PolyProcessing
SOLUTIONS, SIMPLIFIED.
www.polyprocessing.com

Sulfuric Acid.

Challenging a storage tank's strength and design safety.

Sulfuric acid is used in a huge array of industrial applications, for everything from water and wastewater treatment to the manufacture of chemicals, fertilizer and car batteries. But this highly exothermic acid presents serious storage challenges, for a number of reasons.

- Sulfuric acid is an extremely heavy chemical that will test the mechanical integrity of any material and the foundation that supports the tank
- The addition of water to concentrated sulfuric acid leads to the dispersal of a sulfuric acid aerosol – or worse yet, an explosion
- If sulfuric acid is spilled on metals, it can create highly flammable hydrogen gas
- Skin and other bodily burns from sulfuric acid are potentially more serious than burns from other strong acids. Sulfuric acid dehydrates whatever it touches, and the heat caused by that reaction with water can create secondary thermal damage.

Poly Processing's tanks and fittings can be combined specifically to contain sulfuric acid, reducing the risks presented by this highly acidic chemical.

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Winchester, VA 22603

H_2SO_4

SULFURIC ACID

The Poly Processing Sulfuric Acid System

Through a combination of innovative features, Poly Processing created the ideal system for sulfuric acid storage. With our **robust load tolerance**, cross-linked polyethylene tanks can more than handle the chemical's heavy weight. The molecular bonding of XLPE and tank wall thickness is particularly important in the bottom third of the tank, where high levels of load are concentrated.

If secondary containment is not present, the Poly Processing SAFE-Tank® is a smart choice. Along with containing the chemical from its surrounding environment, this double-walled tank **greatly lowers the risk for hazardous contact of sulfuric acid with water**. SAFE-Tank® systems are designed with OR-1000™.

If secondary containment* is present, the IMFO® tank is recommended. With the use of an IMFO® system instead of mechanical fittings, the tank's **structural integrity is maximized**. Combine this tank design with the OR-1000™ system, and **oxidation is reduced dramatically**.

All of these features lead to a safer tank – designed to **reduce safety risks** and **improve the longevity of the system**.

*Containment is required with this chemical in all applications.

H_2SO_4
SULFURIC ACID

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Sulfuric Acid Storage Tanks

Tank Specifications

- **11/15 Rule** Sulfuric Acid can be stored in tanks less than 11,000 gallons and less than 15 feet tall
- **High-density cross-linked polyethylene (XLPE)** accommodates the heavy weight of sulfuric acid
- **OR-1000™** bonds the XLPE with an antioxidant inner surface, minimizing oxidation, reducing the potential for fault and maximizing life span
- **SAFE-Tank® design** creates a tank-within-a-tank, ensuring that water will not enter the containment area. (Recommended where secondary containment is not available.)
- **IMFO® tank** is molded as a single unit. This maintains hoop stress rating, adding to the strength of the tank. (Recommended for situations with existing secondary containment.)
- **B.O.S.S. Fitting®** provides bolted one-piece sure-seal design, limiting the seal point to a single gasket for major leak prevention

Recommended System Components

Venting:
SAFE-Surge® manway cover is recommended on pneumatically loaded systems to support tank longevity

Fittings:
Recommend bellows transition fitting for bottom sidewall discharge

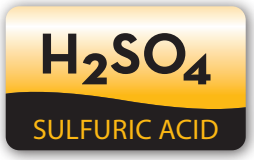
Fittings:
B.O.S.S. Fitting® recommended to prevent leaks and over tightening

NOTE: For concentrations less then 93%, DO NOT use stainless steel

Plumbing:
Reverse float level gauge recommended to know proper chemical level

The above components are just a few of the many options offered by Poly Processing. For additional information and products, visit **www.polyprocessing.com/sulfuricacid** or talk to your Poly Processing representative.

Sulfuric Acid System Requirements



TANKS

11/15 Rule :

Less Than 11,000 Gallons and Less Than 15' Tall

- Sulfuric Acid may be stored in any tank less than 11,000 gallons and less than 15 feet tall. This includes the Vertical, IMFO®, Sloped IMFO®, And SAFE-Tank®

SECONDARY CONTAINMENT

✓ SAFE-Tank® (recommended)

Non-SAFE-Tank® alternatives:

- PPC secondary containment basin
- Other secondary containment suitable for sulfuric acid, of adequate size for use

FITTINGS

SAFE-Tank® sidewall: Recommend Transition Fitting®

Single Wall Sidewall: Recommend BOSS Fitting®

Dome: No restrictions

PLUMBING TO THE TANK

- Required use of **flexible connections** with fittings on lower one-third of sidewall
  - » Allows for lateral and vertical expansion and contraction of the tank. Reduces pump and piping vibration stress on the tank.
  - » Flexible connections, piping, and valves must have structural support independent of the tank sidewall or dome.
- Expansion joints must meet the following minimum requirements:
  - » Axial Compression ≥ 0.67"
  - » Axial Extension ≥ 0.67"
  - » Lateral Deflection ≥ 0.51"
  - » Angular Deflection ≥ 14°
  - » Torsional Rotation ≥ 4°

TEMPERATURE

Product should not exceed 100°F at delivery or during storage to maintain ASTM D 1998 design parameters.

VENTING

polyprocessing.com/venting or see chart in catalog

FOUNDATION AND RESTRAINTS

- Poly Processing structural acid pad or concrete rated to accommodate weight of acid in IMFO®, SAFE-Tank® or vertical tank. All foundations must have an appropriate chemical resistant coating.
- Cable restraint systems (when called for) must pass over the top of the tank.

LID

SAFE-Surge® manway cover for pneumatically loaded tanks; bolted manway cover for all other applications.

OPTIONS

- Restraint systems for wind and seismic
- Reverse Float Level Gauge
- Ladders
- Heating pads and insulation
- Fume-tight manway cover
- NSF-61 chemical certification
- Third party engineering stamp for seismic

CHEMICAL	RESIN TYPE	SPECIFIC GRAVITY RATING	FITTING MATERIAL	GASKET MATERIAL	BOLT MATERIAL
Sulfuric Acid ≥ 93%	XLPE with OR-1000™	2.2	PVC	Viton®	316SS
Sulfuric Acid 80% to ≤92%	XLPE with OR-1000™	2.2	PVC	Viton®	C-276
Sulfuric Acid < 80%	XLPE with OR-1000™	2.2	PVC	Viton®	C-276

»» See our website for a complete Chemical Resistance Chart

NOTE: To meet NSF-61 certification, use Viton® GF.