MATERIAL SAFETY DATA SHEET

Citric Acid, 50% Solution

Section 01 - Chemical And Product And Company Information

Product Identifier ………………… Citric Acid 50% Solution

Product Use ……………………… Membrane cleaning in water treatment, pipe cleaning, metal oxide deposit removal in boilers

Supplier Name…………………… ClearTech Industries Inc.
1500 Quebec Avenue
Saskatoon, SK. Canada
S7K 1V7

Prepared By……………………… ClearTech Industries Inc. Technical Department
Phone: (306)664-2522

Preparation Date…………………… September 5, 2012

24-Hour Emergency Phone…………. 306-664-2522

Section 02 - Composition / Information on Ingredients

Hazardous Ingredients……………… Citric Acid 48-52%

CAS Number………………………. Citric Acid 77-92-9

Synonym (s)……………………… None

Section 03 - Hazard Identification

Inhalation…………………………… Breathing of vapour or mist is possible, may cause irritation.
**Section 04 - First Aid Measures**

**Inhalation**
Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.

**Skin Contact / Absorption**
Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.

**Eye Contact**
Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.

**Ingestion**
Seek medical attention. Do not give anything by mouth if individual is drowsy or unconscious, place individual on left side with head down. Consult with a physician or poison control center whether to induce vomiting. Do not leave individual unattended.

**Additional Information**
Pre-existing disorders of skin and lungs may be aggravated with exposure to material.

**Section 05 - Fire Fighting**

**Conditions of Flammability**
Not considered flammable

**Means of Extinction**
Water; carbon dioxide, foam and powder extinguisher.

**Flash Point**
Not applicable

**Auto-ignition Temperature**
Not available

**Upper Flammable Limit**
Not applicable
Lower Flammable Limit. Not applicable

Hazardous Combustible Products. May form carbon dioxide, carbon monoxide, various hydrocarbons.

Special Fire Fighting Procedures. Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

Explosion Hazards. Material is not considered flammable but residue may burn in presence of a strong ignition source after water has evaporated.

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**Section 06 - Accidental Release Measures**

Leak / Spill. Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Prevent material from entering sewers. Cover spill with soda ash and discard waste into plastic or plastic lined containers. Flush area with water to remove any residue.

Deactivating Materials. Not available

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**Section 07 - Handling and Storage**

Handling Procedures. 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.

Storage Requirements. Store in a cool, dry area away from ignition source.

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**Section 08 - Personal Protection and Exposure Controls**

Protective Equipment

Eyes. Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

Respiratory. Wear a NIOSH-approved respirator for acid vapour.

Gloves. Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Clothing. Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
Footwear

Impervious boots of chemically resistant material should be worn.

Engineering Controls

Ventilation Requirements

Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other

Not available

### Section 09 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor and Appearance</td>
<td>Characteristic odor; colorless to pale yellow liquid</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (Water=1)</td>
<td>1.24-1.26</td>
</tr>
<tr>
<td>Vapor Pressure (mm Hg, 20C)</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&lt; 1 (butyl acetate=1)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Freeze/Melting Point</td>
<td>-10°-15°C</td>
</tr>
<tr>
<td>pH</td>
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<tr>
<td>Water/Oil Distribution Coefficient</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>% Volatiles by Volume</td>
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<tr>
<td>Solubility in Water</td>
<td>Complete</td>
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<tr>
<td>Molecular Formula</td>
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</tr>
<tr>
<td>Molecular Weight</td>
<td>Not available</td>
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</table>
Section 10 - Stability and Reactivity

Stability........................................ Stable under normal conditions.

Incompatibility................................ Reactive metals (iron, zinc, aluminum), metallic nitrates, strong oxidizers and alkalies.

Hazardous Products of Decomposition.. Not available

Polymerization.................................. Hazardous polymerization will not occur.

Section 11 - Toxicological Information

Irritancy................................. Not available

Sensitization......................... Not available

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Chronic/Acute Effects.................. Product may cause burns with prolonged contact.

Synergistic Materials................. Not available

Animal Toxicity Data............... Not available

Carcinogenicity..................... Not available

Reproductive Toxicity............. Not available

Teratogenicity..................... Not available

Mutagenicity..................... Not available

Section 12 - Ecological Information

Fish Toxicity............................... Not available

Biodegradability...................... Not available

Environmental Effects.............. Not available
Section 13 - Disposal Consideration

Waste Disposal. Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transportation Information

TDG Classification

Class ......................... 8
Group ......................... III
PIN Number .................. UN 1760
Other ........................ Secure containers (full and/or empty) with suitable hold down devise during shipment.

Section 15 - Regulatory Information

WHMIS Classification ..................... E

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

NSF Certification ..................... Product is certified under NSF/ANSI Standard 60 for pH adjustment at a maximum dosage of: 250mg/L [NOTE: product is also NSF certified for use off-line as a membrane (filter media) cleaner].

Section 16 - Other Information

Note: The responsibility to provide a safe workplace remains with the user. The 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 user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / MSDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Material 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 or technical service department.
ClearTech Industries Inc. - Locations

Corporate Head Office: 1500 Quebec Avenue, Saskatoon, SK, S7K 1V7
Phone: 306-664-2522
Fax: 306-665-6216
www.ClearTech.ca

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Postal Code</th>
<th>Phone Number</th>
<th>Fax Number</th>
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<tbody>
<tr>
<td>Richmond, BC</td>
<td>12431 Horseshoe Way</td>
<td>V7A 4X6</td>
<td>604-272-4000</td>
<td>604-272-4596</td>
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<tr>
<td>Calgary, AB</td>
<td>5516E - 40th St. S.E.</td>
<td>T2C 2A1</td>
<td>403-279-1096</td>
<td>403-236-0989</td>
</tr>
<tr>
<td>Edmonton, AB</td>
<td>11750 - 180th Street</td>
<td>T5S 1N7</td>
<td>780-452-6000</td>
<td>780-452-4600</td>
</tr>
<tr>
<td>Saskatoon, SK</td>
<td>19 Peters Ave., North Corman Park</td>
<td>S7L 5Z3</td>
<td>306-933-0177</td>
<td>306-933-3282</td>
</tr>
<tr>
<td>Regina, SK</td>
<td>555 Henderson Drive</td>
<td>S42 5X2</td>
<td>306-721-7737</td>
<td>306-721-8611</td>
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<tr>
<td>Winnipeg, MB</td>
<td>340 Saulteaux Crescent</td>
<td>R3J 3T2</td>
<td>204-987-9777</td>
<td>204-987-9770</td>
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<tr>
<td>Mississauga, ON</td>
<td>7480 Bath Road</td>
<td>L4T 1L2</td>
<td>905-612-0566</td>
<td>905-612-0575</td>
</tr>
</tbody>
</table>

24 Hour Emergency Number - All Locations - 306-664-2522