



CITRIC ACID CRYSTALS SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product Identifier:

Citric Acid Anhydrous

Other means of Identification:

CAS No. 77-92-9

Recommended Use:

Activation

Manufactured for:

Bio-Cide International, Inc.
2650 Venture Drive
Norman, Oklahoma 73069
Phone: (405) 329-5556
Fax: (405) 329-2681

Emergency Telephone Number:

Chemtrec for transportation emergencies in the United States, Canada, Puerto Rico, and Virgin Islands 1-800-424-9300; Canutec: 1-613-996-6666 (Canada)

SECTION 2: HAZARD(S) IDENTIFICATION

Signal word: **WARNING**



Pictogram:

HAZARD STATEMENTS:

H319 Causes serious eye irritation

PRECAUTIONARY STATEMENTS:**PREVENTION:**

P264 Wash skin thoroughly after handling

P280 Wear protective gloves/protective clothing/eye protection/face protection

RESPONSE:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present an easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Substance: Citric Acid
CAS number: 77-92-9
EC number: 201-069-1

SECTION 4: FIRST-AID MEASURES

GENERAL ADVICE:

Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

EYE CONTACT: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids.

SKIN CONTACT: Immediately flush skin with large amounts of water.

INHALATION: If breathed in. Move person to fresh air.

SWALLOWING: Drink plenty of water. If swallowed, DO NOT induce vomiting.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Suitable extinguishing media:

Water spray
Dry Powder
Foam
Carbon dioxide (CO₂)

Specific hazards during firefighting:

Do not use a solid water stream as it may scatter and spread fire.
Hazardous decomposition products formed under fire conditions.
Exposure to decomposition products may be a hazard to health.

Special protective equipment for firefighters:

Wear self contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

Further Information:

Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Avoid dust formation.
Avoid breathing dust.
Ensure adequate ventilation, especially in confined areas.

ENVIRONMENTAL PRECAUTIONS:

Prevent further leakage or spillage if safe to do so. No special environmental precautions required.

METHODS FOR CLEANING UP:

Use mechanical handling equipment.
Keep in suitable, closed containers for disposal.
Clean contaminated surface thoroughly.

SECTION 7: HANDLING AND STORAGE

HANDLING:

ADVICE ON SAFE HANDLING:

Avoid creating dust.
Do not breathe dust.
Avoid Contact with skin and eyes.

ADVICE ON PROTECTION AGAINST FIRE AND EXPLOSION:

Norman measures for preventive fire protection.

DUST EXPLOSION CLASS:

St1

REQUIREMENTS FOR STORAGE AREAS AND CONTAINERS:

Keep in an area equipped with acid resistant flooring.

Keep container tightly closed in a dry and well-ventilated place

Do not store at temperatures above 30°C/86° F

ADVICE ON COMMON STORAGE

Incompatible with strong bases and oxidizing agents.

No decomposition if stored and applied as directed.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**CONTROL PARAMETERS**

Contains no substances with occupational exposure limit values.

PNEC: Water
Value: 440 mg/l

PNEC: Fresh water sediment
Value: 34,6 mg/kg

PNEC: Marine sediment
Value: 3,46 mg/kg

PNEC: Soil
Value: 33,1 mg/kg

EXPOSURE CONTROLS**Engineering measures**

Provide adequate ventilation.

PERSONAL PROTECTIVE EQUIPMENT**RESPIRATORY PROTECTION**

In the case of dust or aerosol formation, use respirator with an approved filter.

Half mask with a particle filter P2 (EN 143)

HAND PROTECTION:

Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.

For special applications we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with glove manufacturer.

EYE PROTECTION:

Safety glasses

SKIN AND BODY PROTECTION

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

HYGIENE MEASURES

Handle in accordance with good industrial hygiene and safety practice.

General industrial hygiene practice

Do not breathe dust.

Avoid contact with skin, eyes and clothing.

ENVIRONMENTAL EXPOSURE CONTROLS

Prevent further leakage or spillage if safe to do so.
No special environmental precautions required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): crystalline, white

Odor: odorless

Flash point: not applicable

Flammability (solid, gas): does not ignite

Oxidizing properties: No oxidizing effect

Molecular Weight: 192,13 g/mol

pH: 1,8 at 5% 25° C

Melting point/range: ca. 153° C

Density: 1,665 g/cm³ at 20° C

Water Solubility: ca. 800 g/l at 20°C

Partition coefficient : log Pow: -1,8 – 0.2

Partition coefficient: n-octanol/water: Log Pow: -1,8 – 0,2 calculation

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY

No decomposition if stored and applied as directed

CHEMICAL STABILITY

Stable under normal conditions

POSSIBILITY OF HAZARDOUS REACTIONS

None known

CONDITIONS TO AVOID

Avoid dust formation

INCOMPATIBLE MATERIALS

Strong bases
Oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Buildup of dangerous/toxic fumes possible in cases of fire/high temperature.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

ACUTE ORAL TOXICITY

LD50 Oral: 5,400 mg/kg

Species: mouse

Method: OECD Test Guideline 401

LD50 Oral: 11,700 mg/kg

Species: rat

Method: OECD Test Guideline 401

ACUTE DERMAL TOXICITY

LD50 Dermal: >2,000 mg/kg

Species: rat

ACUTE TOXICITY (other routes of administration)

LD50: 725 mg/kg

Application Route: i.p.

Species: rat

LD50: 940 mg/kg

Application Route: i.p.

Species: mouse

SKIN IRRITATION

Species: Rabbit

Result: No skin irritation

May cause skin irritation in susceptible persons

EYE IRRITATION:

Species: rabbit

Result: Irritating to eyes

SENSITISATION:

Maximisation test

Species: Guinea Pig

Result: Does not cause skin sensitization

Method: OECD Test Guideline 406

GERM CELL MUTAGENICITY

Assessment: In vivo test did not show mutagenic effects

CARCINOGENICITY

Did not show carcinogenic or teratogenic effects in animal experiments.

REPRODUCTIVE TOXICITY

No toxicity to reproduction

TARGET ORGAN SYSTEMIC TOXICANT – REPEATED EXPOSURE**SECTION 12: ECOLOGICAL INFORMATION****TOXICITY TO FISH**

LC50: 440 mg/l

Exposure time: 48 h

Species: *Leuciscus idus* (Golden orfe)

Static test

Method: OECD Test Guideline 203

TOXICITY TO DAPHNIA AND OTHER AQUATIC INVERTEBRATES

LC50: 1.535 mg/l

Exposure time: 24 h

Species; *Daphnia magna* (water fleas)

Static test

TOXICITY TO ALGAE

425 mg/l

Exposure time: 168 h

Species: *Scenedesmus quadricauda* (Green algae)

Static test

TOXICITY TO BACTERIA

>10,000 mg/l
Exposure time: 16h
Species: Pseudomonas putida

PERSISTENCE AND DEGRADABILITY**BIODEGRADABILITY**

97%
Testing period: 28 d
Method: OECD Test Guideline 301B
Readily biodegradable

100%
Testing period: 19 d
Method: OECD Test Guideline 301E
Readily biodegradable

BIOCHEMICAL OXYGEN DEMAND (BOD)

526 mg/g

CHEMICAL OXYGEN DEMAND (COD)

728 mg/g

BIOACCUMULATIVE POTENTIAL**BIOACCUMULATION**

This product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

MOBILITY IN SOIL**RESULTS OF PBT AND vPvB ASSESSMENT**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

SECTION 13: DISPOSAL CONSIDERATIONS**PRODUCT**

Where possible recycling is preferred to disposal or incineration
Can be landfilled or incinerated, when in compliance with local regulations.
Waste codes should be assigned by the User based on the application for which the product was used.
According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

CONTAMINATED PACKAGING

Empty containers should be taken to an approved waste handling site for recycling or disposal.
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

ADR: Not dangerous goods
DOT: Not a Hazardous Material
TDG: Not dangerous goods
IATA: Not dangerous goods
IMDG: Not dangerous goods
RID: Not dangerous goods

SECTION 15: REGULATORY INFORMATION

SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

MAJOR ACCIDENT HAZARD LEGISLATION

96/82/EC Update: 2003

Directive 96/82/EC does not apply

NOTIFICATION STATUS

CERCLA:	Not considered hazardous
SARA Title III:	Not considered hazardous
WHMIS:	Class E
TSCA:	On TSCA Inventory
EINECS:	On the inventory, or in compliance with the inventory
AICS:	On the inventory, or in compliance with the inventory
DSL:	All components of this product are on the Canadian DSL list
ENCS:	On the inventory, or in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
PICCS:	On the inventory, or in compliance with the inventory
IECSC:	On the inventory, or in compliance with the inventory
NZIoC:	On the inventory, or in compliance with the inventory

SECTION 16: OTHER INFORMATION

HMIS* RATING

Health = 1

Fire = 0

Reactivity = 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

*Hazardous Materials Identification System of the National Paint and Coating Association

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