



SAFETY DATA SHEET CITRIC ACID, MONOHYDRATE REVISION 4, DATE 05 NOV 21

1. IDENTIFICATION

Product Name	Citric acid, monohydrate
Other Names	No Data Available
Uses	Cleaning/washing agents and additives; Manufacture of other chemicals.
Chemical Family	No Data Available
Chemical Formula	C ₆ H ₈ O ₇ .H ₂ O
Chemical Name	1,2,3-Propanetricarboxylic acid, 2-hydroxy-, monohydrate
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled



Globally Harmonised System

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories Skin Corrosion/Irritation - Category 2
 Serious Eye Damage/Irritation - Category 2A
 Specific Target Organ Toxicity (Single Exposure) - Category 3

Pictograms

Signal Word Warning

Hazard Statements		H315	Causes skin irritation.	
		H319	Causes serious eye irritation.	
		H335	May cause respiratory irritation.	
		USH232	May form combustible dust concentrations in air.	
	Precautionary Statements	Prevention	P280	Wear protective gloves/eye protection/face protection.
			P261	Avoid breathing dusts or mists.
			P271	Use only outdoors or in a well-ventilated area.
		Response	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
			P337 + P313	If eye irritation persists: Get medical advice.
			P312	Call a POISON CENTER or doctor if you feel unwell.
P332 + P313			If skin irritation occurs: Get medical advice.	
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
		P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.	
		P362 + P364	Take off contaminated clothing and wash it before reuse.	
	Storage	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.	
P405		Store locked up.		
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.		

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Citric acid, monohydrate	C6H8O7.H2O	5949-29-1	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Get medical advice/attention if you feel unwell.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. *Most important symptoms and effects, both acute and delayed: Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal.
Flammability Conditions	May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Do not scatter spilled material with high-pressure water streams.
Fire and Explosion Hazard	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Hazardous Products of Combustion	Fire may produce irritating, corrosive and/or toxic gases, including Carbon oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources (if dust clouds can occur). Do not touch or walk through
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spilled material. Minimise dust generation and accumulation. Avoid breathing dusts or mists and contact with eyes, skin and clothing.

Clean Up Procedures

Carefully shovel or sweep up spilled material and place in suitable container for disposal (see SECTION 13).

*Avoid generating dust. Use non-sparking tools.

Containment

Stop leak if you can do it without risk. Prevent dust cloud. Prevent entry into waterways, sewers, basements or confined areas.

Decontamination

After cleaning, flush away traces with water.

Environmental Precautionary Measures

Prevent entry into drains and waterways.

Evacuation Criteria

Spill or leak area should be isolated immediately. Keep unauthorised personnel away.

Personal Precautionary Measures

Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE**Handling**

Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dusts or mists and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). **WARNING:** May form combustible dust concentrations in air! Keep away from heat and sources of ignition - NO smoking. Take precautionary measures against static discharges.

Storage

Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10). Store locked up.

Container

Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**General**

No specific exposure standards are available for Citric acid, monohydrate. For dusts from solid substances without specific occupational exposure standards:

- Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m³ (measured as inhalable dust).

- New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m³; TWA = 3 mg/m³ (respirable dust).

Exposure Limits

No Data Available

Biological Limits

No information available.

Engineering Measures

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Protection Equipment

- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists.

Recommended: Dust mask/particulate respirator (refer to AS/NZS 1715 & 1716).

- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles.

- Hand protection: Wear protective gloves. Recommended: Impervious gloves.

- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious clothing, e.g. Overalls, safety shoes or boots.

Special Hazards Precautions

No information available.

Work Hygienic Practices

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling, before breaks and at the end of work. Take off contaminated clothing and wash it before reuse. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystalline powder
Odour	Odourless
Colour	White
pH	1.5 - 2.5 (5% soln.)
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	Decomposes before boiling
Melting Point	153 °C
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	1.665
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	210.14 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating, corrosive and/or toxic gases, including Carbon oxides.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	Reacts exothermically with alkalis.
Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Avoid generating dust. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Protect from moisture.
Materials to Avoid	Incompatible/reactive with strong oxidising agents, alkalis, steel, metals.
Hazardous Decomposition Products	Fire/decomposition may produce irritating, corrosive and/or toxic gases, including Carbon oxides.
Hazardous Polymerisation	Hazardous polymerisation does not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Information on toxicological effects:</p> <ul style="list-style-type: none">- Acute toxicity: Based on available data, the classification criteria are not met.- Skin corrosion/irritation: Causes skin irritation.- Eye damage/irritation: Causes serious eye irritation.- Respiratory/skin sensitisation: Based on the available information on citric acid, no hazard classification for sensitisation is recommended [NICNAS].- Germ cell mutagenicity: Based on the available information, no hazard classification for mutagenicity is recommended [NICNAS].- Carcinogenicity: Based on the available information, no hazard classification for carcinogenicity is recommended [NICNAS].- Reproductive toxicity: Based on the available information, no hazard classification for reproductive or developmental toxicity is recommended [NICNAS].- STOT (single exposure): May cause respiratory irritation.- STOT (repeated exposure): Citric acid is not considered to cause serious damage to health from repeated oral exposure [NICNAS].- Aspiration toxicity: Based on available data, the classification criteria are not met. <p>Information on likely routes of exposure:</p> <ul style="list-style-type: none">- Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.- Eye contact: Causes serious eye irritation.- Skin contact: Causes skin irritation.- Inhalation: May cause respiratory irritation. Inhalation of citric acid aerosols may induce coughing and bronchoconstriction. <p>Chronic effects: The main effects relating to consuming large and/or frequent doses of citric acid in humans relate to its acidity and strong chelating properties potentially leading to dental erosion or effects on how the body handles metals [NICNAS].</p>
Acute	
Ingestion	Acute toxicity (Oral): <ul style="list-style-type: none">- LD50, Rats: 3,000 - 12,000 mg/kg bw. [Citric acid; NICNAS].
Other	Acute toxicity (Dermal): <ul style="list-style-type: none">- LD50, Rats: >2,000 mg/kg bw. [Citric acid; OECD TG 402; NICNAS].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	<p>Aquatic toxicity:</p> <ul style="list-style-type: none">- LC50, Fish (Leuciscus idus): 440 mg/L (48 h) [Citric acid; OECD 203; ECHA].- LC50, Crustacea (Daphnia magna): 1,535 mg/L (24 h) [Citric acid; ECHA].
Persistence/Degradability	Readily biodegradable.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.

Bioaccumulation Potential	Does not accumulate in organisms.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Packaging that may not be cleansed must be disposed of in the same manner as the product.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code	
Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code	
Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Caledonia)

Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available

SAFETY DATA SHEET CITRIC ACID, MONOHYDRATE REVISION 4, DATE 05 NOV 21

Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)
US DOT

Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport
IMDG Code

Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport
IATA DGR

Proper Shipping Name	Citric acid, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available

Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No known restrictions for Citric acid, monohydrate have been identified. *WCO (World Customs organisation) HS Code: 2918.14
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Poisons Schedule (Aust)	Not Scheduled
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Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002503 - Additives, Process Chemicals and Raw Materials (Subsidiary Hazard) Group Standard 2020
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National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes

CIACID0100, CIACID0101, CIACID0103, CIACID0105, CIACID0110, CIACID0115, CIACID0120, CIACID0500, CIACID0501, CIACID0502, CIACID0505, CIACID0510, CIACID1160, CIACID1190, CIACID1500, CIACID1501, CIACID1502, CIACID1503, CIACID1504, CIACID1505, CIACID1506, CIACID1700, CIACID1701, CIACID1702, CIACID1703, CIACID1704, CIACID1705, CIACID1706, CIACID1863, CIACID2100, CIACID2101, CIACID2102, CIACID2103, CIACID2104, CIACID2105, CIACID2106, CIACID2107, CIACID2108, CIACID2109, CIACID2110, CIACID2111, CIACID2112, CIACID2113, CIACID2114, CIACID2115, CIACID2116, CIACID2117, CIACID2118, CIACID2119, CIACID2120, CIACID2121, CIACID2122, CIACID2900, CIACID2901, CIACID2902, CIACID2903, CIACID2904, CIACID2905, CIACID3070, CIACID3072, CIACID3300, CIACID3301, CIACID3310, CIACID3400, CIACID3401, CIACID3500, CIACID3501, CIACID3502, CIACID3503, CIACID4000, CIACID4001, CIACID4002, CIACID4003, CIACID4004, CIACID4005, CIACID4006, CIACID4300, CIACID4301, CIACID4302, CIACID4400, CIACID4401, CIACID4402, CIACID4403, CIACID4900, CIACID4901, CIACID4902, CIACID4903, CIACID4904, CIACID4905, CIACID4906, CIACID4920, CIACID4930, CIACID5600, CIACID5601, CIACID5700, CIACID6400, CIACID7500, CIACID7501, CIACID7502, CIACID7503, CIACID7800, CIACID8200, CIACID8300, CIACID8900, CIACID8901, CIACID9000, CIACID9001, CIACID9400, CIACID9601, CIACID9700, CIACID9701, CIACRR1000

Revision

4

Revision Date

05 Nov 2021

Key/Legend

< Less Than

> Greater Than

AICS Australian Inventory of Chemical Substances**atm** Atmosphere**CAS** Chemical Abstracts Service (Registry Number)**cm²** Square Centimetres**CO₂** Carbon Dioxide**COD** Chemical Oxygen Demand**deg C (°C)** Degrees Celcius**EPA (New Zealand)** Environmental Protection Authority of New Zealand**deg F (°F)** Degrees Fahrenheit**g** Grams**g/cm³** Grams per Cubic Centimetre**g/l** Grams per Litre**HSNO** Hazardous Substance and New Organism**IDLH** Immediately Dangerous to Life and Health**immiscible** Liquids are insoluble in each other.**inHg** Inch of Mercury**inH₂O** Inch of Water**K** Kelvin**kg** Kilogram**kg/m³** Kilograms per Cubic Metre**lb** Pound**LC₅₀** LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.**LD₅₀** LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.**ltr or L** Litre**m³** Cubic Metre**mbar** Millibar**mg** Milligram**mg/24H** Milligrams per 24 Hours**mg/kg** Milligrams per Kilogram**mg/m³** Milligrams per Cubic Metre**Misc or Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.**mm** Millimetre**mmH₂O** Millimetres of Water**mPa.s** Millipascals per Second**N/A** Not Applicable**NIOSH** National Institute for Occupational Safety and Health**NOHSC** National Occupational Health and Safety Commission**OECD** Organisation for Economic Co-operation and Development**Oz** Ounce

PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight