SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier

Product code: CI132
Product Name: CITRIC ACID MONOHYDRATE, GRANULAR, USP

Other means of identification

Synonyms: 2-Hydroxy-1,2,3-propanetricarboxylic acid monohydrate
CAS #: 5949-29-1
RTECS # GE7810000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: In beverages. In Foods.
Uses advised against: No information available

Supplier:

Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com
Emergency telephone number: Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>2A</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>3</td>
</tr>
</tbody>
</table>

Label elements

Warning

Hazard statements

Causes serious eye irritation
May cause respiratory irritation
Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Causes mild skin irritation

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid, Monohydrate</td>
<td>5949-29-1</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: Causes eye irritation

Product code: CI132 Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
Mild skin irritation
Irritating to respiratory system
May cause irritation of respiratory tract
Central nervous system effects
May affect the cardiovascular system
May affect respiration

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide.
Specific hazards: May be combustible at high temperatures. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Special Protective Actions for Firefighters

Specific Methods: No information available.
Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment: Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.
Methods for cleaning up: Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:
- Oxidizing agents
- Reducing agents
- Bases
- Acetates
- Sulfides
- Bicarbonates
- Potassium Tartrate
- Metals
- Aluminum
- aluminum alloys
- Zinc
- zinc alloys
- Copper
- Copper alloys
- metal nitrates
- Alkaline earth carbonates

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

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<th>Components</th>
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<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WEEL</th>
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Canada

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<th>Canada - British Columbia</th>
<th>Canada - Ontario</th>
<th>Canada - Quebec</th>
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Australia and Mexico

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<td>Citric Acid, Monohydrate</td>
<td>5949-29-1</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Chemical resistant apron
Long sleeved clothing
Gloves

Respiratory protection: Effective dust mask. Use a dust respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentration of dust (dust clouds), inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

| Physical state: | Appearance: | Color: |
| Odor: | Taste | Formula: |
| Odorless. | Acid. Sour. | C6H8O7•H2O |
| Molecular/Formula weight: | Flammability: | Flashpoint (°C/°F): |
| 210.14 | No information available | No information available. |
| Flash Point Tested according to: | Autoignition Temperature (°C/°F): | Lower Explosion Limit (%): |
| Not available | No information available | No information available |
| Upper Explosion Limit (%): | Melting point/range(°C/°F): | Decomposition temperature(°C/°F): |
| No information available | 100-153 °C/212-307.4 °F | Loses water of crystallization in dry air or when heated at about 40-50°C/104-122°F |
| Boiling point/range(°C/°F): | Bulk density: | Density (g/cm3): |
| No information available | No information available | 1.542 |
| Specific gravity: | pH: | Vapor pressure @ 20°C (kPa): |
| 1.54 | No information available | No information available |
| Evaporation rate: | Vapor density: | VOC content (g/L): |
| No information available | No information available | No information available |
| Odor threshold (ppm): | Partition coefficient | |
| No information available | (n-octanol/water): | |

Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents
Reacts with reducing agents
Reacts with strong bases
Potentially explosive reaction with metal nitrates

Chemical stability
Stability: Stable under recommended storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid:
Heat. Ignition sources. Incompatible materials. Avoid dust formation. Dust may form explosive mixture in air. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Incompatible Materials:
- Oxidizing agents
- Reducing agents
- Bases
- Acetates
- Sulfides
- Bicarbonates
- Potassium Tartrate
- Metals
- Aluminum
- aluminum alloys
- Zinc
- zinc alloys
- Copper
- Copper alloys
- metal nitrates
- Alkaline earth carbonates

Hazardous decomposition products:
Carbon oxides.

Other Information
Corrosivity: Corrosive in presence of aluminum, zinc, copper and their alloys

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
Principal Routes of Exposure:
Ingestion. Inhalation.

**Acute Toxicity**

**Component Information**

<table>
<thead>
<tr>
<th>Citric Acid, Monohydrate</th>
<th>CAS-No.</th>
<th>5949-29-1</th>
</tr>
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<tr>
<td>LD50/oral/rat =</td>
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</tr>
<tr>
<td>LD50/oral/mouse =</td>
<td>5790 mg/kg</td>
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</tr>
<tr>
<td>LD50/dermal/rabbit =</td>
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<td></td>
</tr>
<tr>
<td>LD50/dermal/rat =</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>LC50/inhalation/rat =</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>LC50/inhalation/mouse =</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Other LD50 or LC50 =</td>
<td>375 mg/kg, intraperitoneal, rat; 2700 mg/kg, subcutaneous, mouse; 5500 mg/kg, subcutaneous, rat</td>
<td></td>
</tr>
</tbody>
</table>

**Product Information**

<table>
<thead>
<tr>
<th>LD50/oral/rat =</th>
<th>No information available</th>
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<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse =</td>
<td>No information available</td>
</tr>
</tbody>
</table>

**Symptoms**

**Skin Contact:** Mild skin irritation.

**Eye Contact:** Causes serious eye irritation. Highly irritating.

**Inhalation** Irritating to respiratory system. Symptoms may including coughing.

**Ingestion** Causes gastrointestinal (digestive) tract irritation with nausea, vomiting, and diarrhea. May affect behavior/central nervous system (convulsions, somnolence), and respiration. May affect behavior/central nervous system (ataxia). May affect behavior/central nervous system (tremor, convulsions). May affect respiration (respiratory depression). May affect the cardiovascular system (change in heart rate). May affect the cardiovascular system (hypotension). May cause metabolic
Acidosis. May cause hypocalcemia. May cause lactic acidosis. May cause hyperkalemia.

**Aspiration hazard**
No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Chronic Toxicity**
Frequent intake of citrated beverages may cause erosion of dental enamel and irritation of the mucous membrane lining of the mouth (oral mucosa).

**Sensitization:**
No information available.

**Mutagenic Effects:**
No information available.

**Carcinogenic effects:**
Not considered carcinogenic.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid, Monohydrate</td>
<td>5949-29-1</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**ACGIH** (American Conference of Governmental Industrial Hygienists)

**IARC** (International Agency for Research on Cancer)

**NTP** (National Toxicology Program)

**OSHA** (Occupational Safety and Health Administration of the US Department of Labor)

**Reproductive toxicity**
No data is available

**Reproductive Effects:**
No information available

**Developmental Effects:**
No information available

**Teratogenic Effects:**
No information available

**Specific Target Organ Toxicity**

**STOT - single exposure**
Respiratory system.

**STOT - repeated exposure**
No information available.

**Target Organs:**
Respiratory system.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Ecotoxicity effects:**
No data available.

**Persistence and degradability:**
No information available

**Bioaccumulative potential:**
No information available.

**Mobility:**
No information available.

**13. DISPOSAL CONSIDERATIONS**

**Disposal Methods**

**Product code:** CI132

**Product name:** CITRIC ACID MONOHYDRATE, GRANULAR, USP
Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid, Monohydrate</td>
<td>5949-29-1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT
- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Class: No information available
- Packing group: No information available
- Emergency Response Guide Number: No information available
- Marine Pollutant: No data available
- DOT RQ (lbs): No information available
- Special Provisions: No Information available
- Symbol(s): No information available
- Description: No information available

TDG (Canada)
- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available
- Marine Pollutant: No Information available
- Description: No information available

ADR
- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Packing Group: No information available
- Subsidiary Risk: No information available

IMO / IMDG
- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Packing Group: No information available
- Subsidiary Risk: No information available

RID
- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available

Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>U.S. TSCA</th>
<th>KOREA KECL (PICCS)</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS (2)-1318</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid, Monohydrate</td>
<td>5949-29-1</td>
<td>Not listed; Citric Acid, monohydrate (CAS no.5949-29-1) is exempt from TSCA 8(b) Inventory listing since it is a hydrate. However, the anhydrous form (CAS no.77-92-9) is listed as ACTIVE on the TSCA 8(b) Inventory</td>
<td>Not present</td>
<td>Present</td>
<td>Present</td>
<td>Present[38022</td>
<td>Present</td>
<td>Not present</td>
</tr>
</tbody>
</table>

U.S. Regulations


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Carcinogen</th>
<th>Developmental Toxicity Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity:</th>
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</table>

CERCLA/SARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and ROs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
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Product code: CI132
Product name: CITRIC ACID MONOHYDRATE, GRANULAR, USP
### U.S. TSCA

<table>
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<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
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### Canada

**WHMIS 2015 - GHS Classifications**

**Component**

- **Citric Acid, Monohydrate**
  - CAS-No. 5949-29-1 (100)

**WHMIS 2015 Hazard Classification Information:**

- **Serious Eye Damage/Eye Irritation - Category 2: H319** Causes serious eye irritation. (due to lack of data, this classification was established by analogy to Anhydrous citric acid)
- **Combustible Dust - Category 1: May form combustible dust concentrations in air** (factors such as combustibility and explosiveness of dusts including composition and shape and size of particles could cause substance to belong to 'Combustible dust' hazard class)

**Canada Hazardous Products Regulation:** This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR.

**WHMIS 1988**

- **E** Corrosive material

**Components**

- **Citric Acid, Monohydrate**
  - WHMIS 1988 E

**Canada Controlled Products Regulation:**

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

### Inventory

<table>
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<th>Components</th>
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<th>Canada (NDSL)</th>
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**CEPA Schedule I - Toxic Substances**

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**CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting**

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<th>CAS-No.</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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### EU Classification

**EU GHS - SV - CLP 1272/2008**

<table>
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<th>EU GHS - SV - CLP (1272/2008)</th>
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### EU - CLP (1272/2008)

**R-phrase(s)**

- R36 - Irritating to eyes.
S -phrase(s)
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
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</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Xi - Irritant.

16. OTHER INFORMATION

Preparation Date: 2/12/2015
Revision Date: 6/12/2018
Prepared by: Sonia Owen

Disclaimer:
All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet