



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name CITRIC ACID, MONOHYDRATE, REAGENT (ACS)
Catalog # 894
Version # 03
Revision date 09-Jun-2010
CAS # 5949-29-1
Manufacturer information GFS Chemicals, Inc.
P.O. Box 245
Powell, OH 43065 US
www.gfschemicals.com
Fax 740-881-5989
Phone 740-881-5501
Toll Free 800-858-9682
Emergency Assistance Chemtrec 800-424-8300

2. Hazards Identification

Emergency overview Irritating to eyes. Exposure to powder or dusts may be irritating to eyes, nose and throat.
OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects
Routes of exposure Inhalation. Eye contact.
Eyes Contact may cause eye irritation.
Skin This product may cause irritation to the skin.
Inhalation Inhalation of dusts may cause respiratory irritation. Do not breathe dust.
Ingestion Health injuries are not known or expected under normal use.
Potential environmental effects This material is not expected to be harmful to aquatic life.

3. Composition / Information on Ingredients

Components	CAS #	Percent
CITRIC ACID, MONOHYDRATE	5949-29-1	90 - 100

4. First Aid Measures

First aid procedures
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes.
Skin contact Rinse skin with water/shower. Get medical attention if irritation develops or persists.
Inhalation If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.
Ingestion Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
General advice Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties The product is not flammable. Not a fire hazard. Dust may form explosive mixture with air.
Extinguishing media
Suitable extinguishing media Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Protection of firefighters

Protective equipment and precautions for firefighters In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.

Specific methods In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep upwind. Keep out of low areas. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust from the spilled material. Wear a dust mask if dust is generated above exposure limits.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Sweep up or vacuum up spillage and collect in suitable container for disposal. Small quantities can be dissolved/diluted in water and flushed to drain. Avoid dust formation. Collect dust or particulates using a vacuum cleaner with a HEPA filter. Following product recovery, flush area with water.

7. Handling and Storage

Handling Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust from this material. Avoid contact with eyes. Wear personal protective equipment. In case of insufficient ventilation, wear suitable respiratory equipment. Wash thoroughly after handling. Avoid release to the environment. Handle and open container with care.

Storage Store in a well-ventilated place. Keep container tightly closed. Guard against dust accumulation of this material. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Engineering controls Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Respiratory protection Wear respirator with dust filter. In case of insufficient ventilation wear suitable respiratory equipment.

Hand protection Wear protective gloves.

Eye / face protection Avoid contact with eyes. Wear dust goggles.

Skin protection Avoid contact with the skin. No special protective equipment required.

General hygiene considerations Do not breathe dust. Avoid contact with eyes. Avoid contact with skin. Handle in accordance with good industrial hygiene and safety practice.

General Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical & Chemical Properties

Appearance Crystalline.
Color White.
Odor Characteristic.
Odor threshold Not available.
Physical state Solid.
Form Solid.
pH 2.2 (0.1 M in water)
Melting point 212 °F (100 °C)
Freezing point Not available.
Boiling point Not available.

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Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	1.5
Relative density	1.5 g/cm ³
Solubility (water)	Very soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	1850 °F (1010 °C)
Decomposition temperature	Not available.
Molecular weight	210.1400
Molecular formula	C ₆ H ₈ O ₇ .H ₂ O

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	This product may react with oxidizing agents.
Incompatible materials	Alkaline metals. Oxidizing materials. Will corrode copper, zinc, and aluminum.
Hazardous decomposition products	May include oxides of carbon.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects

Acute Oral: LD 50

CITRIC ACID, MONOHYDRATE	5949-29-1	Mouse 5040 mg/kg
CITRIC ACID, MONOHYDRATE	5949-29-1	Rat 6730 mg/kg

Acute Toxicity other routes: LD 50

CITRIC ACID, MONOHYDRATE	5949-29-1	Mouse 903 mg/kg Intrapertoneal
CITRIC ACID, MONOHYDRATE	5949-29-1	Rat 5500 mg/kg Subcutaneous
CITRIC ACID, MONOHYDRATE	5949-29-1	Rat 883 mg/kg Intrapertoneal
CITRIC ACID, MONOHYDRATE	5949-29-1	Rat 975 mg/kg Intrapertoneal
CITRIC ACID, MONOHYDRATE	5949-29-1	Rabbit 330 mg/kg Intravenous
CITRIC ACID, MONOHYDRATE	5949-29-1	Mouse 42 mg/kg Intravenous
CITRIC ACID, MONOHYDRATE	5949-29-1	Mouse 2700 mg/kg Subcutaneous

Toxicology data for the preparation

Acute LD50: 2700 mg/kg, Mouse, Other
 Acute LD50: 42 mg/kg, Mouse, Other
 Acute LD50: 903 mg/kg, Mouse, Other
 Acute LD50: 330 mg/kg, Rabbit, Other
 Acute LD50: 5500 mg/kg, Rat, Other
 Acute LD50: 883 mg/kg, Rat, Other
 Acute LD50: 975 mg/kg, Rat, Other
 Acute LD50: 5040 mg/kg, Mouse, Oral
 Acute LD50: 6730 mg/kg, Rat, Oral

Local effects	Irritating to eyes. Inhalation of dusts may cause respiratory irritation.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

12. Ecological Information

Ecotoxicity	Components of this product have been identified as having potential environmental concerns.
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Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not applicable.

14. Transport Information

DOT

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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