



# SAFETY DATA SHEET

## CITRIC ACID ANHYDROUS

### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### STATEMENT OF HAZARDOUS NATURE

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation. EPA Approval Code: HSR003138

**SYNONYMS:** C6-H8-O7, HOC-(CH<sub>2</sub>-CO<sub>2</sub>-H)<sub>2</sub>-CO<sub>2</sub>-H, HOC(CH<sub>2</sub>COOH)<sub>2</sub>COOH, "2-hydroxy-1, 2, 3-propanetricarboxylic acid", "beta-hydroxytricarballic acid", "beta-hydroxycarboxylic acid", Aciletten, "Food additive food acid 330"

**PROPER SHIPPING NAME:** Not Regulated  
**CAS NUMBER:** 77-92-9  
**UN NUMBER:** Not regulated  
**STRONG ACID**

**PRODUCT USE:** Component acidulant in beverages, confectionery, effervescent salts, in pharmaceutical syrups, medicines, in effervescent powders and tablets. Used to adjust the pH of foods and as synergistic antioxidant. Used in beverages, jellies, jams, preserves and candy to provide tartness. Manufacture of citrate salts. In processing of cheese. In electroplating. As sequestering agent to remove trace metals. As mordant to brighten colours. In analytical chemistry as reagent for albumin, mucin, glucose. Food Additive 330. Citric acid is a natural ingredient of many fruits. Citric acid occurs naturally in the body as a metabolite in the tricarboxylic acid cycle.

**SUPPLIER:** Interchem Agencies Limited  
7 Gladstone Road  
Northcote  
AUCKLAND 0627  
NEW ZEALAND  
**Telephone:** +64 9 418 0097  
**Fax:** +64 9 418 4008  
**24 Hr Emergency Contact:** 0800 243 622

**TRANSFER NOTICE:** 28 June 2006

Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2006, *New Zealand Gazette*, 26 June 2006 - Issue No.72

(<http://www.epa.govt.nz/Publications/Transfer-Notice-72-2006.pdf>)

## Section 2 - HAZARDS IDENTIFICATION

### HAZARD LABELLING



### DANGER

### EMERGENCY OVERVIEW

Hazard Classifications: 6.1E 6.3B 8.3A

May be harmful if swallowed

Causes mild skin irritation

Causes serious eye damage

### CONTROLS APPLYING TO THIS SUBSTANCE ARE:

1. Hazardous Substances (Classes 6,8 and 9 Controls) Regulations 2001
  - T1 (R11-27), T2 (R29, 30), T4 (R7), T5 (R8), T7 (R10), T8 (R28)
2. Hazardous Substances (Packaging) Regulations 2001
  - P1 (R5,6,7(1),8), P3 (R9), P13\* (R19), PS4
3. Hazardous Substances (Disposal) Regulations 2001
  - D4 (R8), D6 (R10), D7 (R11, 12), D8 (13,14)
4. Hazardous Substances (Emergency Management) Regulations 2001
  - EM1 (R6,7,9-11), EM2 (46-48), EM6 (R8e), EM8 (R12-16, 18-20), EM11 (R25-34), EM12 (R35-41), EM13 (R42)
5. Hazardous Substances (Identification) Regulations 2001
  - I1 (R6,7,32-35,36.1-36.7), I2 (R8), I8 (R14), I9 (R18), I10 (R19), I16 (R25), I17 (R26), I18 (R27), I19 (R29-31), I21 (R37-39, 47-50), I22 (R40), I28 (R46), I29 (51,52), I30 (R53)

Variation Codes applying to the Hazard Classifications as outlined in Gazette notice 72: 16

### PRECAUTIONARY STATEMENTS

#### Prevention

Keep out of reach of children

Read label before use

Wear protective gloves/clothing

Wear eye/face protection

#### Response

If medical advice is needed have product container or label at hand

Call a POISON CENTRE or Doctor if you feel unwell

If Skin irritation occurs: Get medical attention

IF IN EYES: Rinse cautiously with water for several minutes, remove contact lenses if present and easy to do so. Continue rinsing

Immediately call a POISON CENTRE or Doctor

#### Disposal

Dispose of contents and container in accordance with relevant legislation.

For additional information see section 13 of this SDS

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME        | CAS RN  | %    | Hazardous |
|-------------|---------|------|-----------|
| citric acid | 77-92-9 | > 98 | Yes       |

24 HOUR EMERGENCY CONTACT TELEPHONE 0800 CHEMCALL 0800 243 622

## Section 4 - FIRST AID MEASURES

### SWALLOWED

If swallowed do NOT induce vomiting.

If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

Observe the patient carefully.

Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.

Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.

Seek medical advice.

### EYE

If this product comes in contact with the eyes:

Wash out immediately with fresh running water.

Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

If pain persists or recurs seek medical attention.

Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

If skin contact occurs:

Immediately remove all contaminated clothing, including footwear

Flush skin and hair with running water (and soap if available).

Seek medical attention in event of irritation.

### INHALED

If fumes or combustion products are inhaled remove from contaminated area.

Other measures are usually unnecessary.

### NOTES TO PHYSICIAN

Treat symptomatically.

Simple antacid powders should be useful in the case of ingestion.

[<http://www.toxinz.com/>]

## Section 5 - FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

Water spray or fog.

Foam.

Dry chemical powder.

Carbon dioxide.

### FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

Wear breathing apparatus plus protective gloves.

Prevent, by any means available, spillage from entering drains or water courses.

Use water delivered as a fine spray to control fire and cool adjacent area.

DO NOT approach containers suspected to be hot.

Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

**FIRE/EXPLOSION HAZARD**

Combustible solid which burns but propagates flame with difficulty.

Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.

Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.

Build-up of electrostatic charge may be prevented by bonding and grounding.

Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

All movable parts coming in contact with this material should have a speed of less than 1-meter/sec

Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), other pyrolysis products typical of burning organic material.

May emit poisonous and corrosive fumes.

**FIRE INCOMPATIBILITY**

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

**Personal Protective Equipment**

Gloves, boots (chemical resistant).

**Section 6 - ACCIDENTAL RELEASE MEASURES****MINOR SPILLS**

Remove all ignition sources.

Clean up all spills immediately.

Avoid contact with skin and eyes.

Control personal contact by using protective equipment.

Use dry clean up procedures and avoid generating dust.

Place in a suitable labelled container for waste disposal.

**MAJOR SPILLS**

Moderate hazard.

CAUTION: Advise personnel in area.

Alert Emergency Services and tell them location and nature of hazard.

Control personal contact by wearing protective clothing.

Prevent, by any means available, spillage from entering drains or water courses.

Recover product wherever possible.

IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.

ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.

If contamination of drains or waterways occurs, advise Emergency Services.

**EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)**

- The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing life-threatening health effects is:

**Citric acid: 500mg/m<sup>3</sup>**

- Irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

**Citric acid: 50mg/m<sup>3</sup>**

- Other than mild, transient adverse effects without perceiving a clearly defined odor is:

**Citric acid: 30mg/m<sup>3</sup>**

-The threshold concentration below which most people experience no appreciable risk of health effects:

**24 HOUR EMERGENCY CONTACT TELEPHONE 0800 CHEMCALL 0800 243 622**

**Citric acid: 10mg/m<sup>3</sup>**

Personal Protective Equipment advice is contained in Section 8 of the SDS

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

Avoid all personal contact, including inhalation.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

Prevent concentration in hollows and sumps.

DO NOT enter confined spaces until atmosphere has been checked.

DO NOT allow material to contact humans, exposed food or food utensils.

Avoid contact with incompatible materials.

When handling, DO NOT eat, drink or smoke.

Keep containers securely sealed when not in use.

Avoid physical damage to containers.

Always wash hands with soap and water after handling.

Work clothes should be laundered separately. Launder contaminated clothing before re-use.

Use good occupational work practice.

Observe manufacturer's storing and handling recommendations.

Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

Polyethylene or polypropylene container.

Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents.

Avoid potassium tartrate, alkali and alkaline earth carbonates and bicarbonates, acetates, sulfides, metal nitrates.

### STORAGE REQUIREMENTS

Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

### EXPOSURE CONTROLS

| Source               | Material         | TWA ppm | TWA mg/m <sup>3</sup> | STEL ppm | STEL mg/m <sup>3</sup> | Peak ppm | Peak mg/m <sup>3</sup> | TWA F/CC |
|----------------------|------------------|---------|-----------------------|----------|------------------------|----------|------------------------|----------|
| New Zealand WES 2010 | total dust       |         | 10 mg/m <sup>3</sup>  |          |                        |          |                        |          |
| New Zealand WES 2010 | respirable dust. |         | 3mg/m <sup>3</sup>    |          |                        |          |                        |          |

The following materials had no OELs on our records

- citric acid: CAS: 77-92-9

### MATERIAL DATA

No exposure limits set by NOHSC or ACGIH.

### PERSONAL PROTECTION EQUIPMENT (PPE)

#### AIRBOURNE EXPOSURE LIMITS:

None established.

**24 HOUR EMERGENCY CONTACT TELEPHONE 0800 CHEMCALL 0800 243 622**

**VENTILATION SYSTEM:**

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. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**PERSONAL RESPIRATORS (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator.

**WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**SKIN PROTECTION:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**EYE PROTECTION:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE**

White odourless crystals, granules or powder; mixes with water, alcohol and methanol; practically insoluble in chloroform. Solubility in water @ 20 deg.C: 59.2 g/100 ml. Weakly acidic; pKa1 = 3.14, pKa2 = 4.77 and pKa3 = 6.39. Monohydrate loses water of crystallisation in dry air or when heated to 40-50 deg.C. Slightly deliquescent (absorbs moisture) in moist air. Softens at 75 deg. C and melts at 100 deg. C. At 175 deg.C begins to convert to various organic compounds (aconitic acid, acetonedicarboxylic acid, acetone).

**PHYSICAL PROPERTIES**

Solid.

Mixes with water.

| Property                       | Value                  |
|--------------------------------|------------------------|
| Molecular Weight:              | 192.13                 |
| Melting Range (°C):            | 153                    |
| Solubility in water (g/L):     | Miscible               |
| pH (10% solution):             | 1.6                    |
| Volatile Component (%vol):     | Not available          |
| Relative Vapor Density(air=1): | Not applicable         |
| Lower Explosive Limit (%):     | 0.28kg/m <sup>3</sup>  |
| Autoignition Temp (°C):        | 1000-1020              |
| State:                         | Divided Solid          |
| Boiling Range (°C):            | Decomposes             |
| Specific Gravity (water=1):    | 1.67 @ 20 deg.C        |
| pH (as supplied):              | Not applicable         |
| Evaporation Rate:              | Not applicable         |
| Flash Point (°C):              | 1000-1020              |
| Upper Explosive Limit (%):     | 2.29 kg/m <sup>3</sup> |
| Decomposition Temp (°C):       | >153                   |
| Viscosity:                     | Not applicable         |

## Section 10 - CHEMICAL STABILITY AND REACTIVITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials including oxidizing agents.

Avoid potassium tartrate, alkali and alkaline earth carbonates and bicarbonates, acetates, sulfides, metal nitrates.

Product is considered stable.

Hazardous polymerisation will not occur.

## Section 11 - TOXICOLOGICAL INFORMATION

### ACUTE HEALTH EFFECTS

#### SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual.

Ingestion of low-molecular organic acid solutions may produce spontaneous haemorrhaging, production of blood clots, gastrointestinal damage and narrowing of the oesophagus and stomach entry.

#### EYE

There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. There may be damage to the cornea. Unless treatment is prompt and adequate there may be permanent loss of vision.

Conjunctivitis can occur following repeated exposure.

Solutions of low-molecular weight organic acids cause pain and injury to the eyes.

#### SKIN

There is some evidence to suggest that the material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

#### INHALED

The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

### CHRONIC HEALTH EFFECTS

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.

Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

### TOXICITY

|                   |                  |
|-------------------|------------------|
| Oral (rat) LD50:  | 3000 mg/kg       |
| 6.1E (inhalation) | Inhalation Form: |

**24 HOUR EMERGENCY CONTACT TELEPHONE 0800 CHEMCALL 0800 243 622**



R-PHRASE: R 37 Irritating to respiratory system.

[<http://www.cise.columbia.edu/clean/msds/citricacid.pdf>]

<http://www.epa.govt.nz/search-databases/Pages/ccid-details.aspx?SubstanceID=3044>

#### IRRITATION

Skin (rabbit): 500 mg/24h - Mild  
Eye (rabbit): 0.75 mg/24h- SEVERE

### Section 12 - ECOLOGICAL INFORMATION

Algae IC50 (72hr.) (mg/l): 80  
log Pow (Verschueren 1983): - 1.72  
log Kow: -1.72  
BOD 5 if unstated: 0.42  
ThOD: 0.686  
Toxicity Fish: LC50>100mg/L  
Effects on algae and plankton: inhib. algae  
100mg/L

### Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.

Bury residue in an authorised landfill.

Recycle containers if possible, or dispose of in an authorised landfill.

Containers may still present a chemical hazard/ danger when empty.

Otherwise:

If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

Contact appropriate Waste Management Company for guidance and disposal options in your area.

Where possible retain label warnings and SDS and observe all notices pertaining to the product.

### Section 14 - TRANSPORT INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

### Section 15 - REGULATORY INFORMATION

#### REGULATIONS

ERMA Approval Code: HSR003138

Hazard Classifications: 6.1E 6.3B 8.3A

Citric Acid Monohydrate (CAS: 77- 92- 9) is found on the following regulatory lists;

CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General,  
Unless Otherwise Specified, in Accordance with GMP

IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk

International Council of Chemical Associations (ICCA) - High Production Volume List

New Zealand - Australia New Zealand Food Standards Code - Food Additives - Schedule 1 Permitted uses



of food additives by food type

New Zealand - Australia New Zealand Food Standards Code - Food Additives - Schedule 2 Miscellaneous additives permitted in accordance with GMP in processed foods specified in Schedule 1

New Zealand Transferred List of Single Component Substances

OECD Representative List of High Production Volume (HPV) Chemicals

Specific advice on controls required for this material can be found at

<http://www.epa.govt.nz/search-databases/Pages/controls-details.aspx?SubstanceID=3044&ApplID=3287>

## Section 16 - OTHER INFORMATION

NEW ZEALAND POISON CENTRE 0800 POISON (0800 764 766)

NZ EMERGENCY SERVICES: 111

### Interpretation and Abbreviations

Controls applying to a substance:

- \* denotes that changes have been made to these controls, further information on these changes is located in the transfer notice for that substance,
- ( R ) abbreviation for the term Regulation of the Hazardous Substances regulations

**DISCLAIMER:** *The information contained in this safety data sheet was obtained from current and reliable sources. This data is supplied without warranty, expressed or implied, regarding its correctness and accuracy. It is the user's responsibility to determine safe conditions for use of this product and to assume liability for loss, injury, damage or expense resulting from improper use of this product.*