TECHNICAL DATA SHEET

Sulfuric Acid 50% - Electrolyte Grade

Revised: 07/22/2026

PRODUCT IDENTIFICATION

Product Name: Sulfuric Acid 50% - Electrolyte Grade
CAS Number: 7664-93-9
Molecular Formula: H_2O_4S
Molecular Weight: 98.08 g/mol
Grade: Electrolyte
Purity / Concentration: 50%
Synonyms: Sulfuric Acid Dilute, Electrolyte Sulfuric Acid

PRODUCT OVERVIEW

Alliance Chemical offers high-purity Sulfuric Acid 50% in Electrolyte Grade, specifically formulated for sensitive electrochemical applications. This clear, viscous liquid features exceptionally low impurity levels, such as 0.1 ppm Iron and 0.05 ppm Heavy Metals, ensuring reliable performance in demanding industrial and laboratory environments.

Grade Significance: Electrolyte grade indicates a high-purity product with minimal metallic and ionic impurities, which is essential to prevent internal short-circuiting and premature degradation in electrochemical devices.

CERTIFICATE OF ANALYSIS — TYPICAL VALUES

PARAMETER	UNIT	TYPICAL	MIN	MAX	TEST METHOD
Assay (Titration)	%	50	49	51	Titration
Color (APHA/Hazen)	APHA	5	0	10	Spectrophotometry
Specific Gravity (20°C)	g/mL	1.4462	1.39	1.5185	Hydrometer @ 25°C
Non-Volatile Residue	%	0.0030	—	0.01	Residue on Ignition
Arsenic Antimony As As	ppm	0.0016	—	0.0052	ICP-MS
Heavy Metals As Pb	ppm	0.156	0	0.52	ICP-MS (as Pb)
Iron (Fe)	ppm	0.03	0	0.1	ICP-MS
Chloride Cl	ppm	0.03	0	0.1	ICP
Nitrate No3	ppm	0.078	0	0.26	ICP
Mercury Hg	ppm	0.78	—	2.6	ICP-MS
Sulfite So3	ppm	3	0	5.2	ICP
Turbidity	NTU	0.3	0	1	EPA 180.1

ND = Not Detected. Values are typical and may vary by lot.

PHYSICAL & CHEMICAL PROPERTIES

Appearance	Clear, viscous liquid	**Form**	Liquid solution
Boiling Point	Not characterized for the 50% solution	**Melting / Freezing Point**	Not characterized for the 50% solution
Specific Gravity	1.4	**Solubility**	Complete water miscibility, organic solvent
Molecular Formula	H_2O_4S	**Molecular Weight**	98.08 g/mol

APPLICATIONS

1. **Battery Manufacturing** — Used as a high-purity electrolyte solution in lead-acid battery production to ensure optimal charge transfer and longevity.
2. **Laboratory Research** — Serves as a precise reagent for analytical chemistry and titration processes where trace metal contamination must be strictly controlled.
3. **Metal Finishing** — Utilized in electrolytic cleaning and pickling baths to remove surface impurities from precision metal components without introducing unwanted contaminants.
4. **Electronics** — Employed in semiconductor cleaning processes where the low residue profile is critical for maintaining component integrity.

STORAGE & HANDLING

Proper storage is vital because Sulfuric Acid is highly corrosive and can cause severe skin burns and eye damage upon contact. It must be kept in a cool, well-ventilated area in original, compatible containers to prevent dangerous reactions and ensure the long-term stability of the solution's precise concentration.

AVAILABLE PACKAGING

- 1 Quart
- 1 Gallon
- 5 Gallon
- 15 Gallon
- 55 Gallon
- 275 Gallon
- 330 Gallon

SAFETY SUMMARY (CROSS-REFERENCE TO SDS)

Signal Word: Danger

Hazard Statements:

- H314: Causes severe skin burns and eye damage [Danger Skin corrosion/irritation]

Emergency Contact: CHEMTEL - 800-255-3924 (24 Hours/Day, 7 Days/Week)

For complete safety information, refer to the Safety Data Sheet (SDS) for this product.

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