Technical Data Sheet

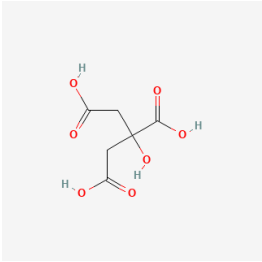
Citric Acid 50% Solution Technical Grade

Technical · 50%

Alliance Code	Revised	Revision
citric-acid-50-solution	2026-10-08	1.5

CAS number

77-92-9



Structure · PubChem

Grade

Technical · 50%

Signal word

Warning

Hazards

Irritant / harmful H319 H335

IDENTITY & COMPOSITION

PRODUCT NAME

Citric Acid 50% Solution Technical Grade

ALLIANCE CODE

citric-acid-50-solution

GRADE

Technical

CONCENTRATION

50% w/w

CAS NUMBER

77-92-9 PubChem

FORMULA

C6H8O7 PubChem

MOLECULAR WEIGHT

192.12 PubChem

PRODUCT TYPE

Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay as Anhydrous Citric Acid	49 - 50.5 % w/w	—	Alkalimetric titration, reported as anhydrous C6H8O7 % w/w	Interpreted
Color	Max 100 APHA	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Residue on Ignition (sulfated ash)	Max 0.05 %	—	Residue on ignition (sulfated ash), gravimetric	Interpreted
Heavy Metals (as Pb)	Max 5 ppm	—	ICP-OES, USP <233>	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 Technical	50%	—	current
Technical	25%	—	citric-acid-25-solution
ACS Reagent	—	—	citric-acid-anhydrous-acs-reagent-grade
Food	—	—	citric-acid-anhydrous-food-grade

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

PHYSICAL & CHEMICAL PROPERTIES

Additional physical properties are listed in the Safety Data Sheet (SDS). For anything not shown, contact sales@alliancechemical.com.

PROPERTY	VALUE	SOURCE
Appearance	Transparent pale liquid, slightly viscous	Adjudicated
Form	Liquid	Published reference
Odor	Odorless to faint characteristic odor	Adjudicated
pH	About 0.5–1.5	Adjudicated
Density	1.24 (50% w/w aqueous solution, 20 °C)	Published reference
Boiling Point	100 to 105 °C (212 to 221 °F) (aqueous solution)	Adjudicated
Melting Point	Not characterized for the 50% solution	Published reference
Flash Point	Not applicable	Adjudicated
Solubility (water)	Completely miscible with water	Adjudicated
Viscosity	10–12 mPa·s (cP)	Adjudicated

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

Not regulated Adjudicated

HAZARD CLASS

Not regulated Adjudicated

PACKING GROUP

Not regulated Adjudicated

PROPER SHIPPING NAME

Not regulated Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD

Warning Adjudicated

H-CODES (HAZARD STATEMENTS)

H319, H335 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P261, P264, P271, P280, P304+P340, P305+P351+P338, P312, P337+P313, P403+P233, P405, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— no canonical

ACGIH TLV

— no canonical

NIOSH REL

— no canonical

NIOSH IDLH

— no canonical

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)

3,000–11,700 mg/kg (citric acid)

Adjudicated

LD_{50} DERMAL (RABBIT)

> 2,000 mg/kg (citric acid, rat)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

Industrial use in the manufacture of ecologically compatible detergents, chemical cleaning, concrete admixtures and plasticizers

ingredi.com

Used as a hydraulic fracturing / well stimulation chemical in oil and shale gas production mubychem.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 plastic or stainless-steel containers, not mild steel. Protect from freezing; store away from bases and bleach.

Adjudicated

HANDLING PRECAUTIONS

Use standard chemical PPE — splash goggles, gloves, lab coat. Refer to SDS for hazard-specific PPE requirements.

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

INCOMPATIBILITIES

Strong bases (heat); strong oxidizers and metal nitrates; bleach and other hypochlorites (release chlorine); reactive metals (release hydrogen). Slowly corrodes mild steel.

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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Not regulated for transport.
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Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS

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REVISION HISTORY

Last reviewed 2026-10-08 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.5	2026-10-08	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • dot_transport_note · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.4	2026-10-07	Canonical data updated: 19 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) • flashPoint · canonical change (coa.data_provenance / adjudication) • viscosity · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • partitionCoefficient · canonical change (coa.data_provenance / adjudication) • decompositionTemperature · 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) • 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
1.3	2026-09-30	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • boilingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-08-05	Canonical data updated: 4 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) • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.1	2026-07-17	Canonical data re-verified: 8 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). • color · canonical adjudication / reground (coa.data_provenance) • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hazard_h_codes · 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) • specificGravity · 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.