

Section 01 Identification

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| Product Identifier | Citric Acid Solution Citric Acid 15%, Solution Citric Acid 50%, Solution Citric Acid 50%, Solution, NSF® - 60 |
| Other Means of Identification | 2-hydroxyl-1,2,3-propanyl-tri-carboxylic acid |
| Product Use and Restrictions on Use | Membrane cleaning in water treatment, pipe cleaning, metal oxide deposit removal in boilers |
| Initial Supplier Identifier | ClearTech Industries Inc 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7 Phone: 800.387.7503 Fax: 888.281.8109 www.cleartech.ca |
| Prepared By | ClearTech Industries Inc. technical writer |
| 24-Hour Emergency Phone | 306.664.2522 |

Section 02 Hazard Identification

Physical Hazards

Corrosive to metals Category 1

Health Hazards

Skin corrosion / irritation Category 2

Serious eye damage / eye irritation Category 2

Signal Word

Warning

Hazard Statements

H290 May be corrosive to metals.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Pictograms



Precautionary Statements

Prevention

- P234 Keep only in original packaging.
P264 Wash affected body parts thoroughly after handling.
P280 Wear protective gloves, eye protection, face protection.

Response

- P305 P351 P338 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 or attention.
P337 P313
P390 Absorb spillage to prevent material damage.

Hazards Not Otherwise Classified

Not available

Supplemental Information

Not available

Section 03 Composition / Information on Ingredients

Hazardous Ingredients:

| Chemical name | Common name(s) | CAS number | Concentration (w/w%) |
|---|----------------|------------|----------------------|
| 2-hydroxypropane-1,2,3-tricarboxylic acid | Citric acid | 77-92-9 | 14-52% |

Section 04 First-Aid Measures

Description of necessary first-aid measures

- Inhalation** Get medical advice / attention if you feel unwell or are concerned. Remove source of exposure or move person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
- Ingestion** Rinse mouth. Get medical advice / attention if you feel unwell or are concerned.
- Skin contact** Avoid direct contact. Wear chemical protective clothing, if necessary. Take off immediately contaminated clothing, shoes and leather goods. Rinse skin with lukewarm, gently flowing water / shower for 15 to 20 minutes. Get medical advice / attention. Wash contaminated clothing before re-use, or discard.
- Eye contact** Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15 to 20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice / attention.

Most important symptoms and effects, both acute and delayed

- Inhalation** May cause respiratory irritation.
- Ingestion** May cause discomfort or nausea.
- Skin contact** Causes skin irritation.
- Eye contact** Causes serious eye irritation.
- Further information** For further information see Section 11 Toxicological Information.

Section 05 Fire Fighting Measures

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| Suitable extinguishing media | Extinguish fire using extinguishing agents suitable for the surrounding fire. |
| Unsuitable extinguishing media | Not available |
| Specific hazards arising from the chemical | Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. In the event of a fire oxides of carbon may be released. Thermal decomposition occurs at 175 °C. |
| Special protective equipment for fire-fighters | Wear NIOSH-approved self-contained breathing apparatus and protective clothing. |

Section 06 Accidental Release Measures

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| Personal Precautions / Protective Equipment / Emergency Procedures | Wear appropriate personal protective equipment (See Section 08 Exposure Controls and Personal Protection). Stay upwind, ventilate area. Only enter area with PPE. |
| Environmental Precautions | Prevent material from entering waterways, sewers or confined spaces. Notify local health and wildlife officials. Notify operators of nearby water intakes. |
| Methods and Materials for Containment and Cleaning Up | SMALL SPILLS: Stop or reduce leak if safe to do so. Clean up spill with non-reactive absorbent and place in suitable, covered, labeled containers. Flush area with water. Contaminated absorbent material may pose the same hazards as the spilled product. LARGE SPILLS: Contact fire and emergency services and supplier for advice. |

Section 07 Handling and Storage

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| Precautions for Safe Handling | Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Inspect containers for damage or leaks before handling. If the original label is damaged or missing replace with a workplace label. Have suitable emergency equipment for fires, spills and leaks readily available. |
| Conditions for Safe Storage | Store in a cool, dry, well-ventilated area, out of direct sunlight, away from heat sources and incompatible materials. Always store in original labeled container. Keep containers tightly closed when not in use and when empty. Empty containers may contain hazardous residues. Protect label and keep it visible. Do not transfer to metal containers. |
| Incompatibilities | Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates. Oxidizing agents, such as oxygen, hydrogen peroxide, sulphuric and nitric acids, hypochlorites and permanganates. Reducing agents, such as hydrogen, sodium borohydride, sulphur dioxide, thiosulphates, hydrazine, phosphites, carbon, and oxalic, formic and ascorbic acid. Metals, such as aluminum, copper, and zinc. |

Section 08 Exposure Controls and Personal Protection

Exposure limits

There are no known exposure limits for this product.

Engineering controls

Ventilation Requirements Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other A soak hose and eyewash station or emergency shower and eyewash station should be available, tested, and be in close proximity to the product being handled in accordance with provincial regulations.

Protective equipment

The following are recommendations only. It is the responsibility of the employer / user to conduct a hazard assessment of the process in which this product being used and determine the proper engineering controls and PPE for their process. Additional regulatory and safety information should be sought from local authorities and, if needed, a professional industrial hygienist.

Eye and face protection Where there is potential eye or face exposure, tightly fitting chemical goggles are recommended. Contact lenses are not recommended; they may contribute to severe eye injury.

Hand and body protection Where handling this product it is recommended that chemically resistant gloves are worn skin contact is avoided. Where there is potential for contact with clothing or skin, rubber boots and sufficient body protection, such as: a chemical body suit or an apron and coveralls of chemical resistant material, are recommended. Continued use of contaminated safety gear or clothing is not recommended; wash before reuse or discard.

Respiratory protection In case of insufficient ventilation wear suitable respiratory equipment.

Thermal hazards Not available

Section 09 Physical and Chemical Properties

Appearance

Physical state Liquid
Colour Clear
Odour Odourless
Odour threshold Not applicable

Property

pH <1.0 (50% solution)
Melting point / freezing point 10-15 °C (50% solution)
Initial boiling point and boiling range >100 °C
Flash point Not applicable
Evaporation rate Not available
Flammability Not applicable
Upper flammable limit Not available
Lower flammable limit Not available

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| Vapour pressure | Not available |
| Vapour density | Not available |
| Relative density | Not applicable |
| Solubility | Soluble in water |
| Partition coefficient: n-octanol/water | Log Kow: -0.2 to -1.8 |
| Auto-ignition temperature | Not applicable |
| Decomposition temperature | 175 °C |
| Viscosity | Not available |
| Specific gravity | 1.24-1.26 g/mL (50%) |
| Formula | C ₆ H ₈ O ₇ |
| Molecular weight | 192.13 g/mol |

Section 10 Stability and Reactivity

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| Reactivity | May be corrosive to metals. Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. Reacts violently with bases. |
| Stability | This product is stable if stored according to the recommendations in Section 07. |
| Possibility of hazardous reactions | Hazardous polymerization will not occur. |
| Conditions to avoid | Avoid contact with incompatible materials. Do not heat. |
| Incompatible materials | Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates. Oxidizing agents, such as oxygen, hydrogen peroxide, sulphuric and nitric acids, hypochlorites and permanganates. Reducing agents, such as hydrogen, sodium borohydride, sulphur dioxide, thiosulphates, hydrazine, phosphites, carbon, and oxalic, formic and ascorbic acid. Metals, such as aluminum, copper, and zinc. |
| Hazardous decomposition products | Thermal decomposition may produce oxides of carbon. Thermal decomposition occurs at 175 °C. |

Section 11 Toxicological Information

Acute Toxicity (LD50 values)

| Component | Route | Species | Value | Exposure time |
|-------------|--------|---------|-------------|---------------|
| citric acid | Oral | mouse | 5400 mg/kg | |
| | Dermal | rat | >2000 mg/kg | 24 hours |

Toxic Health Effect Summary

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|---------------------------------|---|
| Chemical characteristics | Citric acid is a metabolic intermediate vital to the TCA respiration pathway found in all animal and plant cells. There is little evidence that citric acid and the citrate salts have deleterious effects, even in large doses. Indeed there is some support for the fact that citric acid in the human diet is favourable by inhibiting the formation of calcium oxalate kidney and bladder stones. This statement is applicable to the citrate salts since once absorbed citrate salts will dissociate into citric acid and their counter-ion. |
| Skin | Causes skin irritation. Not irritating to skin. |
| Ingestion | May cause discomfort or nausea. |
| Inhalation | May cause respiratory irritation. |
| Eye contact | Causes serious eye irritation. |
| Sensitization | This product and its components at their listed concentration have no known sensitizing effects. |
| Mutagenicity | This product and its components at their listed concentration have no known mutagenic effects. |
| Carcinogenicity | This product and its components at their listed concentration have no known carcinogenic effects. |
| Reproductive toxicity | This product and its components at their listed concentration have no known reproductive effects. |
| Specific organ toxicity | This product and its components at their listed concentration have no known effects on specific organs. |
| Aspiration hazard | Not available |
| Synergistic materials | Not available |

Section 12 Ecological Information

Ecotoxicity

| Component | Type | Species | Value | Exposure Time |
|------------------------------|--|--------------------------|------------|---------------|
| Citric acid | LC50 | Leuciscus idus melanotus | 440 mg/L | 48 hours |
| | EC50 | Daphnia magna | 1,535 mg/L | 24 hours |
| Biodegradability | The domestic substance list categorizes citric acid as non-persistent. | | | |
| Bioaccumulation | The domestic substance list categorizes citric acid as non-bioaccumulative. | | | |
| Mobility | This product is water soluble, and will not adsorb to soil and may contaminate ground water. | | | |
| Other adverse effects | Not available | | | |

Section 13 Disposal Considerations

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| Waste From Residues / Unused Products | Dispose in accordance with all federal, provincial, and local regulations including the Canadian Environmental Protection Act. |
| Contaminated Packaging | Do not remove label, follow label warnings even after the container is empty. Empty containers should be recycled or disposed of at an approved waste handling facility. |

Section 14 Transport Information

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|--|--|---------------------|----------------|---------------------------------------|----------------|-------------|----------------------------|
| UN number | UN3265 | | | | | | |
| UN proper shipping name and description | CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Citric acid) | | | | | | |
| Transport hazard class(es) | 8 | | | | | | |
| Packing group | III | | | | | | |
| Excepted quantities | 5 L | | | | | | |
| Environmental hazards | Not listed as a marine pollutant under Canadian TDG Regulations, schedule III. | | | | | | |
| Special precautions | 16 (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). | | | | | | |
| Transport in bulk | <p>ERAP index: not available</p> <p>MARPOL 73/78 and IBC Code:</p> <p style="padding-left: 40px;">Product name: Citric acid (70% or less)</p> <p style="padding-left: 40px;">Pollution category: Z</p> <p style="padding-left: 80px;">Hazards: the product is included in the Code because of its pollution hazards.</p> <p style="padding-left: 40px;">Ship type: ship type 3</p> <p style="padding-left: 40px;">Tank type: integral gravity tank</p> <p style="padding-left: 40px;">Tank vents: open venting</p> <p style="padding-left: 40px;">Tank environmental control: no special requirements under this Code</p> <table border="0" style="margin-left: 80px;"> <tr> <td style="padding-right: 20px;">Temperature classes</td> <td>no information</td> </tr> <tr> <td>Electrical equipment: Apparatus group</td> <td>no information</td> </tr> <tr> <td>Flash point</td> <td>flashpoint exceeding 60 °C</td> </tr> </table> <p style="padding-left: 40px;">Gauging: open gauging</p> <p style="padding-left: 40px;">Vapour detection: no special requirements under this Code</p> <p style="padding-left: 40px;">Fire protection: alcohol-resistant foam or multi-purpose foam</p> <p style="padding-left: 40px;">Emergency equipment no special requirements under this Code</p> <p style="padding-left: 40px;">Specific and operational requirements no special requirements under this Code</p> | Temperature classes | no information | Electrical equipment: Apparatus group | no information | Flash point | flashpoint exceeding 60 °C |
| Temperature classes | no information | | | | | | |
| Electrical equipment: Apparatus group | no information | | | | | | |
| Flash point | flashpoint exceeding 60 °C | | | | | | |
| Additional information | Secure containers (full or empty) during shipment and ensure all caps, valves, or closures are secured in the closed position. | | | | | | |

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 16 of this SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and published test data regarding the classification of this product are listed in the references at section 16 of this SDS.

Section 15 Regulatory Information.

NOTE: THE PRODUCT LISTED ON THIS SAFETY DATA SHEET HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN HAZARDOUS PRODUCTS REGULATIONS. THIS SAFETY DATA SHEET CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

All components of this product appear on the domestic substance list.

NSF Certification: Citric Acid 50%, Solution, NSF® - 60 is certified under NSF / ANSI Standard 60 for pH adjustment and membrane cleaning at a maximum dosage of: 250 mg/LNSF product use restrictions based on requirements obtained from the NSF website; consult NSF website for current requirements.

Section 16 Other Information

Date of latest revision: July 10, 2019

Note: The responsibility to provide a safe workplace remains with the buyer / user. The buyer / user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the buyer / user to comply with all applicable laws and regulations regarding handling, using, reselling and shipping this product.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the RDC Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

- 1) CHEMINFO
- 2) TOXNET
- 3) eChemPortal
- 4) ECHA
- 5) Transportation of Dangerous Goods Canada
- 6) HSDB
- 7) PAN