



CHEMICAL STORAGE RECOMMENDATIONS
FROM ASSMANN CORPORATION OF AMERICA

>93% SULFURIC ACID STORAGE

Sulfuric Acid is a highly corrosive, strong mineral acid with the molecular formula H_2SO_4 . It is a pungent, colorless to slightly yellow viscous liquid that is soluble in water at all concentrations. Sulfuric Acid shows different properties depending upon its concentration. Its corrosiveness on other materials, like metals, living tissues, or even stones, can be mainly attributed to its strong acidic nature and, if concentrated, strong dehydrating and oxidizing properties. Sulfuric acid has a wide range of applications including as an electrolyte in lead-acid batteries and in various cleaning agents. It is also a central substance in the chemical industry. Uses include mineral processing, fertilizer manufacturing, oil refining, wastewater processing, and chemical compounding. Sulfuric

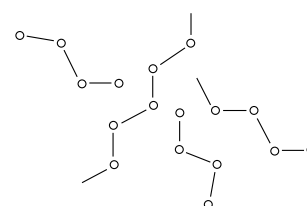
Acid has an approximate specific gravity of 1.830 at 77°F. The major use of Sulfuric Acid is in the manufacturing of chemicals, hydrochloric acid, nitric acid, synthetic detergents, dyes and pigments, and drugs. Sulfuric Acid is one of the most important compounds made by the chemical industry. It is used to make, literally, hundreds of compounds needed by almost every industry. Tank manufacturers' products and processes vary considerably, therefore, selecting an appropriate storage vessel should entail a thorough evaluation. This document is to be used as a guideline for selecting the best options for your Assmann Polyethylene Tank.

ASSMANN POLYETHYLENE TANKS ARE NSF CERTIFIED

Assmann Corporation is the only manufacturer that has NSF certification for our Crosslink polyethylene in chemical storage applications. Other storage tank manufacturers do not carry the NSF certification on Crosslink polyethylene without the use of expensive liners, or they simply have potable water certification and do not have chemical certification. While selecting your storage tank, consider if NSF certification is required.



Certified to
NSF/ANSI 61



Assmann recommends that tanks be constructed of Linear Polyethylene. Assmann requires that tanks be rated for a minimum of 2.2 Specific Gravity. All connections below liquid level must prevent chemical from contacting the tank wall cross section. When practical, Sulfuric Acid should not exceed 100°F at delivery or during storage. Tank should be kept from direct sunlight to avoid excessive heat. When possible, multiple smaller storage tanks should be used in lieu of one large storage tank. Assmann has the ability to manufacture Sulfuric Acid tanks up to 12,000 gallon capacity.

Assmann's Linear polyethylene has an ESCR value of >1000 Hrs. Our Linear material is a .938 density and should not be confused with "High Density Linear Polyethylene." Assmann's .938 density material has a higher environmental stress cracking resistance than our competitors.

SULFURIC ACID >93%

Resin	Specific Gravity	Fitting Material	Gasket Material	Hardware
LLDPE	2.2	CPVC	Viton	Hastelloy C-276

SULFURIC ACID 92% - 50%

Resin	Specific Gravity	Fitting Material	Gasket Material	Hardware
LLDPE	2.2	CPVC	Viton	Hastelloy C-276

SULFURIC ACID <50%

Resin	Specific Gravity	Fitting Material	Gasket Material	Hardware
LLDPE	1.9	CPVC	Viton	Hastelloy C-276



Venting polyethylene storage tanks is one of the most commonly overlooked steps but is a significant one. It is extremely important that polyethylene tanks are not over-pressurized or placed under vacuum. Adequate vent size will always be based on flow rates and delivery rates; however you can NEVER have too much venting. Over-pressurization and vacuum are the two leading causes of failure in a polyethylene storage tank. Vents should be sized a minimum of 2-3 times the largest inlet or outlet connection when tanks are filled by a tanker that uses air unloading techniques. Vents should be sized 1½-2 times the largest inlet or outlet nozzle when diaphragm pumps or non-pressurized methods are used for filling. Venting is critical when considering tank longevity. Polyethylene storage tanks must maintain atmospheric pressure. Under no circumstances should tanks be placed under pressure or vacuum conditions. Assmann Corporation offers a wide variety of venting options in multiple sizes and configurations.

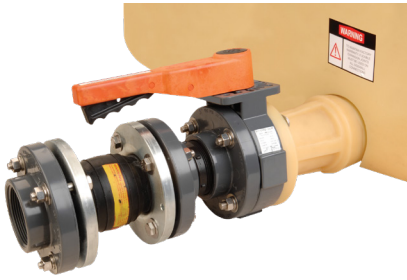


Assmann offers manway covers specifically designed to help prevent tank over-pressurization. These manways are available in 16", 22", and 24" sizes depending on tank model. These manways should be used when tanks are pneumatically filled by tanker trucks or when there are high delivery flows. We also offer bolted and gasketed covers for indoor applications where hazardous fumes need to be restricted.

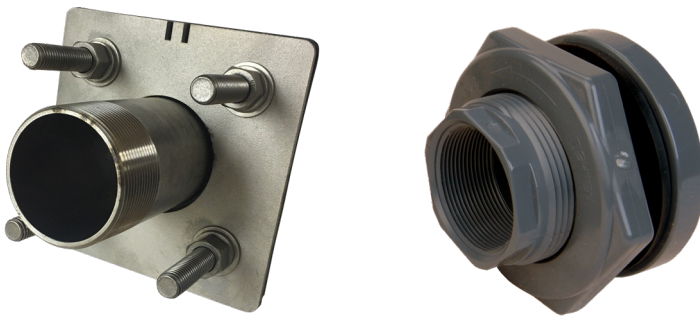
SECONDARY CONTAINMENT

Proper design of a storage system will include adequate containment in case of tank failure. Containment should be adequate in capacity and suitable for Sulfuric Acid. Typically, containment basins are sized to a minimum of a 110% of the primary tank's capacity. Assmann offers both secondary containment basins and double-walled tanks to meet containment requirements. End user should check local regulations to meet secondary containment requirements and ensure that all coating and linings are compatible with Sulfuric Acid.





Flexible hoses or expansion joints must be used on all lower ½ sidewall connections. A lightweight isolation valve is permitted prior to the flexible joint. All piping must be supported independent of tank. Pipe supports must be installed after the flexible joint to allow the tank to expand and contract under normal service conditions. Polyethylene tanks expand and contract both laterally and vertically; expansion hose or joint must accommodate this expansion.



Assmann recommends the following fitting materials of construction; Materials should be CPVC or Hastelloy C-276 for nozzles. Gaskets should be VITON material. Metallic fittings and hardware should be Hastelloy C-276. All connections below liquid level must prevent chemical from contacting the tank wall cross section. Bulkhead-style connections can be used on tanks 2,000 gallons and below. The sidewall connections of tanks above 2,000 gallons should be Hastelloy C-276 construction. (Flange-style fittings are not recommended). There are no restrictions on dome fittings.



Certificate Number:
DAS 90024930/39/Q Rev: 001

Quality: First and Forever

Assmann polyethylene bulk storage tanks are built the right way – even if that's not the easiest or fastest way. We're the only manufacturer who uses non-shielded molds with low temperature heat and gradual air cooling. The result is truly uniform wall thickness, unparalleled certified quality, and reliability that proves itself every time and across decades.

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