

## MATERIAL SAFETY DATA SHEET

### 1. General Information

<b>Supplier :</b>	D&J Chemicals Co., Ltd.
<b>Trade Name :</b>	Citric Acid
<b>Molecular Formula:</b>	$\text{HOC}(\text{COOH})(\text{CH}_2\text{COOH})_2$
<b>Molecular Weight:</b>	
<b>CAS No:</b>	77-92-9
<b>EINECS No:</b>	201-069-1
<b>Chemical family :</b>	Organic Chemicals
<b>Chemical Name:</b>	2-hydroxy-1,2,3-propanetricarboxylic acid, acietten, citretten, beta-hydroxytricarballic acid, citro, hydrocerol A

### 2. Physical Data Information

<b>Appearance:</b>	white crystalline powder
<b>Odor:</b>	With fruit sour
<b>Solubility:</b>	Soluble in water.
<b>Specific Gravity:</b>	
<b>pH:</b>	No information found.
<b>% Volatiles by volume @ 21C (70F):</b>	
<b>Density (g cm-3):</b>	1.54
<b>Boiling Point:</b>	
<b>Melting Point:</b>	153C
<b>Vapor Density (Air=1):</b>	No information found.
<b>Vapor Pressure (mm Hg):</b>	No information found.
<b>Evaporation Rate (BuAc=1):</b>	No information found.

### 3. Hazards Identification

**Emergency Overview:**

**WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY BE HARMFUL IF SWALLOWED.**

### Potential Health Effects

**Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

**Ingestion:**

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Extremely large oral dosages may produce gastrointestinal disturbances. Calcium deficiency in blood may result in severe cases of ingestion.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

**Eye Contact:**

Highly irritating; may also be abrasive.

**Chronic Exposure:**

Chronic or heavy acute ingestion may cause tooth enamel erosion.

**Aggravation of Pre-existing Conditions:**

No adverse health effects expected.

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature: 1011C (1852F)

As with most organic solids, fire is possible at elevated temperatures or by

contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect from physical damage. Separate from oxidizing materials. Store in the dark. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**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 full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Metal nitrates (potentially explosive reaction), alkali carbonates and bicarbonates, potassium tartrate. Will corrode copper, zinc, aluminum and their alloys.

**Conditions to Avoid:**

Heat and incompatibles.

## 10. Toxicology Information

May act as an irritant.

ORL-RAT LD50 11700 mg kg<sup>-1</sup>

IPR-RAT LD50 883 mg kg<sup>-1</sup>

SCU-RAT LD50 5500 mg kg<sup>-1</sup>

ORL-MUS LD50 5040 mg kg<sup>-1</sup>

ORL-RBT LDLO 7000 mg kg<sup>-1</sup>

IVN-RBT LD50 330 mg kg<sup>-1</sup>

Irritating to eyes.

Irritating to respiratory system.

Irritating to skin.

## 11. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 12. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 13. Transport Information

Not regulated.

## 14. Other Information

**NFPA Ratings:** Health: **2** Flammability: **1** Reactivity: **0**

**Label Hazard Warning:**

WARNING! CAUSES SEVERE EYE IRRITATION. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

The information above is believed to be accurate. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, of damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, even if the company has been advised of the possibility of such damages.