Citric Acid MSDS / Safety Data Sheet

1. Identification

Product Name: Citric Acid
Chemical Name: 2-Hydroxypropane-1,2,3-tricarboxylic acid
Chemical Formula: $C_6H_8O_7$
CAS Number: 77-92-9
EC Number: 201-069-1
Recommended Uses: Food processing, pharmaceuticals, cosmetics, detergents, water treatment, cleaning products, and industrial applications
Supplier: ATDM

2. Hazard Identification

Citric Acid generally presents a low overall hazard under normal industrial handling conditions. However, concentrated dust or direct contact may cause irritation.

Main Hazards:

- Causes serious eye irritation
- Dust may irritate the nose, throat, and respiratory tract
- Repeated or prolonged skin contact may cause mild irritation
- Large quantities may lower the pH of water or soil

GHS Signal Word: Warning

Hazard Statement:
H319 – Causes serious eye irritation.

Precautionary Measures:

- Avoid breathing dust
- Wear suitable eye protection
- Wash hands after handling
- Prevent unnecessary dust generation

3. Composition / Information on Ingredients

Component	CAS Number	Concentration
Citric Acid	77-92-9	Typically ≥99.5%

Purity and water content can vary between Citric Acid Anhydrous and Citric Acid Monohydrate grades.

4. First-Aid Measures

Eye Contact:
Immediately rinse the eyes carefully with clean water for at least 15 minutes. Remove contact lenses when easy to do. Continue rinsing. Seek medical attention if irritation continues.

Skin Contact:
Wash the affected area thoroughly with water and mild soap. Remove contaminated clothing if necessary.

Inhalation:
Move the affected person to fresh air. Keep the person comfortable and allow normal breathing. Seek medical attention if coughing or irritation persists.

Ingestion:
Rinse the mouth with water. Drink water in small quantities. Do not induce vomiting unless instructed by medical personnel. Seek medical advice if symptoms develop.

5. Fire-Fighting Measures

Citric Acid is not considered highly flammable under normal conditions.

Suitable Extinguishing Media:

- Water spray
- Dry chemical powder
- Carbon dioxide
- Foam

Select the extinguishing agent according to the surrounding fire.

Hazardous Combustion Products:
Thermal decomposition may generate carbon monoxide, carbon dioxide, and irritating fumes.

Protection for Firefighters:
Use suitable protective clothing and self-contained breathing equipment when required.

6. Accidental Release Measures

Avoid generating airborne dust during cleanup.

Recommended Procedure:

- Keep unprotected personnel away from the spill
- Wear suitable gloves, eye protection, and dust protection
- Sweep or vacuum the material carefully
- Place recovered material in a suitable closed container
- Prevent large quantities from entering drains or natural waterways
- Wash the contaminated area with water after collecting the dry material

7. Handling and Storage

Handling

- Avoid direct eye contact
- Avoid unnecessary dust generation
- Use adequate ventilation in dusty operations
- Keep food and beverages away from industrial handling areas
- Wash hands after handling

Storage

Store Citric Acid in a:

- Cool area
- Dry location
- Well-ventilated warehouse
- Moisture-free environment

Keep the original packaging tightly closed. Protect the product from humidity, contamination, and incompatible chemicals.

8. Exposure Controls / Personal Protection

No specific occupational exposure limit normally applies to pure Citric Acid. However, workplaces should control general airborne dust.

Engineering Controls:
Provide adequate ventilation or local exhaust ventilation where dust forms.

Eye Protection:
Use safety goggles or chemical-resistant safety glasses.

Hand Protection:
Use suitable protective gloves during prolonged or bulk handling.

Respiratory Protection:
Use an appropriate particulate mask or respirator when ventilation cannot adequately control dust.

Skin Protection:
Wear normal industrial work clothing.

9. Physical and Chemical Properties

Property	Typical Information
Physical State	Solid
Appearance	White crystalline powder or crystals
Odor	Odorless
Molecular Formula	$C_6H_8O_7$
Molecular Weight	192.12 g/mol
Melting / Decomposition	Approx. 153°C, with decomposition
Solubility in Water	Highly soluble
pH	Acidic in aqueous solution
Flammability	Not readily flammable
Vapor Pressure	Negligible under normal conditions
Relative Density	Approx. 1.66 for anhydrous material
Taste	Strongly acidic / sour

Physical properties may vary slightly according to grade and moisture content.

10. Stability and Reactivity

Chemical Stability:
Stable under normal storage and handling conditions.

Conditions to Avoid:

- Excessive heat
- Moisture exposure
- Strong contamination
- Dust accumulation

Incompatible Materials:

- Strong oxidizing agents
- Strong alkaline materials
- Reactive metals under certain conditions

Hazardous Decomposition Products:
Heating to decomposition may produce carbon oxides and irritating vapors.

11. Toxicological Information

Citric Acid generally shows low acute toxicity when handled correctly.

Possible Effects:

Eyes:
May cause significant irritation, redness, and discomfort.

Skin:
May cause mild irritation after prolonged contact.

Inhalation:
Dust may irritate the upper respiratory tract.

Ingestion:
Small incidental amounts generally present low toxicity, although large amounts may cause gastrointestinal irritation.

Chronic Effects:
Normal industrial exposure is not expected to cause serious chronic toxicity when workers follow proper handling procedures.

12. Ecological Information

Citric Acid is readily biodegradable and generally presents a low environmental persistence risk.

However, large releases can lower the pH of water and may temporarily affect aquatic organisms.

Environmental Precautions:

- Prevent uncontrolled bulk discharge
- Avoid large releases into drains
- Follow local environmental regulations

13. Disposal Considerations

Dispose of unused product, contaminated packaging, and cleanup material according to local, regional, and national regulations.

Small uncontaminated quantities may require different disposal procedures from industrial waste.

Do not discharge large amounts directly into surface water or drainage systems.

14. Transport Information

Citric Acid is generally **not classified as dangerous goods** for standard transport.

Typical Transport Status:

- UN Number: Not normally assigned
- ADR/RID: Not regulated as dangerous goods
- IMDG: Not regulated as dangerous goods
- IATA: Not regulated as dangerous goods

Always verify the latest transport requirements for the specific shipment and destination country.

15. Regulatory Information

Citric Acid is widely used across food, pharmaceutical, cosmetic, cleaning, and industrial sectors.

Regulatory requirements depend on:

- Product grade
- Intended use
- Destination country
- Purity specification
- Industry standards

Food-grade and pharmaceutical-grade products may require compliance with specific standards and certificates.

16. Other Information

This MSDS provides general safety guidance for Citric Acid. Actual safety requirements may differ according to grade, producer, particle size, moisture content, packaging, and application.

ATDM can provide product-specific technical documents, including:

- MSDS / SDS
- TDS
- Certificate of Analysis (COA)
- Product specification sheet

Buyers should review the official supplier-issued SDS before commercial handling, storage, formulation, or transport.