# TECHNICAL DATA SHEET

## Sulfuric Acid 96% ACS Grade

Revised: 04/27/2026

## PRODUCT IDENTIFICATION


**Product Name:** Sulfuric Acid 96% ACS Grade
**CAS Number:** 7664-93-9
**Molecular Formula:** $H_2O_4S$
**Molecular Weight:** 98.08 g/mol
**Grade:** ACS Grade
**Purity / Concentration:** 96%
**Synonyms:** Oil of Vitriol, Sulfuric Acid Solution

## PRODUCT OVERVIEW

Sulfuric Acid 96% ACS Grade is a high-purity, dense, clear liquid essential for demanding laboratory and industrial processes. With a verified assay of 98.5% and exceptionally low impurity levels, such as 0.0050 ppm for Arsenic, this reagent provides the consistency required for precision chemical synthesis and analytical testing.

**Grade Significance:** ACS Grade signifies that the product meets the strict purity standards set by the American Chemical Society, ensuring the consistency and reliability required for sensitive analytical and laboratory applications.

## CERTIFICATE OF ANALYSIS — TYPICAL VALUES

| PARAMETER | UNIT | TYPICAL | MIN | MAX | TEST METHOD |
|---|---|---|---|---|---|
| Assay (wt%) | % | 98.5 | 96 | 99.5 | Titration with standardized NaOH |
| Color (APHA) | APHA | 5 | — | 10 | APHA/Hazen visual comparison |
| Specific Gravity (20°C) | g/mL | 1.86 | 1.84 | 1.88 | Hydrometer or pycnometer at 20°C |
| Residue After Ignition | % | 0.02 | — | 0.05 | Gravimetric residue after evaporation and ignition |
| Aluminum (Al) | ppm | 0.05 | — | 0.2 | ICP-OES |
| Arsenic (As) | ppm | 0.0050 | — | 0.01 | ICP-MS |
| Calcium (Ca) | ppm | 2 | — | 10 | ICP-OES |
| Chromium (Cr) | ppm | 0.05 | — | 0.2 | ICP-OES |
| Cobalt (Co) | ppm | 0.01 | — | 0.05 | ICP-OES |
| Copper (Cu) | ppm | 0.02 | — | 0.1 | ICP-OES |
| Heavy Metals (as Pb) | ppm | 0.05 | — | 0.2 | ICP-MS |
| Iron (Fe) | ppm | 0.05 | — | 0.2 | ICP-OES |
| Lead (Pb) | ppm | 0.1 | — | 0.5 | ICP-OES |
| Magnesium (Mg) | ppm | 2 | — | 10 | ICP-OES |
| Manganese (Mn) | ppm | 0.02 | — | 0.1 | ICP-OES |
| Nickel (Ni) | ppm | 0.02 | — | 0.1 | ICP-OES |
| Potassium (K) | ppm | 20 | — | 100.0 | ICP-OES |
| Sodium (Na) | ppm | 20 | — | 100.0 | ICP-OES |
| Zinc (Zn) | ppm | 0.1 | — | 0.5 | ICP-OES |
| Ammonium ($NH_4^+$) | ppm | 0.1 | — | 0.5 | Ion Chromatography (IC) |
| Chloride ($Cl^-$) | ppm | 0.2 | — | 0.5 | ICP-OES |
| Nitrate ($NO_3^-$) | ppm | 0.5 | — | 2 | ICP-OES |
| Phosphate ($PO_4^{3-}$) | ppm | 1 | — | 5 | Ion Chromatography (IC) |
| Sulfate ($SO_4^{2-}$) | ppm | 10 | — | 50 | Ion Chromatography (IC) or ICP-OES |
| Substances Reducing $KMnO_4$ | — | Passes test | — | — | Potassium permanganate time test |
| Sulfurous Acid ($H_2SO_3$) | ppm | 5 | — | 10 | Colorimetric or iodometric titration |

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

## PHYSICAL & CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Appearance** | Dense, clear liquid | **Odor** | Odorless |
| **Form** | Liquid | **Boiling Point** | 337°C (639°F) |
| **Melting / Freezing Point** | 10°C (50°F) | **Specific Gravity** | 1.84 |
| **Solubility** | Highly water soluble, reacts with most solvents | **Molecular Formula** | $H_2O_4S$ |
| **Molecular Weight** | 98.08 g/mol | **Vapor Pressure (20°C)** | 0.3 mmHg |
| **Viscosity (25°C)** | 1.12 cP (at 25°C) | **Refractive Index (20°C)** | 1.406 |
| **Density (25°C)** | 1.84 g/mL | **Decomposition Temp.** | Decomposes at high temperatures with release of water vapor |

## APPLICATIONS

1. **Energy Storage** — Functions as a high-performance electrolyte in lead-acid batteries to facilitate efficient energy transfer and storage.
2. **Water Treatment** — Utilized for precise pH adjustment to neutralize alkaline water streams, ensuring compliance with environmental standards.
3. **Agriculture** — Serves as a critical reagent in the synthesis of various fertilizers, supporting large-scale crop nutrient production.
4. **Organic Synthesis** — Acts as a powerful dehydrating agent in complex chemical reactions, enabling the formation of various organic compounds.
5. **Analytical Chemistry** — Provides a high-purity medium for rigorous laboratory testing and standardized analytical procedures where impurity interference must be minimized.

## STORAGE & HANDLING

Proper storage is critical because Sulfuric Acid is highly corrosive and causes severe skin burns and eye damage. It must be stored in a cool, well-ventilated area in chemically compatible containers to prevent dangerous reactions and ensure the integrity of the high-purity ACS grade.

- Store in a cool, dry, well-ventilated area away from incompatible materials.
- Use corrosion-resistant containers (e.g., HDPE, glass) for storage.
- Avoid contact with strong bases and organic materials to prevent violent reactions.
- Ensure proper personal protective equipment (PPE) is worn, including gloves and goggles.
- Keep containers tightly closed when not in use to prevent moisture absorption.

## 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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