Safety Data Sheet · OSHA HCS 2024

Citric Acid 50% Solution Technical Grade

Technical · 50% w/w

Standard	Revised	Emergency
OSHA HCS 2024 · GHS Rev. 7	2026-11-12	Chemtel 1-800-255-3924 (24/7)

1 Identification

Product Identifier	Citric Acid 50% Solution Technical Grade
Grade	Technical
Concentration	50% w/w
CAS Number	77-92-9
Chemical Formula	C6H8O7
Molecular Weight	192.12 g/mol
Manufacturer	Alliance Chemical 204 South Edmond Street, Taylor, TX 76574
Emergency Phone	Chemtel 1-800-255-3924 (24/7)
Synonyms	Citric acid solution; 2-hydroxypropane-1,2,3-tricarboxylic acid (aqueous)
Recommended Use	Descaling and cleaning; pH adjustment; chelating agent in water treatment and formulations.
Restrictions on Use	Do not mix with bleach (hypochlorite) or other chlorine products. For industrial and professional use.

2 Hazard Identification



Irritant / harmful

Classification	Serious eye damage/eye irritation, Category 2A Specific target organ toxicity, single exposure, Category 3 (respiratory tract irritation)
Signal Word	**Warning**
Hazard Statements	H319 Causes serious eye irritation H335 May cause respiratory irritation

Precautionary Statements

P261 Avoid breathing dust, fume, gas, mist, vapors or spray.

P264 Wash hands and face thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves, protective clothing, and eye/face protection.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 Call a POISON CENTER or doctor if you feel unwell.

P337+P313 If eye irritation persists: Get medical advice or attention.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

Classification, hazard (H) and precautionary (P) statements and pictograms per OSHA HCS 2024 (29 CFR 1910.1200, Appendices A–C), aligned with GHS Rev. 7.

3 Composition / Information on Ingredients

Component	CAS No.	Formula	Concentration
Citric acid	77-92-9	C6H8O7	50% (w/w)
Water	7732-18-5	H2O	Balance (w/w)

Concentrations are nominal; lot-specific values appear on the Certificate of Analysis. Components not contributing to classification are omitted.

4 First-Aid Measures

Eyes
Rinse with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention immediately.

Skin
Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing. Wash with soap. Get medical attention immediately.

Inhalation
Move person to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.

Ingestion
Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.

Most Important Symptoms and Effects
Eye contact causes irritation: redness, pain and tearing.

Inhalation may irritate the nose, throat and respiratory tract (coughing, sore throat).

Immediate Medical Attention and Special Treatment
Treat symptomatically. Get medical attention if symptoms develop or persist.

5 Fire-Fighting Measures

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical, or CO2. Use measures appropriate to local circumstances.

Unsuitable Extinguishing Media
Do not use a solid water stream as it may scatter and spread fire.

Specific Hazards Arising from the Chemical
Containers may rupture when heated.

Protective Equipment
Wear self-contained breathing apparatus and full protective clothing.

Hazardous Combustion Products
Carbon monoxide and carbon dioxide when the dried residue is heated strongly; hydrogen from contact with metals.

6 Accidental Release Measures

Personal Precautions	Use PPE as described in Section 8. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental Precautions	Prevent leakage or spillage from entering drains, sewers, or waterways.
Containment & Cleanup	Absorb with inert material. Collect in appropriate waste container. Dispose per applicable regulations.

7 Handling and Storage

Safe Handling	Use with adequate ventilation. Avoid contact with skin, eyes, and clothing. Wash thoroughly after handling. Keep container closed when not in use.
Safe Storage	Store in a cool, dry, well-ventilated area. Keep away from incompatible materials (see Section 10). Keep containers tightly closed.
Specific Storage Precautions	Keep closed in plastic or stainless-steel containers, not mild steel. Protect from freezing; store away from bases and bleach.

8 Exposure Controls / Personal Protection

Occupational Exposure Limits

No established occupational exposure limits.

Engineering Controls	Use adequate ventilation. Provide eyewash stations and quick-drench showers accessible to areas of use.
Eye/Face Protection	Wear chemical safety goggles or face shield.
Skin Protection	Wear chemical-resistant gloves and protective clothing.
Respiratory Protection	Use a NIOSH-approved respirator (N95/P100 for particulate, organic vapor or acid gas cartridge as appropriate to the substance) when exposure limits may be exceeded or visible mist or dust is generated.

9 Physical & Chemical Properties

Appearance	Transparent pale liquid, slightly viscous
Odor	Odorless to faint characteristic odor
Odor Threshold	No data available
pH	About 0.5–1.5
Melting Point / Freezing Point	Not characterized for the 50% solution
Boiling Point	100 to 105 °C (212 to 221 °F) (aqueous solution)
Flash Point	Not applicable
Evaporation Rate	No data available
Flammability (solid, gas)	No data available
Upper/Lower Flammability or Explosive Limits	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Relative Density	No data available
Solubility	Completely miscible with water

Partition Coefficient (n-octanol/water)	log Kow -1.72 (citric acid)
Auto-ignition Temperature	No data available
Decomposition Temperature	About 175 °C (citric acid, after the water evaporates)
Viscosity	10–12 mPa·s (cP)
Particle Characteristics	Not applicable
Form	Liquid
Density	1.24 g/cm^3 (50% w/w aqueous solution, 20 °C)

Values shown reflect product-specific canonical data. Lot-specific ranges may vary; see the Certificate of Analysis for the shipped lot.

10 Stability and Reactivity

Reactivity	Not reactive under normal conditions of use and storage.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing conditions.
Conditions to Avoid	Contact with incompatible materials; storage in mild-steel containers.
Incompatible Materials	Strong bases (heat); strong oxidizers and metal nitrates; bleach and other hypochlorites (release chlorine); reactive metals (release hydrogen). Slowly corrodes mild steel.
Hazardous Decomposition Products	Carbon monoxide and carbon dioxide when the dried residue is heated strongly; hydrogen from contact with metals.

11 Toxicological Information

See below for route-specific acute toxicity data.

Likely Routes of Exposure	Inhalation, skin contact, eye contact, ingestion.
Symptoms	Eye contact causes irritation: redness, pain and tearing. Inhalation may irritate the nose, throat and respiratory tract (coughing, sore throat).
Delayed and Chronic Effects	No delayed or chronic effects identified beyond the classification in Section 2.

Route	Value
LD50 Oral (rat)	3,000–11,700 mg/kg (citric acid)
LD50 Dermal	> 2,000 mg/kg (citric acid, rat)

Carcinogen Classification

Agency	Status
IARC	Not listed as carcinogen.
NTP	Not listed as carcinogen.
OSHA	Not listed as carcinogen.

12 Ecological Information

Ecotoxicity	Aquatic invertebrates EC50: 160 mg/L (48 h, Carcinus maenas (shore crab; crustacean, not Daphnia))
Persistence & Degradability	Not persistent — Readily biodegradable (66–67% ThBOD in 5 d)
Bioaccumulative Potential	log Kow −1.64, BCF 3 (estimated; low)
Mobility in Soil	Very high soil mobility (estimated Koc 10)

13 Disposal Considerations

Dispose of contents/container in accordance with applicable federal, state, and local regulations. Do not dispose of into drains or waterways.

EPA RCRA Waste Codes	D002 (corrosive) when discarded: the solution has a pH of 2 or less (40 CFR 261.22). Not a P- or U-listed waste. Neutralize before disposal where permitted.

14 Transport Information

Not regulated for transport under US DOT 49 CFR Subchapter C, IMDG, or IATA DGR.

15 Regulatory Information

Inventory / List	Status
California Proposition 65	Not listed
US EPA TSCA Active Inventory	Listed
EPCRA SARA 313 (TRI)	Not listed

SARA 311/312 hazard categories correspond to the GHS classification in Section 2. Data retrieved as of: California Proposition 65 2026-11-02; US EPA TSCA Active Inventory 2026-11-02; EPCRA SARA 313 (TRI) 2026-11-02.

16 Other Information

Revision Date	2026-11-12
Format	16-section format per OSHA HCS 2024 (29 CFR 1910.1200, Appendix D), aligned with GHS Rev. 7.

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