Technical Data Sheet

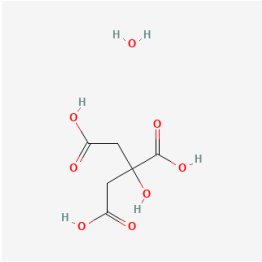
Citric Acid Monohydrate - USP Food Grade

USP Food Grade

Alliance Code	Revised	Revision
citric-acid-monohydrate-usp-food-grade	2026-10-13	1.5

CAS number

5949-29-1



Structure · PubChem

Grade

USP Food Grade

Signal word

Warning

Hazards

Irritant / harmful H315 H319 H335

IDENTITY & COMPOSITION

PRODUCT NAME

Citric Acid Monohydrate - USP Food Grade

ALLIANCE CODE

citric-acid-monohydrate-usp-food-grade

GRADE

USP Food Grade

CONCENTRATION

—

CAS NUMBER

5949-29-1 PubChem

FORMULA

C6H8O7·H2O PubChem

MOLECULAR WEIGHT

210.14 PubChem

PRODUCT TYPE

Pure substance

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (C6H8O7, anhydrous basis)	99.5%-100.5% on the anhydrous basis	—	Titration with 1 N sodium hydroxide VS to phenolphthalein; 1 mL = 64.03 mg C6H8O7	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Clarity of Solution	The Sample solution shows the same clarity as that of water or its opalescence is not more pronounced than Standard suspension A	—	200 mg/mL in water, compared with water and Standard suspension A	Interpreted
Description	Colorless, translucent crystals or a white, granular to fine, crystalline powder	—	—	Interpreted
Heavy Metals	NMT 10 µg/g	—	Heavy metals (as Pb), sulfide colour comparison against lead standard	Interpreted
Lead	Not more than 0.5 mg/kg	—	—	Interpreted
Oxalic Acid	≤ 0.036 %	—	—	Interpreted
Residue on Ignition (USP)	NMT 0.1%	—	Residue on Ignition <281>, 1.0 g	Interpreted
Readily Carbonizable Substances	Not darker than Matching Fluid K	—	1.0 g in 10 mL sulfuric acid, 90 ± 1 °C for 60 ± 0.5 min	Interpreted
Sulfate (SO4)	≤ 0.015 %	—	—	Interpreted
Tridodecylamine (solvent-extracted material only)	Not more than 0.1 mg/kg	—	—	Interpreted
Water	7.5%-9.0%	—	Water Determination, Method I <921> (Karl Fischer), 0.5 g sample	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Identification	Meets USP/FCC requirements	—	USP citrate identification test / FTIR vs. reference standard	Interpreted
Arsenic (as As)	Not more than 1 mg/kg	—	ICP-MS / FCC arsenic limit test	Interpreted
Iron	0 - 5 ppm	—	—	Interpreted
Oxalate	0 - 100 ppm	—	—	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 USP Food Grade	—	—	current
ACS Reagent	—	—	citric-acid-monohydrate-acs-reagent-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

PROPERTY	VALUE	SOURCE
Appearance	Translucent	Adjudicated
Form	Crystal	Published reference
Color	The Sample solution is not more intensely colored than water; if more intensely colored, not more intensely colored than Standard solutions A, B, and C	Interpreted
Density	1.5 g/cm^3	Published reference
Boiling Point	175	Published reference
Melting Point	135 °C	Adjudicated
Flash Point	385	Published reference
Solubility (water)	Solubility in water, g/100ml at 20 °C: 59.2	Published reference

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)

H315, H319, H335 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P261, P264, P271, P280, P302+P352, P304+P340, P305+P351+P338, P312, P321, P332+P313, P337+P313, P362, 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.

APPLICATIONS

Bulk pharmaceutical chemical (GMP manufactured) for manufacturing, processing or repackaging, with further processing required for injectable dosage forms

assets.thermofisher.com

USP monohydrate intended for use in dialysis solutions or, after further processing, injectable dosage forms

mubychem.com

FCC food-grade functions: sequestrant, dispersing agent, acidifier and flavoring agent mubychem.com

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

Used in the preparation of injectable dosage forms after further processing. assets.thermofisher.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 containers tightly closed in a cool, dry, well-ventilated place away from sunlight and incompatible materials. Polypropylene packaging is suitable. Avoid dust formation when handling.

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 oxidizing agents; strong bases; reducing agents; 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)

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

NMFC CLASS

70

REVISION HISTORY

Last reviewed 2026-10-13 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.5	2026-10-13	Canonical data updated: 4 fields changed via the provenance/adjudication pipeline. • `storage_precautions` · 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)	`canonical_change`

VERSION	DATE	CHANGE	TRIGGER
1.4	2026-10-07	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • 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. • meltingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-22	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • ghsClassification · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-07-17	Canonical data re-verified: 7 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). • appearance · canonical adjudication / reground (coa.data_provenance) • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • dotSubsidiaryHazardClass · 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)	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.