TECHNICAL NOTES

Chemical Containment Tanks

Selecting containment tanks

How Do I Select the Right Chemical Containment?

Globally, the chemical storage market was valued at USD 5.39 billion as of 2022, projected to grow at a CAGR of 4.26% to 2030. With rapid advancements in technology and AI also comes rapid industrialization and urbanization. This has prompted the expansion of industries such as chemicals, agri-processing, petrochemicals, and pharmaceuticals, all of which require chemical storage tanks.

In industries where handling hazardous chemicals is integral to operations, selecting the appropriate chemical containment tank is vital. Chemical storage tanks are engineered to safely store corrosive and volatile substances, safeguarding against leaks, spills, and reactivity.

At Pan America Environmental, we understand the complexities of these storage solutions and offer guidance on choosing high-performing tanks suited to your unique requirements. The correct tank choice can enhance operational efficiency, minimize risks, and extend equipment life—ultimately protecting your investment.

This comprehensive guide provides technical insights to help you select the ideal tank and maintain it for optimal performance.

Core Considerations in Selecting a Chemical Containment Tank

Selecting the best storage/process tank begins with a thorough understanding of your specific needs and the technical details of available tanks. Primary factors include:



Chemical Compatibility
Chemicals can react differently with tank materials. HDPE, XLPE, FRP, and stainless steel each offer specific advantages in corrosion resistance, durability, and reactivity depending on the chemical being stored.



Capacity Requirements
Accurately assess current storage demands while considering potential growth. Properly sizing your tank not only ensures safety but also supports operational continuity.



Installation Environment
Determine whether the tank will be located indoors, outdoors, above-ground, or underground. These factors influence your choice of material, durability, and installation design.



Regulatory Compliance
Adhere to regulations and standards such as EPA, NFPA, OSHA, and UL for legal, environmental, and operational safety.

Evaluating these considerations with precision ensures that your tank is optimized

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Top 9 Chemical Storage Tanks for Common Applications

Each tank type has unique characteristics and suitability for different applications and industries. Below is an overview of the most common tank types and designs for most applications.



Polyethylene (PE) Tanks

Material:	HDLPE, XLPE, UHMWPE
Benefits:	Water treatment, agricultural, manufacturing
Applications:	Corrosion-resistant, affordable, offered in many sizes and shapes



Fiberglass Reinforced Plastic (FRP) Tanks

Material:	FRP
Benefits:	Weather-resistant, durable, customizable
Applications:	Chemical processing, wastewater treatment



Steel Tanks

Material:	A36 coated carbon, 304, 316SS
Benefits:	Heat-resistant, pressure-tolerant
Applications:	Food processing, pharmaceutical storage, large scale storage, treatment processes



Cone Bottom Tanks

Material:	HDLPE, XLPE, FRP, Steel
Benefits:	Ideal for full drainage, seismic tie-down options
Applications:	Wastewater, chemical mixing, sludge storage, pretreatment to final treatment processes

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Double Wall Containment Tanks

Material: HDLPE, FRP, XLPE
Benefits: Dual containment for leak prevention, wind/seismic-rated
Applications: Hazardous chemical containment



Chemical Feed Stations

Material: HDLPE, XLPE
Benefits: Precise dosing, single/double wall safety
Applications: Water treatment, chemical dosing



Bladder Tanks

Material: Polymer
Benefits: Flexible, portable storage
Applications: Emergency containment, firefighting



Chemical Injection Systems

Material: HDLPE, XLPE
Benefits: Reliable for controlled dosing applications
Application: Wastewater, chem makeup, coagulation, pH, flocculation

A variety of tank types and configurations allows a multitude of solutions for all chemical dosing applications.

Have our specialists match a metering pump and controls to the storage.

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Polypropylene Storage Tanks

Material: Polypropylene

Benefits: Indoor-friendly, corrosion-resistant, easily customized

Applications: Chemical manufacturing, affordable storage

Each tank type is designed for specific applications, maximizing safety and efficiency in chemical handling. Also, since chemicals have different chemical characteristics, we recommend connecting with our storage specialist to determine the right tank for your application.

Maintenance Essentials for Chemical Storage Tanks

Maintaining chemical containment tanks is essential to ensure safety and longevity. A proactive maintenance routine prevents leaks, structural damage, and environmental hazards, safeguarding both workers and equipment.



Regular Inspections

Routine inspections help identify potential issues before they escalate. Depending on usage, tank material, and environmental factors, inspect tanks weekly, monthly, or quarterly.

- Visible Damage: Look for cracks, stress fractures, or leaks.
- Corrosion: Check metal tanks and fittings for rust.
- Discoloration: Surface color changes may indicate chemical reactions.
- Fittings and Valves: Tighten and inspect all connections.

***Pro Tip*:** Document inspections with images and notes for future reference.



Advanced Cleaning Techniques

Cleaning minimizes contamination, especially if tanks are used to store different chemicals.

1. Drain: Completely remove tank contents.
2. Rinse: Use high-pressure water to remove residues.
3. Apply Cleaning Solutions: Use compatible solutions for persistent buildup.
4. Scrub: Utilize appropriate brushes to clean tank walls and base.
5. Final Rinse: Ensure all cleaning agents are removed before refilling.

   Dry tanks thoroughly after cleaning to prevent chemical reactions with residual water.



Ventilation and Pressure Control

Inadequate pressure control can compromise tank integrity. Volatile chemicals may emit gases, so installing venting systems and pressure relief valves is crucial.

Best Practices for Pressure Control

- Install tank-specific venting systems.
- Regularly clean vent filters.
- Use relief valves to prevent excessive pressure buildup.

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Monitoring pH and Compatibility

Regularly monitoring pH levels ensures tank compatibility with chemicals, helping prevent chemical reactions or material breakdown. Also, the stored material should be compatible with the tank used with the right specific tank gravity.

Pan America can provide pH monitoring www.intell-i-watch.com and pH neutralization systems where required https://www.panamenv.com/chemical-treatment/eph/



Recommended Maintenance Schedule

To help prevent costly repairs and optimize tank life, establish a routine maintenance schedule.

Task	Frequency
Leak and Odor Checks	Daily
Exterior Inspections	Weekly
Vent Filter Cleaning	Monthly
Comprehensive Inspection	Annually

Advanced Monitoring Solutions: Pan America Environmental offers ultrasonic level monitoring with our www.Intell-i-Watch.com monitoring system for sensing precise level readings and interstitial leak detection systems that provide immediate alerts for leaks.

To monitor the following use our www.intell-i-watch.com monitoring systems:

- Level: All sensor types
- Flow: All meter types
- Temperature
- Pressure
- Leak detection
- Tank inventories

And much more.

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Essential Repair Tools

- Professional Poly Welding Gun: Designed to operate on standard 110V power, ensuring convenience and effectiveness.
- Specialized Welding Wire: Includes copolymers and adhesives for bonding with tank materials.
- Insulation Repair: Combine design and precision engineering to make minor repairs effortless.
- Polyethylene Welding Rods: Available in various lengths to accommodate different repair needs.
- Patch Kits: Compact solutions for addressing minor damages, especially useful for bladder tanks.

Repair Best Practices

- Temperature Control: Perform repairs in a temperature-controlled environment to ensure proper bonding.
- Pre-Clean and Prepare: Clear all dirt, grease, and chemical residue from the damaged area.
- V-Notching Techniques: Prepare the damaged area by V-notching to half or three-fourths the material thickness for effective weld penetration.
- Consistent Welding Passes: Apply smooth, even passes for optimal bond strength.

P.S.: *For significant repairs, or if any safety concern persists, we recommend consulting with certified professionals to ensure the integrity and compliance of your tank.*

Pan America Environmental can deliver State-of-the-Art chemical storage solutions

Choosing a chemical containment tank is an investment in safety, operational efficiency, and environmental responsibility. From standard tanks to custom-designed solutions, Pan America Environmental offers comprehensive expertise, high-quality products, and professional support for every storage need.

Maintaining your tank through regular inspections, cleaning, pressure management, and timely repairs ensures a long-lasting, reliable storage system that protects your investment. Our expert team is available for consultations to help you find the best tank solution and maintain it effectively.

Explore our full range of chemical containment tanks and services by contacting Pan America Environmental, Inc. your partner in advanced, safe, and sustainable chemical storage solutions.

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