

EQUIPMENT GUIDE / STORAGE & CONTAINMENT

Chemical Storage Tank Selection Guide

Which tank resin, wall construction, and containment architecture holds up against your actual chemical and concentration – not the generic "chemical resistant tank" answer.

THE PROBLEM THIS GUIDE SOLVES

Sulfuric acid is the only chemistry with an unconditional secondary-containment mandate

A tank rated "chemical resistant" is not a specification. Resin type (LPE vs. XLPE), wall construction (single vs. dual containment), and fitting material are three separate questions — and this dataset shows real double-exclusion cases where two commonly-assumed-safe materials (Viton and PVDF) are both explicitly not recommended for sodium hydroxide bulkhead fittings.

This guide organizes real, vendor-documented selection data by tank category, not by brand. Every material call-out is sourced to a named vendor document, a real LibertyCES field case, or the chemical-compatibility chart.

TANK SELECTION, AT A GLANCE

Storage & containment categories, by what they're actually built to hold

Tank category	Built for	Watch for
Storage Tank	General chemical storage across acids, caustics, oxidizers, and fuels	Standard LPE is not resistant to fuels or fuming sulfuric acid — XLPE is the real engineered exception, not a generic upgrade
Dual Containment Tank	Chemicals with dangerous exothermic reaction to water, e.g. sulfuric acid	Explicitly ideal for exothermic-reaction chemistries — single-wall tanks are the wrong category for these, not just a lesser option
Wastewater Tank	pH-neutralization holding tanks with closed-loop dosing	Double-wall polyethylene handles both the acidic feed and the caustic dosing chemical in the same real installation
Brine Tank / Brine Storage & Regeneration Tank	Softener regeneration brine, dedicated salt/brine service	A dedicated product family, not a general-purpose tank pressed into brine service
Balance Tank / Surge Tank	Flow equalization and surge capacity in a treatment train	Sized to the process, not just the chemical — the flow-rate variance matters as much as the chemistry
Bulk Storage Tank / Silo	Large-volume bulk chemical or dry-material storage	Structural loading and material-handling equipment integration are as important as the wetted material

STORAGE TANK — EVIDENCE: STRONG

Acids & caustics — the double-exclusion cases



Poly Processing SAFE-Tank / IMFO

Also: [Snyder Vertical/Horizontal Tanks](#) · [Peabody ProChem](#) · [Ace Roto-Mold Vertical Tanks](#)

Sulfuric Acid

Hydrochloric Acid

Hydrofluoric Acid

Material flag: sulfuric acid is the only chemistry in this dataset with an unconditional secondary-containment mandate per Poly Processing — not a recommendation, a mandate. Standard PE itself fails at 98%+ concentration or fuming form; XLPE is recommended over LPE, and above 70% concentration at 100°F, PVDF or 316SS becomes the required material rather than PE at all. Snyder confirms this with a dedicated resin (#880046) for the same service.

Caustics/bases: Peabody's bulkhead-fitting table shows an unusual double-exclusion for sodium hydroxide and potassium hydroxide — both Viton *and* PVDF are explicitly not recommended, with EPDM required instead. Two materials that would be assumed safe defaults elsewhere in this dataset both fail specifically on caustic bulkhead fittings.

STORAGE TANK — OXIDIZERS, SALTS & SOLVENTS



Ace Roto-Mold Vertical Tanks · Snyder Fuel Tanks

Sodium Hypochlorite

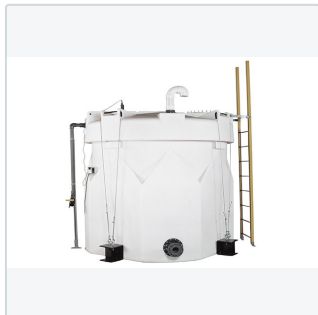
Hydrogen Peroxide

Gasoline / Toluene / Xylene / Benzene

Poly Processing caps on-site hypochlorite generation (0.8%) at 4,000 gallons without engineering review, and a hinged-weighted manway vents at 0.25 psi specifically for hydrogen peroxide decomposition. Both EPDM and 316SS are flagged as a flat "N" (not recommended) per Ace Roto-Mold for this service — Snyder uses a dedicated resin (#880059) instead. Snyder separately dedicates a distinct Brine Tank product family for salt/brine service, using HDPE or polypropylene, with calcium chloride and sodium chloride brine both explicitly confirmed.

Fuel/solvent exception: standard LPE is not resistant to fuels, but XLPE construction is a real, explicit engineered exception documented independently by two tank vendors — not a generic upgrade, a specific documented fuel-tank construction for gasoline, toluene, xylene, and benzene service.

DUAL CONTAINMENT TANK – EVIDENCE: STRONG

Exothermic-reaction chemistries need this category, not single-wall**Poly Processing SAFE-Tank · Snyder Captor / DCT Systems**

Sulfuric Acid

Sodium Hypochlorite

SAFE-Tank is explicitly marketed as ideal for chemicals with dangerous exothermic reaction to water – sulfuric acid is the named example, using XLPE construction. This is a category-level answer, not a material upgrade: single-wall tanks are the wrong architecture for these chemistries regardless of resin grade. Snyder's Captor Double Wall Tank line confirms a dedicated resin (#880059) for sodium hypochlorite service specifically, matching the same resin used on Snyder's single-wall hypochlorite tanks – the dual-containment version isn't a different material, it's a different wall architecture around the same proven resin.

WASTEWATER TANK – EVIDENCE: STRONG

One tank, two opposite-chemistry roles**Snyder 4,500-gallon Double-Wall Polyethylene Tank**

Acidic Wastewater (pH 3.3)

Caustic Dosing Chemical

FIELD RECORD – AUTOMATED WASTEWATER PH TREATMENT

Acidic wastewater is neutralized in a double-wall polyethylene holding tank with closed-loop PLC dosing. The same tank system handles both the acidic feed water (pH 3.3) and the caustic dosing chemical added to neutralize it – one tank, two opposite-chemistry roles, matching the same pattern already documented for mixers in this dataset.

Double-wall polyethylene construction is the confirmed material across both roles, using Snyder's Wastewater / Chemical Feed Station Tank line.

NEXT STEP

Send LibertyCES the process data, not a part number.

Seven storage and containment categories, real vendor selection data, one guide — but your actual chemical still has a specific concentration, temperature, and reactivity profile that determines which resin, wall construction, and fitting material is correct. A spec review checks the exact conditions against the exact tank, before anything gets ordered.

Chemical, concentration, temperature, volume, and current infrastructure — that's what a real spec review needs to start.

Request a spec review

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