providing a level and dry base for the upright cylinders.

Floor Plates can be ordered separately for retrofitting to existing floorless cages



Single Base,
Order no. L62-3178-E0
Order no. L62-3278-E0




Double Base,
Order no. L62-3179-E0
Order no. L62-3279-E0

Description	Single Horizontal Bottle	Double Horizontal Bottle	Single Vertical Cylinder	Double Vertical Cylinder	Combo - Horizontal & Vertical
External Dimensions W x D x H [in]	31 x 33 x 69	63 x 33 x 75	32 x 36 x 76	62 x 35 x 69	63 x 33 x 69
Storage Capacity Gas Cylinders	—	—	5-10	10-20	5-10
Storage Capacity Gas Bottles	8	16	—	—	8
Shipping Weight [lbs]	250	503	225	360	440
Order number	L62-3160-E0	L62-3165-E0	L62-3180-E0	L62-3183-E0	L62-3187-E0

Storage Cages with Floor Plate

- Pad-lockable hinged doors provide secure storage and prevent unauthorized access
- Floor Plates provides level surface for cylinders when placing structure over gravel, uneven pavement, or areas where puddles may occur
- Expanded metal sides and doors allow natural ventilation and visual inspection of cylinders
- Corrosion resistant finish- Choose between painted and galvanized / aluminum coatings
- Meets OSHA & NFPA regulations
- Anchor plates for securing structure
- Ships fully assembled

 Cylinder cages are offered in a variety of configurations to match your specific needs.



Double propane bottle storage provides horizontal storage for up to 16 bottles, Order no. L62-3165-E0

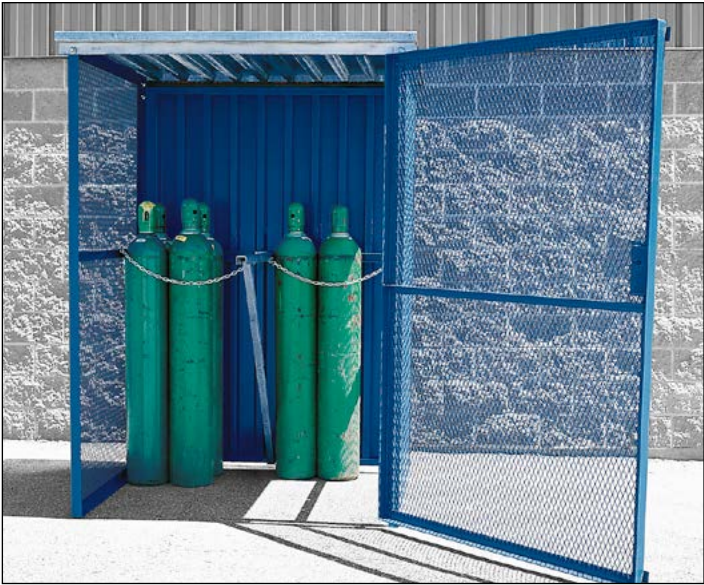


Double cylinder cage allows for separation of full and empty cylinders, Total capacity: 10-20 cylinders, Order no. L62-3183-E0



Single model for Gas Cylinder Storage, Order no. L62-3181-E0

Description	Single Vertical Cylinder	Double Vertical Cylinder	Combo - Horizontal & Vertical	Single Horizontal Bottle	Double Horizontal Bottle
External Dimensions W x D x H [in]	31 x 33 x 75	63 x 33 x 75	63 x 33 x 75	31 x 33 x 75	63 x 33 x 75
Storage Capacity Gas Cylinders	5-10	10-20	5-10	—	—
Storage Capacity Gas Bottles	—	—	8	8	16
Shipping Weight [lbs]	300	575	575	300	575
Order number Painted	L62-3181-E0	L62-3184-E0	L62-3188-E0	L62-3161-E0	L62-3166-E0
Order number Galvanized / Aluminum Coating	L62-3251-E0	L62-3256-E0	L62-3261-E0	L62-3266-E0	L62-3271-E0



Stores 24 gas cylinders

Knock-Down Gas Cylinder Storage Cages

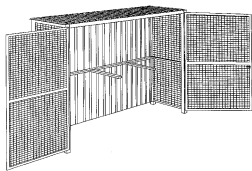
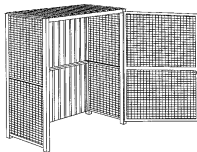
Store gas cylinders in an upright and secure position inside a non-combustible structure in accordance with NFPA 55.

- Heavy-duty steel frame with solid steel back & roof
- Expanded metal sides and doors allow natural ventilation and visual inspection of cylinders
- Lockable hinged doors provide secure storage and prevent unauthorized access
- Chains are adjustable to secure any number of cylinders stored
- System utilizes existing foundation as its base

i Non-Combustible Wall Sections Available to Separate Incompatible Gases in Accordance with NFPA 55.



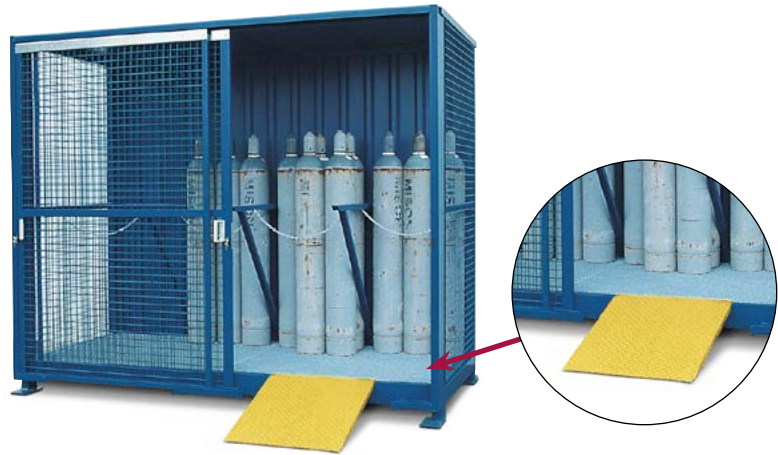
Stores 48 gas cylinders



Suitable for	24 Cylinder	48 Cylinder
External Dimensions W x D x H [ft]	7.75 x 4 x 6	11 x 4 x 6
Door Type	Hinged	Hinged
Shipping Weight	705	1,100
Order number	L62-3101-E0	L62-3102-E0

Gas Cylinder Storage Cages

- Meets OSHA & NFPA regulations
- Heavy-duty steel frame
- Expanded metal sides and doors allow natural ventilation and visual inspection of cylinders
- Lockable doors provide secure storage and prevent unauthorized access
- Corrosion resistant coating
- Chains are adjustable to secure stored cylinders
- Anchor plates for securing structure



Gas Cylinder Storage Cage with Floor and Sliding doors, optional Ramp for easy access

Ramp for Gas Cylinder Storage Cages, Order no. L62-3122-E0

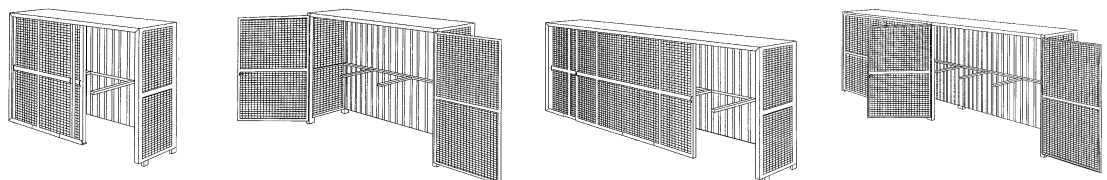


Available in two styles:
 - Hinged Doors and Sliding Doors
 - Floor provides level surface for cylinders when placing structure over gravel, uneven pavement, or areas where puddles may occur



Anchor plates for securing structure

Without Floor Plate: Stores 96 gas cylinders., Order no. L62-3114-E0



Storage Capacity Gas Cylinders	48				96			
External Dimensions W x D x H [ft]	11 x 5 x 9	11 x 5 x 9	11 x 5 x 9	11 x 5 x 9	21 x 5 x 9	21 x 5 x 9	21 x 5 x 9	21 x 5 x 9
Version	without Floor Plate		with Floor Plate		without Floor Plate		with Floor Plate	
Door Type	Hinged	Sliding	Hinged	Sliding	Hinged	Sliding	Hinged	Sliding
Shipping Weight	1,200	1,400	1,600	1,800	132	2,600	148	3,100
Order number	L62-3110-E0	L62-3112-E0	L62-3111-E0	L62-3113-E0	L62-3114-E0	L62-3116-E0	L62-3115-E0	L62-3117-E0

Gas Cylinder Storage Cages with 2-Hour Fire Rated Walls

Legally compliant storage of Gas Cylinders

- Add extra safety to your cylinder storage area with the security of fire rated walls providing compliant separation for flammable compressed gases
- 2-Hour rated wall construction for the sides and rear walls



DENIOS Gas Cylinder storage structure for up to 6 Cylinders, Order no. L65-0200-E0



DENIOS Gas Cylinder storage structure for up to 24 Cylinders, Order no. L65-0600-E0



Comes with separating brackets and safety chains for secure storage of gas cylinders

Gas Cylinder Handling







Storage Capacity Gas Cylinders	6	12	24
External Dimensions W x D x H [in]	44 x 39 x 91	76 x 42 x 98	142 x 42 x 98
Internal Dimensions W x D x H [in]	32 x 27 x 85	62 x 27 x 85	126 x 27 x 85
Version	1 hinged door	2 hinged doors	4 hinged doors
Shipping Weight [lbs]	850	1,155	1,785
Order number	L65-0200-E0	L65-0400-E0	L65-0600-E0

- Segregate flammable gas cylinders from combustible materials
- Stable steel frame design
- Open mesh access door provides ample natural ventilation and easy access to stored cylinders
- Pad-lockable door adds security
- Safety chains are adjustable to secure cylinders
- Delivered Ready-To-Use, including crane eyes



DENIOS Gas Cylinder storage structure for up to 12 Cylinders,
Order no. L65-0400-E0

Gas Cylinder Racks

Gas Cylinder Racks feature a multitude of application possibilities. Portability is ensured by the use of pallet trucks, fork trucks, hoist or optional caster kits.

Gas Cylinder Rack for 8 Cylinders, moveable with forklift

Gas Cylinder Rack with fork mounted style transports cylinders for ideal operation. Features durable steel construction for added strength and long life

- Transports cylinders safely with this fork mounted style
- Comes complete with safety chains to secure the cylinders in place
- Made of all steel construction
- Includes web ratchet retaining strap and edge lip for added safety.
- Safety chains secure cylinder to cart for maximum security and efficiency
- Hold cylinders up to 9-1/2" in diameter



Order no. K52-1169-E0

Model	Cylinder Rack	Cylinder Hand Truck
Storage Capacity Gas Cylinders	8	2
External Dimensions W x D x H [in]	47 x 39 x 36	31 x 17 x 74
Total Load Capacity [lbs]	800	350
Shipping Weight [lbs]	231	84
Order number	M75-0053-E0	K52-1169-E0

Double Gas Cylinder Hand Truck

The Cylinder Hand Truck is ideal for transporting cylinders from storage to work space.

- Tilt back design for effortless transportation
- Chains and contoured back cradle provide utmost safety
- Once cylinders are loaded, caddy leans back and is supported by two swivel casters
- Two mounted chains measure 28" long
- Unit rolls smoothly on two (2) 10" x 2" mold-on-rubber wheels and two (2) 4" x 1-3/8" phenolic casters

Portable Sorbent Caddies

These Emergency Spill Kits can be brought quickly to the scene of the leak. The range consists of socks for containment as well as mats/rolls and cushions for absorbing leaked fluid. Personal protection equipment for use at the site of the incident such as safety goggles and gloves complete the set.

- Contain high quality absorbent materials
- Lockable for added safety
- Functional Caddy for easy, quick maneuverability



Order no. M28-2036-E0

Using a padlock or seal protecting against unauthorized access is possible (Caddy MEDIUM)



Comes together with a Warning Sign (Caddy MEDIUM)



Ergonomic handle can be gripped safely even when wearing protective gloves and optimizes manoeuvrability

Containment Pallets for 2 IBC Totes

Safely store hazardous chemicals in Intermediate Bulk Containers (IBC Totes) over a compliant spill sump. Our multiple tote designs offer you the flexibility to choose the right sump for your application.

- Compliant Sump volumes meet EPA, OSHA, NFPA, UFC and other regulations
- Secure Storage - Sumps are 100% tested and 100% guaranteed leak-free
- Constructed using premium heavy gauge quality steel
- Solidly welded, all steel construction for extended life
- Feet for easy forklift access
- Easy removable gratings

IBC Tote Containment Pallet,
painted

Order no. K17-3123-E0



Poly Safe Spill Pallet with poly grating, for 4 Drums

New Generation of Spill Pallets with the experience of over 25 years these Spill Pallets provide high functionality and heavy duty construction for longlife use at any job site.

- Safe storage of hazardous materials like oils, coolants, acids, caustics, and other aggressive liquids
- Modern Design in combination with high functionality
- Rugged Construction provides impact and shock resistance even under high temperature conditions
- Secure Storage - Sumps are 100% tested and 100% guaranteed leak-free
- Four-way forkliftable
- Rust-free and easy to clean



Order no. K22-1507-E0



Order no. M31-3932-E0

30 Gallon Storage Cabinet

- Sturdy all welded double wall, steel construction
- 2" wide louvers support shelves, adjustable on 4" centers
- 2" deep leak proof sump
- Safely contains hazardous chemicals, reducing the risk of fire
- Improved security with recessed lockable paddle latch and 3 point locking system
- 2" bunged air vents with flame arrestors on each side of the cabinet allows for ventilation

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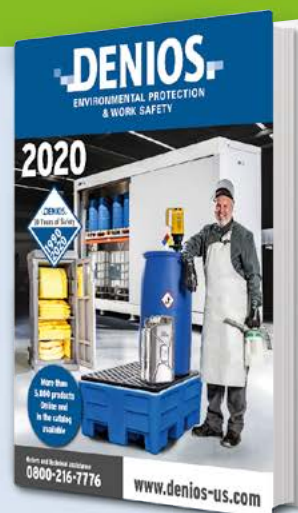
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Transportation and Delivery

Your new DENIOS building will be delivered to your site safely and on time. Our team will work with you to understand the unique needs of your site and delivery.

We offer:

- Offloading of the building
- Placement and anchoring
- Rigging services
- Forklift rental



Building Installation and Assembly Services

DENIOS is your partner through the entire process of putting your new building into service. We want to make sure everything is properly installed to minimize downtime and meets your needs.

We offer the following services:

- Electric and HVAC hookup
- Fire suppression commissioning
- Concrete foundations and/or piers/slab for all DENIOS buildings

Call one of our trained experts for any of your service needs.



Spill & Flood Barrier Installation

Let us help to install your spill or flood barrier with our trained professionals. It is important to get it right from the start. From our initial design, to production and installation we are here to make it right.

Our onsite installation includes:

- Concrete/grout work around the barrier to ensure it is setup properly
- Product performance testing for quality control
- Maintenance training on how your new barrier deploys and how to reset it properly



On-site Service Analysis of Your DENIOS Products

- Detailed overview of your active DENIOS products including photo documentation
- Simplified procurement of replacement parts
- Shorter reaction times when service is needed
- Reduction of costs and unplanned downtime
- Recommendations for prescribed maintenance schedules depending on product type
- Annual service contracts available



DENIOS.

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