



Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

SECTION I

PRODUCT AND COMPANY IDENTIFICATION

Product: Citric acid, monohydrate
This MSDS is valid for all grades and catalog #'s

Synonyms: 2-Hydroxy-1,2,3-propanetricarboxylic acid monohydrate

Formula: C₆H₈O₇

Manufacturer: PHARMCO-AAPER
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Brookfield, Connecticut 06804, USA
Phone (203) 740-3471
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Emergency Contact:
CHEMTREC 1-800-424-9300

SECTION II

COMPOSITION / INFORMATION ON INGREDIENTS

% by weight	Material	CAS #	TLV/PE L	LC50/LD50
100	Citric acid, monohydrate	5949-29-1	Not available	ORAL (LD50): Acute: 6730 mg/kg [Rat]

SECTION III

HAZARDS IDENTIFICATION

Potential Acute Health Effects: Hazardous in case of eye contact (irritant), of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant, sensitizer), of ingestion. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Severe over-exposure 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: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

SECTION IV

FIRST AID

Obtain medical attention for all cases of over-exposure.

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Hazardous Skin Contact: Wash with a disinfectant soap and cover the contaminated attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Hazardous Inhalation: Not available.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Hazardous Ingestion: Not available.

SECTION V

FIRE FIGHTING MEASURES

Fire:

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

Auto-Ignition temperature: Not available.

Flash point: Not available.

Flammable limits: LOWER: 8%

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

Fire Hazards: Flammable in presence of open flames and sparks, of oxidizing materials, of reducing materials. Slightly flammable to flammable in presence of heat, of combustible materials.

Explosion Hazards: 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.

Fire Extinguishing Media: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Information: Material in powder form, capable of creating a dust explosion. As with most organic solids, fire is possible at elevated temperatures

SECTION VI

SPILL/ACCIDENTAL RELEASE MEASURES

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill: Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Neutralize the residue with a dilute solution of carbonate. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

SECTION VII

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. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, alkalis.

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

SECTION VIII

EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Gloves (impervious). Dust respirator. Be sure to use an approved/certified respirator or equivalent. The dust respirator should be used for conditions where exposure has exceeded recommended exposure limits, dust is apparent, and engineering controls (adequate ventilation) are not feasible.

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 IX

PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance: Solid. (solid crystalline powder.)

Molecular Weight: 210.14 g/mole

Odor: Not available.

Taste: Acid. (Strong.)

Color: Colorless.

pH (1% Solution in Water): 3 [Acidic.]

Boiling Point: Not available.

Melting Point: Decomposes. (45°C or 113°F)

Critical Temperature: Not available.

Specific Gravity: 1.54 (Water = 1)

Vapor Pressure (mm Hg): Not applicable.

Vapor Density (Air=1): Not available.

Volatility: Not available.

Odor Threshold: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Water/Oil Dist. Coefficient: Not available.

Ionicity (in water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether.

Solubility: Easily soluble in cold water, hot water. Partially soluble in methanol, diethyl ether. Insoluble in n-octanol.

SECTION X

STABILITY/REACTIVITY INFORMATION

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials, moisture/moisture air. Slightly deliquescent in moist air

Incompatibilities: Reactive with oxidizing agents, reducing agents, metals, alkalis.

Corrosivity: Not available.

Special Information: Incompatible with oxidizing agents, potassium tartrate, alkali, alkaline earth carbonates and bicarbonates, acetates, and sulfides, metal nitrates

SECTION XI

TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 6730 mg/kg [Rat.].

Chronic Effects on Humans: May cause damage to the following organs: teeth.

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

Special Information on Toxicity to Animals: Not available.

Special Information on Chronic Effects/Toxicity on Humans: Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure

to this material. Eyes: Causes moderate to severe eye irritation and possible injury. Ingestion: May cause gastrointestinal (digestive) tract irritation with nausea, vomiting, diarrhea. Excessive intake may cause erosion of teeth and hypocalcemia (calcium deficiency in blood). May affect behavior/central nervous system (tremor, convulsions, muscle contraction or spasticity). Inhalation: Causes moderate respiratory tract and mucous membrane irritation. Chronic Potential Health Effects: Frequent intake of citrated beverages may cause erosion of dental enamel and irritation of mucous membranes.

SECTION XII 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 product itself and its products of degradation are not toxic.

Special Information on Products of Biodegradation: Not available.

SECTION XIII DISPOSAL CONSIDERATIONS

Waste Disposal: Recycle to process, if possible. Consult your local or regional authorities.

SECTION XIV TRANSPORTATION INFORMATION

DOT Classification: DOT Not a DOT controlled material (United States).

UN: Not applicable.

Special Provisions for Transport: Not applicable.

SECTION XV REGULATORY INFORMATION

Federal and State Regulations: Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). Components present in this product at a level which could require reporting under the statute are: **NONE**

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual report release of toxic chemicals that appear in 40 CFR 372 (used for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are: **NONE**

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal or greater than the reportable quantities (RQs) in 40 CFR 302.4. Components present in this product at a level which could require reporting under the statute are: **NONE**

Other Classifications:

WHMIS (Canada): CLASS E: Corrosive solid.

DSCL (EEC): R36/37/38- Irritating to eyes, respiratory system and skin.

Protective Equipment: Gloves (impervious). Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

References:

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

-The Sigma-Aldrich Library of Chemical Safety Data, Edition II.

Other Special Considerations: Not available.

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.