Citric Acid Anhydrous
SAFETY DATA SHEET
ACCORDING TO EC-REGULATIONS 1907/2006 (REACH); 1272/2008 & 453/2010 (CLP)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Chemical Name Citric acid
Trade name Citric acid Anhydrous
CAS No. 77-92-9
EINECS No. 201-069-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified use(s)
Used as a sour agent, buffering agent and antioxidant in the food industry; a correctant in pharmaceutical industry; used in detergents, buffering and chelating, sizing and as a sequestrant.

Uses advised against
No uses advised against

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.2 Label elements
2.2.1 According to Regulation (EC) No. 1272/2008 & 453/2010 (CLP)
Hazard Pictogram

Signal word(s) Warning
Hazard statement(s) H319: Causes serious eye irritation

Hazard Symbol

Risk Phrases R36. Irritating to eye
2.3 Other hazards
Not known

2.4 Additional Information
Not known

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance Composition

<table>
<thead>
<tr>
<th>%W/W</th>
<th>EC No.</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>99.5 to 100.5</td>
<td>201-069-1</td>
<td>77-92-9</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

**Inhalation**
Move to fresh air.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. If irritation persists, call a physician.

**Eye Contact**
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**Ingestion**
Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
Serious eye damage/eye irritation: Eye Irrit. 2

4.3 Indication of immediate medical attention and special treatment needed
Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

**5.1.1 Suitable Extinguishing Media**
Use alcohol-resistant foam, carbon dioxide, dry powder or water fog.

**5.1.2. Unsuitable Extinguishing Media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture
Oxides of carbon

5.3 Advice for fire-fighters
In the event of fire, wear self-contained breathing apparatus and wear suitable protective clothing.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

5.4 Additional information
Explosion hazard from the generation of dust.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment.

6.2 Environmental precautions
Do not flush substance into surface water or sewage system.

6.3 Methods and material for containment and cleaning up
Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4 Reference to other sections
Section 8

6.5 Additional Information
Not known

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Use only in well-ventilated areas. Do not breathe vapours/dust
7.2 Conditions for safe storage, including any incompatibilities

- Storage: Keep locked up or in an area accessible only to qualified staff. Store in tightly closed original container in a dry, cool and well ventilated place. Keep in original container.
- Incompatible materials: Strong oxidising substances, strong alkalis.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
8.1.1 Occupational Exposure Limits
No values assigned

8.1.2 Biological limit values
No values assigned

8.2 PNECs and DNELs

- DNELs - Health: No true DNEL for systemic toxicity can be derived. Local effects, eye irritation should be considered.

<table>
<thead>
<tr>
<th>PNEC/PEC – Environment</th>
<th>Compartment</th>
<th>PNEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic PNECaqua – freshwater (mg/l)</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>PNECaqua - marine water (mg/l)</td>
<td>0.044</td>
<td></td>
</tr>
<tr>
<td>PNECdrywater-sediment (mg/kg d.w.)</td>
<td>3.46. (Equivalent to 0.752 mg/kg wwt)</td>
<td></td>
</tr>
<tr>
<td>The PNECmarine-sediment mg/kg d.w.</td>
<td>34.6. (Equivalent to 7.52 mg/kg wwt)</td>
<td></td>
</tr>
<tr>
<td>Terrestrial (PNECsoil mg/kg d.w.)</td>
<td>33.1</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment plant PNEC STP (mg/l)</td>
<td>&gt;1000</td>
<td></td>
</tr>
<tr>
<td>Atmospheric Compartment</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

8.3 Exposure controls
8.3.1 Appropriate engineering controls
Minimise the risk of dust inhalation. Provide adequate ventilation.

8.3.2 Personal protection equipment
- Eye/face protection: Safety glasses with side-shields
- Skin protection (Hand protection/ Other): Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday. Protective gloves must satisfy the specifications of EU Directive 89/686/EEC and EN 374
- Respiratory protection: Provide adequate ventilation. Wear respirator where dust level exceeds 10 mg/m3.
- Thermal hazards: Not applicable

8.3.3 Environmental Exposure Controls
Do not allow to enter drains, sewers or watercourses

8.3.4 Hygiene measures
Do not smoke in the work area. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
- Appearance: Solid, crystalline
- Colour: White
- Odour: Odourless
- pH (Value): 1.7 (100g/l)
- Melting Point: Approx.153 °C at 1,013 hPa
- Boiling point/boiling range (°C): Decomposes before boiling
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point (°C)</td>
<td>Not known</td>
</tr>
<tr>
<td>Flammability</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Density</td>
<td>1.665 g/cm³ at 20°C</td>
</tr>
<tr>
<td>Solubility (Water)</td>
<td>590 g/L at 20°C</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Soluble in alcohol</td>
</tr>
<tr>
<td>Partition Coefficient (Log Kow: -n-Octanol/water)</td>
<td>-0.2 to -1.8</td>
</tr>
<tr>
<td>Decomposition Temperature (°C)</td>
<td>Not known</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not oxidising</td>
</tr>
<tr>
<td>Granulometry</td>
<td>The fraction below 100 μm = 84.1%; the D50 of the fraction below 100 μm = 31.99 μm.</td>
</tr>
<tr>
<td>Dissociation constant</td>
<td>pKa: 3.13, 4.76 and 6.4 at 25°C</td>
</tr>
</tbody>
</table>

**SECTION 10: STABILITY AND REACTIVITY**

10.1 Reactivity
Reacts with alkaline materials

10.2 Chemical stability
Stable under normal conditions

10.3 Conditions to avoid
Exposure to heat and moisture.

10.4 Incompatible materials
Sodium nitrite, potassium nitrite

10.5 Hazardous Decomposition Product(s)
Oxides of carbon.

**SECTION 11: TOXICOLOGICAL INFORMATION**

11.1 Information on toxicological effects

11.1.1 Substances

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td></td>
</tr>
<tr>
<td>Ingestion LD50 (mouse)</td>
<td>5400 mg/kg bw</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No data</td>
</tr>
<tr>
<td>Skin Contact LD50 (dermal)</td>
<td>&gt;2000 mg/kg bw</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Mild skin irritant</td>
</tr>
<tr>
<td>Eye Contact</td>
<td>Irritating</td>
</tr>
<tr>
<td>Respiratory or skin sensitization –skin</td>
<td>Not a sensitizer</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Not a mutagen</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not a carcinogen</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not a reproductive toxin</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td>Not known</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>Not known</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not known</td>
</tr>
</tbody>
</table>

11.2 Other information
Not known

**SECTION 12: ECOLOGICAL INFORMATION**

12.1 Toxicity

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish LC50 (48hr)</td>
<td>440 mg/l</td>
</tr>
<tr>
<td>D. Magna LC 50 (24hr)</td>
<td>1535 mg/l</td>
</tr>
<tr>
<td>Algae (8 d mat. (nominal) based on cell density</td>
<td>425 mg/l</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability
Biodegradable

12.3 Bioaccumulative potential
No expected to bioaccumulate

12.4 Mobility in soil
Not applicable

12.5 Results of PBT and vPvB assessment
Not a PBT or a vPvB

12.6 Other adverse effects
Not known

**SECTION 13: DISPOSAL CONSIDERATIONS**

13.1 Waste treatment methods
Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority.

13.2 Additional Information
Not known
SECTION 14: TRANSPORT INFORMATION

14.1 Land transport (ADR/RID) Not subject to transport regulations.
14.2 Sea transport (IMDG) Not subject to transport regulations.
14.3 Air transport (ICAO/IATA) Not subject to transport regulations.
14.4 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not known

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture substance
15.1.1 EU regulations User to follow EU directives and regulations
15.1.2 Authorisations and/or restrictions on use Not applicable
15.1.3 National regulations User to follow national regulations

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Version 1.

LEGEND
LTFL Long Term Exposure Limit
STEL Short Term Exposure Limit
STOT Specific Target Organ Toxicity
DNEL Derived No Effect Level
PNEC Predicted No Effect Concentration

References:
Chemical Safety Report for citric acid and citrates

Risk Phrases and Safety Phrases
R36: Irritating to eyes
S26: Avoid contact with eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

Hazard statement(s) and Precautionary statement(s)
H319: Causes serious eye irritation
P264: Wash hands thoroughly after handling.
P280: Wear eye protection.
P305 + P351 + P338. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313: If eye irritation persists: Get medical advice/attention.

Training advice: Ensure staff and workers receive adequate training with regular updates in the handling of chemicals

Additional Information: Not known

Information contained in this publication or as otherwise supplied to users is believed to be accurate and is given in good faith, but it is for the users to satisfy themselves of the suitability of the product for their own particular purpose. Pestell Minerals & Ingredients Inc., gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Pestell Minerals & Ingredients Inc., accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.