Safety Data Sheet

Section 01 - Identification

Product Identifier	Citric Acid, 50% Solution
Other Means of Identification	1,2,3-Propanetricarboxylic acid, 2-hydroxy-; 2-Hydroxy-1,2,3-propanetricarboxylic acid; Propane-1,2,3-tricarboxylic acid, 2-hydroxy-; beta-hydroxytricarballylic 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
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
24-Hour Emergency Phone	Phone: 1 (306) 664 – 2522

Section 02 - Hazard Identification

GHS-Classification

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Irritation	Category 2A

Physical Hazards

Corrosive to Metals	Category 1

Warning

Hazard Statements

H290 May be corrosive to metals.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Pictograms

Precautionary Statements

P234 - Keep only in original container.
P264 - Wash hands thoroughly after handling.
P280 - Wear protective clothing, chemical resistant gloves, and safety glasses.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P337 + P313 - If eye irritation persists: Get medical advice/attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P390 - Absorb spillage to prevent material damage.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Citric Acid	77-92-9	48-52%	
Water	7732-18-5	48-52%	

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 medical attention if you feel unwell.

Skin Contact / Absorption

Remove contaminated clothing. Rinse skin with lukewarm, gently flowing water for 30 minutes. Seek immediate medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

Eye Contact

Contact lenses should never be worn when working with this product. Flush immediately with water for at least 30 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. If a contact lens is present, remove only if easy to do so. 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 vomitting. Do not leave individual unattended.

Additional Information

Pre-existing disorders of skin and lung may be aggravated with exposure to material.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media

Water, carbon dioxide, dry chemical powder or appropriate foam.

Unsuitable Extinguishing Media

Not Available

Specific Hazards Arising From the Chemical

May form carbon dioxide, carbon monoxide. Incomplete combustion may produce irritating fumes and acrid smoke.

Special Protective Equipment and Precautions for Fire-Fighters

Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

Further Information

Not Available

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures

Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.

Environmental Precautions	Dike runoff to prevent material from entering sewers, storm drains, and soil or groundwater waterways.
Methods and Materials for Containment and Cleaning Up	Addition of sodium bicarbonate or lime (soda ash) will neutralize Citric Acid and precipitate calcium citrate. Test area of spill with pH paper to assure neutralization. Thoroughly wash the area after a spill clean-up with large quantities of water, flush to drain.

Section 07 - Handling and Storage

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.
Conditions for Safe Storage	Store in a cool, dry area away from ignition source, direct sunlight or where freezing is possible. Store away from incompatible materials.
Incompatibilities	Stong oxidizing agents and reducing agents, strong bases, and metal nitrates.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Citric Acid	Not Available		

Engineering Control(s)

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must 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	Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

Protective Equipment

Eyes/Face	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.
Hand Protection	Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
Skin and Body Protection	Body suite, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse. Impervious boots of chemically resistant material should be worn at all times. No special footwear is required other than what is mandated at place of work.
Respiratory Protection	Wear a NIOSH-approved respirator for acid vapour.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Liquid

Colour	Colourless to pale yellow
Odour	Characteristic odour
Odour Threshold	Not Available

Property

pH	<1
Melting Point/Freezing Point	10-15°C
Initial Boiling Point and Boiling Range	>100°C
Flash Point	Not Applicable
Evaporation Rate	<1 (butyl acetate=1)
Flammability	Non-Flammable.
Upper Flammable Limit	Not Applicable
Lower Flammable Limit	Not Applicable
Vapour Pressure (mm Hg, 20°C)	Not Available
Vapour Density (Air=1)	Not Available
Relative Density	Not Available
Solubility(ies)	Completely soluble in water
Partition Coefficient: n-octanol/water	Log K_{ow} = -1.64
Auto-ignition Temperature	Not Applicable
Decomposition Temperature	Not Available
Viscosity	7.0cP at 25°C
Explosive Properties	Material is not considered flammable but residue may burn in presence of a strong ignition source after water has evaporated.
Specific Gravity (Water=1)	1.24-1.26
% Volatiles by Volume	Not Available
Formula	$C_6H_8O_7$ (Anhydrous)
Molecular Weight	192.13 (Anhydrous)

Section 10 - Stability and Reactivity

Reactivity	Not Available
Stability	Stable under normal conditions. Dilute aqueous solutions of citric acid may ferment if left standing for long period of time.

Possibility of Hazardous Reactions	None known
Conditions to Avoid	Heat, flames, sparks, build-up of static electricity, and other ignition sources.
Incompatible Materials	Metal nitrates, strong bases and ozidizers. Corrosive to brass, copper, zinc, aluminum and their alloys, lead, cast iron and steel.
Hazardous Decomposition Products	Carbon dioxide and carbon monoxide, incomplete combustion may produce irritating fumes and acrid smoke.

Section 11 - Toxicological Information

Acute Toxicity

Component	Oral LD_{50}	Dermal LD_{50}	Inhalation LC_{50}
Citric Acid (50%)	6000mg/kg (rat)	Not Available	Not Available

Chronic Toxicity – Carcinogenicity

Component	IARC
Citric Acid	Citric acid is not known to be carcinogenic.

Skin Corrosion/Irritation	Corrosive. Capable of producing severe burns, blister, ulcers and permanent scarring.
Ingestion	Ingesting small amounts not likely to cause harmful effects. Ingesting large amounts may however, be harmful.
Inhalation	Breathing of vapour or mist is possible, may cause irritation.
Serious Eye Damage/Irritation	Concentrated solutions may be corrosive to the eyes and cause corneal ulcerations.
Respiratory or Skin Sensitization	Citric acid aerosols may induce coughing and bronchoconstriction. Citric Acid has been reported to have allergenic properties, and might cause allergic contact dermatitis and sensitization to the sun.
Germ Cell Mutagenicity	Citric acid is not known to be mutagenic.
Reproductive Toxicity	Citric acid is not known to cause reproductive toxicity.
STOT-Single Exposure	May cause respiratory irritation.
STOT-Repeated Exposure	Chronic, high concentration overexposure to Citric Acid can result in a reduction of plasma calcium concentration, which can lead to cardiac arrhythmias, reduced cardiac output and, in severe cases, death.
Aspiration Hazard	Not Available
Synergistic Materials	Not Available

Section 12 – Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Citric Acid	EC_0(Scenedesmus quadricauda, 7d): 640mg/L	LC_{50}(Leuciscus idus melanotus, 48hr): 440mg/L	LC_{50}(Carcinus maenas, 48hr): 160mg/L EC_{50}(Daphnia magna, 24hr): 1535mg/L

Biodegradability	Readily biodegradable.
Bioaccumulation	Does not bioaccumulate.

Mobility	Due to its physico-chemical characteristics citric acid is highly mobile in the environment and will partition to the aquatic compartment.
Other Adverse Effects	Not Available

Section 13 – Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 – Transport Information

UN Number	UN3265
UN Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Citric acid)
Transport Hazard Class(es)	8
Packaging Group	III
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations.
Special Precautions	Not Available
Transport in Bulk	Not Available

Additional Information

Packing Group	Limited Quantity Index
I	0
II	1 L
III	5 L

TDG

Other Secure containers (full and/or empty) with suitable hold down devises 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 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

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

NSF Certification..... Product is certified under NSF for pH adjustment and membrane cleaner at a maximum dosage of: 250 mg/L

NSF product use restrictions based on requirements obtained from the NSF website for current requirements.

Section 16 – Other Information

Preparation Date	August 19, 2015
Revision Date	2018 January 2

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 / SDS 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 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) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) PAN
6) HSDB
7) ECHA

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