



MATERIAL SAFETY DATA SHEET

NAME OF PRODUCT: Citric Acid MSDS DATE: 17 Nov, 2011

Notice

NSF Reference Standards are for test and assay use only and are not intended for human or animal consumption. This document communicates information relating to test and assay use only and may not be applicable for any unauthorized use.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Citric Acid
Catalog Code: RS1-0039
Synonym: 2-hydroxypropane-1,2,3-tricarboxylic acid
Chemical Formula: $C_6H_8O_7$
CAS #: 77-92-9

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Name: Citric Acid

CAS#: 77-92-9

% by Weight: 100%

Toxicological Data on Ingredients:

LD50 (mouse): 5040 mg/ kg, LD50 (rat): 3000 mg/ kg

SECTION 3: HAZARDS IDENTIFICATION

Potential Acute Health Effects:

Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of ingestion, of inhalation (lung irritant). Tissue damage is dependent on length of contact. Skin contact can produce



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inflammation and blistering. Severe overexposure can produce lung damage, choking, unconsciousness, or death.

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (sensitizer).

CARCINOGENIC EFFECTS: Not Available

MUTAGENIC EFFECTS: Mutagenic for Human somatic cells, and bacteria/ yeast cells

TERATOGENIC EFFECTS: Not Available

DEVELOPMENTAL TOXICITY: Not Available

Repeated or prolonged exposure to the substance can produce target organ damage.

Repeated or prolonged exposure to the substance is not known to aggravate medical conditions.

SECTION 4: FIRST AID MEASURES

Eye Contact:

Check for and remove contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation occurs.

Skin Contact:

In case of contact, immediately wash skin with non-abrasive soap and plenty of water. Cover the irritated skin with an emollient. Seek medical attention if irritation develops.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing give artificial respiration. Seek medical attention.

Serious Inhalation:

Not Available

Ingestion:

Do not induce vomiting. Loosen tight clothing. If a large quantity of citric acid is swallowed, seek medical attention if symptoms appear.

Serious Ingestion: Not Available.

SECTION 5: FIRE-FIGHTING MEASURES

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 1010 °C

Flammable Limits: Lower: 0.28 kg/m³ (Dust) Upper: 2.29 kg/m³ (Dust)

Flash Points: Not Available



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Products of Combustion: These products are carbon oxides (CO, CO₂)

Special Remarks on Explosion Hazards: Not Available.

Fire Hazards in Presence of Various Substances:

Slightly flammable to flammable in presence of open flames.

Explosion Hazards in Presence of Various Substances:

Slightly explosive in the presence of flames and sparks.

Risks of explosion of the product in presence of mechanical impact: Not Available.

Risks of explosion of the product in presence of static discharge: Not Available.

Special Remarks on Fire Hazards: Fire is possible at elevated temperatures.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. After powder clean up, spread water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:

Stop leak if without risk. Do not touch spilled material. Call for assistance. Use appropriate tools to put the material into a suitable waste disposal container. After powder clean up, spread water on the contaminated surface and dispose of according to local and regional authority requirements.

SECTION 7: HANDLING AND STORAGE

Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and provide the container or the label. Avoid contact with skin and eyes. Keep away from oxidizing agents, reducing agents, metals, alkalis.

Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area.



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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

If laboratory operations generate dust, fume or mist, use local exhaust ventilation or other appropriate engineering controls to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:

Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not Available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Solid. (crystalline powder)

Odor: Odorless

Taste: Acidic, Strong

Molecular Weight: 192.13 g/mol

Color: Not Available

pH (1% soln/water): Not Available

Boiling Point: Decomposes

Melting Point: 153 °C

Critical Temperature: Not Available

Specific Gravity: 1.665

Vapor Pressure: Not applicable.

Vapor Density: Not Available.

Volatility: Not Available.

Odor Threshold: Not Available.

Water/Oil Dist. Coeff.: Citric acid is more soluble in water; $\log(\text{oil/water}) = -1.7$

Ionicity (in Water): Not Available

Dispersion Properties: Not Available

Solubility: Soluble in cold water, hot water.



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SECTION 10: STABILITY AND REACTIVITY

Stability: The product is stable.

Instability Temperature: Not Available.

Conditions of Instability: Excessive heat, incompatible materials.

Incompatibility with various substances: Reactive with oxidizing agents, reducing agents, metals, alkalis

Corrosivity: Corrosive in the presence of aluminum, zinc, of copper. Not corrosive in presence of glass.

Special Remarks on Reactivity: Incompatible with oxidizing agents, potassium tartrate, alkali, alkaline earth carbonates and bicarbonates, acetates and sulfides, metal nitrates.

Special Remarks on Corrosivity: Will corrode copper, zinc, aluminum, and their alloys.

Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 3000 mg/kg [Rat]

Irritancy data: Skin/ rabbit: not irritating; Eye/ Rabbit: not irritating

Chronic effects on humans: May cause damage to teeth.

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant, sensitizer), of ingestion, or inhalation (lung irritant).

Special Remarks on Toxicity to Animals:

LDL [Rabbit] – Route: oral; Dose: 7000 mg/kg

Special Remarks on Chronic Effects on Humans: Not Available

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects:

Skin: May cause mild to moderate irritation/ sensitization, allergic reaction

Eyes: May cause moderate to severe eye irritation and possible injury

Inhalation: May cause respiratory tract and mucous membrane irritation.

Ingestion: May cause GI irritation with nausea, vomiting, diarrhea. Excessive intake may cause teeth erosion and hypocalcaemia. May affect nervous system (tremor, convulsions, muscle contraction).

Chronic potential Health effects:



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SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not Available.

BOD5 and COD: Not Available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation:

The products of degradation and the product itself are not toxic.

Special Remarks on the Products of Biodegradation: Not Available

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

DOT Classification: Not a DOT controlled material in the United States

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

SECTION 15: REGULATORY INFORMATION

Federal and State Regulations: TSCA 8(b) inventory: Citric Acid

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances/

Other Classifications:

WHMIS (Canada): Class E : Corrosive Solid

DSCL (EEC):

R 36/37/38 – Irritating to eyes, respiratory system, and skin.

S 26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 – Wear suitable gloves and eye/ face protection.

HMIS (U.S.A.):

Health Hazard: 2



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Fire Hazard: 1
Reactivity: 0
Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2
Flammability: 1
Reactivity: 0
Specific hazard:

Protective Equipment:

Gloves (Impervious). Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

SECTION 16: OTHER INFORMATION

References: Not Available.
Other Special Considerations: Not Available.

DISCLAIMER:

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