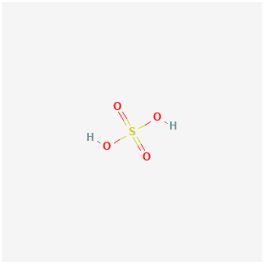
Technical Data Sheet

Sulfuric Acid 50% Electrolyte Grade

Electrolyte · 50%

Alliance Code	Revised	Revision
sulfuric-acid-50-electrolyte-grade	2026-10-07	1.6

CAS number 7664-93-9	UN number UN2796	Hazard class · packing group 8 · PG II
 Structure · PubChem	Grade Electrolyte · 50%	Signal word **Danger**
Hazards Corrosive H290 H314		
Proper shipping name Sulfuric acid with not more than 51% acid		

IDENTITY & COMPOSITION

PRODUCT NAME
Sulfuric Acid 50% Electrolyte Grade

ALLIANCE CODE
sulfuric-acid-50-electrolyte-grade

GRADE
Electrolyte

CONCENTRATION
50% w/w

CAS NUMBER
7664-93-9 PubChem

FORMULA
H2SO4 PubChem

MOLECULAR WEIGHT
98.08 PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (H_2SO_4)	49.0 - 51.0 % w/w	—	—	Interpreted
Color, APHA	50 max	—	—	Interpreted
Total heavy metals	13 ppm max	—	—	Interpreted
Iron (Fe)	50.0 ppm max	—	—	Interpreted
Mercury	1.0 ppm max	—	—	Interpreted
Nitrates (as NO_3)	54 ppm max	—	—	Interpreted
Residue after ignition	54 ppm max	—	—	Interpreted
Specific Gravity @ 68°F	1.408 min	—	—	Interpreted
Sulfur dioxide (SO_2)	27 ppm max	—	—	Interpreted
Chloride (Cl)	5.0 ppm max	—	ASTM E223 (turbidimetric, $AgNO_3$)	Interpreted
Manganese (Mn)	0.5 ppm max	—	ICP-OES	Interpreted
Arsenic (As)	1.0 ppm max	—	ICP-MS	Interpreted

Values are reproduced from the current product reference. Source labels do not by themselves establish a supplier guarantee or a test result for your lot. Confirm applicable acceptance limits and request lot-specific documentation.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE Electrolyte	50%	—	current
ACS Grade	96%	—	sulfuric-acid-96-acs-grade
Technical Grade	93%	—	sulfuric-acid-93-technical-grade
Technical	70%	—	sulfuric-acid-70
Technical	37%	—	sulfuric-acid-37-battery-acid
Technical	30%	—	sulfuric-acid-30

Typical assay for each grade is the average of its recent lots. Confirm a grade meets your specification before substituting it.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Clear, viscous liquid	Adjudicated
Form	Liquid solution	Published reference
Odor	Odorless	Adjudicated
pH	< 1	Adjudicated
Specific Gravity	1.39–1.40 at 20 °C (water = 1)	Adjudicated
Density	1.4 (50% w/w aqueous solution, 20 °C)	Published reference
Boiling Point	123 °C (254 °F)	Adjudicated
Melting Point	-36.6 to -34 °C (-34 to -29 °F), freezing point (aqueous solution)	Adjudicated
Flash Point	Not applicable	Adjudicated
Vapor Pressure	1 mmHg at 294.8 °F (EPA, 1998)	Published reference
Solubility (water)	Completely miscible with water (dilution releases heat)	Adjudicated

Strong acid — density and vapor-pressure values shown are at 20 °C; values shift markedly with concentration and temperature. Reference concentration-temperature curves before specifying equipment.

MATERIALS OF CONSTRUCTION SERVICE ENVELOPE ≈ 50%

MOC ratings are required for this chemical class but no compatibility data has been seeded yet. Treat as no-data and consult Alliance Technical Services before equipment selection.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN2796 Manual review

HAZARD CLASS

8 Adjudicated

PACKING GROUP

II Adjudicated

PROPER SHIPPING NAME

Sulfuric acid with not more than 51% acid

Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H290, H314 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P264, P280, P301+P330+P331, P303+P361+P353, P304+P340, P305+P351+P338, P310, P321, P363, P390, P405, P406, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

1 mg/m³ TWA OSHA 29 CFR 1910.1000

ACGIH TLV

0.2 mg/m³ TWA (thoracic fraction); A2 for strong inorganic acid mists containing sulfuric acid

Adjudicated

NIOSH REL

1 mg/m³ TWA NIOSH Pocket Guide

NIOSH IDLH

15 mg/m³ NIOSH Pocket Guide

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

HEALTH & FIRE HAZARD

ACUTE TOXICOLOGY

LD_{50} ORAL (RAT)

2,140 mg/kg (sulfuric acid)

Adjudicated

LC_{50} INHALATION (RAT, 4 H)

0.375 mg/L (sulfuric acid mist)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

Battery manufacture, chlorine dioxide generation, effluent treatment and inorganic pigment production

nouryon.com

Manufacture of fertilizers (agriculture) lookpolymers.com

Oxidizing and dehydrating agent in chemical processing lookpolymers.com

Treatment of metals (metallurgy) and purification of petroleum lookpolymers.com

pH control in water treatment lookpolymers.com

Applications are drawn from published manufacturer and supplier documentation; each is sourced. Suitability for a specific use is the buyer's to confirm.

STORAGE & HANDLING

RECOMMENDED STORAGE

Keep closed in acid-resistant plastic containers in a cool, ventilated area away from bases, bleach and metals. To dilute, add acid slowly to water.

Adjudicated

HANDLING PRECAUTIONS

Use full PPE including face shield, acid-resistant gloves and apron. Add acid to water slowly with stirring; never reverse. Ventilation required.

Class-level guidance — not product-specific; the SDS controls.

INCOMPATIBILITIES

Bases (violent, heat); bleach and other hypochlorites (release chlorine); cyanides and sulfides (release toxic gases); most metals (release flammable hydrogen); organic materials, chlorates, permanganates and nitrates.

Adjudicated

SHELF LIFE

Consult Technical Services for product-specific shelf life

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

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UN2796, Sulfuric acid with not more than 51% acid, 8, PG II
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Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS	PLACARD	PACKING GROUP
60	Corrosive	PG II

REVISION HISTORY

Last reviewed 2026-10-07 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.6	2026-10-07	Canonical data updated: 20 fields changed via the provenance/adjudication pipeline. • synonyms · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • boilingPoint · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • rcra_waste_codes · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication) • ghsClassification · canonical change (coa.data_provenance / adjudication) • hazard_h_codes · canonical change (coa.data_provenance / adjudication) • hazard_p_codes · canonical change (coa.data_provenance / adjudication)	canonical_change
1.5	2026-10-05	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • oel_niosh_rel · canonical change (coa.data_provenance / adjudication) • oel_idlh · canonical change (coa.data_provenance / adjudication)	canonical_change
1.4	2026-09-30	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • meltingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-08-04	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • unNumber · canonical change (coa.data_provenance / adjudication) • hazardClass · canonical change (coa.data_provenance / adjudication) • packingGroup · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.2	2026-07-22	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication) • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-07-17	Canonical data re-verified: 5 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable). • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hazard_p_codes · canonical adjudication / reground (coa.data_provenance) • hsCode · canonical adjudication / reground (coa.data_provenance) • physicalProperties · canonical adjudication / reground (coa.data_provenance)	canonical_change
1.0	2026-05-20	Initial URL-first TDS published from canonical chemistry registry.	initial

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.