Material Safety Data Sheet

Martrex, Inc.

Section 1: Chemical Product and Company Information

Product name: Citric acid monohydrate

Supplier/ Further Information: Martrex, Inc.

P. O. Box 1709
14525 Highway 7
Minnetonka, Minnesota 55345-3793

Phone: 952/933-5000
Toll Free: 800/328-3627
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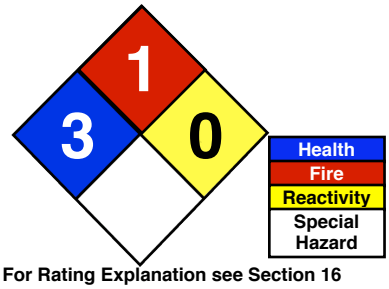
Web: www.martrexinc.com

EPA Registration Number: n/a
CAS#: 5949-29-1
Chemical Name: Citric acid monohydrate
Synonyms: 2-Hydroxy-1,2,3-propanetricarboxylic acid monohydrate
Chemical Family: Carboxylic Acid



For Rating Explanation see Section 16

24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637

Section 2: Composition/Information on Ingredients

Hazardous Components	CAS#	%	OSHA PEL	OSHA STEL	OSHA TWL
Citric acid monohydrate	5949-29-1	>97%	n/a	n/a	n/a

OTHER LIMITS	RTECS#	ACGIH TLV	ACGIH STEL	ACGIH CEIL
See Section 15	n/a	n/a	n/a	n/a

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 3: Hazards Identification

Main hazards: **Danger!** Causes severe eye irritation and possible injury. Causes skin and respiratory tract irritation.

Potential Health Effects

Primary Routes of Exposure / Entry: Inhalation (breathing), eye contact, skin contact

Target Organs: Respiratory system, eyes, skin

Acute Exposure Symptoms

Inhalation: Causes respiratory tract irritation.

Eye Contact: Causes severe eye irritation and possible injury

Skin Contact: Causes skin irritation. Some references state that citric acid has allergenic properties but, no animal or human studies were found to support this claim. It does not seem likely that citric acid is a sensitizer since it is found in the body as an essential component of the citric acid cycle which releases energy for physiological functions. Citric acid is widely distributed in plants and in animal tissues and fluids.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Excessive intake of citric acid may cause erosion of the teeth.

Chronic Exposure Symptoms: Repeated exposure may cause erosion of teeth. Chronic exposure may cause effects similar to those of acute exposure. See section 11 Toxicological Information

Medical Conditions Aggravated By Long-Term Exposure: See section 11 Toxicological Information

Section 4: First Aid Measures

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

Eye Exposure: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. **Get medical aid immediately.**

Skin Exposure: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse..

Ingestion: If swallowed, **do not induce vomiting** unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. **Seek immediate medical attention.**

NOTE TO THE PHYSICIAN: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Flamibility Classification:

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

NFPA= (estimated) Health: 3; Flammability: 1; Instability: 0

DOT= see Section 14

Flash Point [Method]**:** n/a

Auto-ignition Temperature: 1010ºC (1850ºF)

Lower explosion limit (LEL): n/a

Upper explosion limit (UEL): n/a

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Unusual Fire and Explosive Hazards: In sufficient quantity and reduced particle size is capable of creating a dust explosion.

Hazardous Decomposition Materials: Irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Special Procedures: n/a

Fire-Fighting Instructions: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion..

Personal Protective Equipment: Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

CAUTION: no data

Section 6: Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spill and Leak Procedures: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Spill may be carefully neutralized with lime (calcium oxide, CaO).

Environmental and Regulatory Reporting: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Follow local/state/national regulations.

Note: Local regulations may prescribe or limit action to be taken.

Section 7: Handling and Storage

Minimum/maximum Storage Temperature: n/a

HANDLING: Wash thoroughly after handling. Remove contaminated clothing and wash before re-use. Use with adequate ventilation. Minimize dust generation and accumulation. Keep container tightly closed. Avoid ingestion and inhalation. Do not get in eyes. Avoid contact with skin and clothing.

STORAGE Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

REGULATORY REQUIREMENTS: See Section 8 for employee exposure controls and Section 15 for other regulatory requirements.

Section 8: Exposure Controls / Personal Protection

Exposure Limits:

Hazardous Component	NIOSH	ACGIH	OSHA - Final PELs	Note
Citric acid monohydrate	n/a	n/a	n/a	

***NOTE:** Limits/standards shown for guidance only. Follow applicable regulations.

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Eye Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Hand Protection: Wear appropriate protective gloves to prevent skin exposure.

Skin and Body Protection: Wear appropriate protective clothing to prevent skin exposure.

Other Protective Clothing and Equipment: n/a

Hygienic Work Practices: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Environmental Controls: See Sections 6, 7, 12, 13.

Section 9: Physical and Chemical Properties

Chemical Name: Citric acid monohydrate
Physical State: Crystalline powder
Color and Appearance: White
Odor: Odorless
pH (in water): 2.2 (0.1N soln)
Vapor Pressure: 3.70E-009 mm Hg @ 25°C
Vapor Density (Air = 1): n/a
Evaporation Rate: n/a
Viscosity: n/a
Boiling Point / Range: 175ºC
Freezing/Melting Point: 100°C
Decomposition Temperature: 175ºC
Solubility: Freely Soluble
Specific Gravity/Density: 1.542 g/cm^3
Chemical Formula: $C_6H_8O_7.H_2O$
Formula Wt: 210.15

Section 10: Stability and Reactivity

Chemical Stability: Stable__X__ Unstable____ Material is stable under normal conditions.
Conditions to Avoid: Dust generation, moisture.
Chemical Incompatibility: Metals, strong oxidizing agents, strong reducing agents, strong bases, metal nitrates..
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information

Cas#: 5949-29-9
LD50/LC50: n/a
Carcinogenicity:
Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: No information available
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available..
Neurotoxicity: No information available.
Other Studies:

Section 12: Ecological Information

No information available.

Section 13: Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14: Transport Information

US DOT: Not Regulated
Canada TDG: Not Regulated

Section 15: Regulatory Information

US FEDERAL

TSCA
CAS# 5949-29-1 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 5949-29-1: immediate.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 5949-29-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California Prop 65
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XI
Risk Phrases:
R 36/37/38 Irritating to eyes, respiratory system and skin.
Safety Phrases:
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.
WGK (Water Danger/Protection)
CAS# 5949-29-1: 0
Canada - DSL/NDSL
CAS# 5949-29-1 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List
n/a

Section 16: Other Information

ACGIH - American Conference of Governmental Industrial Hygienists
ANSI - American National Standards Institute
CAS - Chemical Abstracts Service
CERCLA - Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR - Code of Federal Regulations
CHEMTREC - Chemical Transportation Emergency Center

DOT - U.S. Department of Transportation
DSL - Canadian Domestic Substance List
EHS - Extremely Hazardous Substance
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Material Identification System
IARC - International Agency for Research on Cancer
LEL/UEL - Lower and Upper Explosive Limit
mg/m³ - Milligrams per cubic meter
MSDS - Material Safety Data Sheet
NAERG - North American Emergency Response Guidebook
NIOSH - National Institute of Occupational Safety and Health
NFPA - National Fire Protection Association
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit (set by OSHA)
PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act of 1976
SARA - Superfund Amendments and Reauthorization Act
TDG (Canadian)**:** Transport of Dangerous Goods Regulations
TLV - Threshold Limit Value (set by ACGIH)
TWA - 8-hour Time Weighted Average
TSCA - US Toxic Substance Control Act
WHMIS - Workplace Hazardous Material Information System

NFPA Rating Explanation Guide

Rating Number	Health Hazard	Flamibility Hazard	Instability Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable
0	No Hazard	Will not burn	Stable

Rating Symbol	Special Hazard
ALK	Alkaline
ACID	Acidic
BIO	BioHazard
COR	Strong Corrosive
CRYO	Cryogenic
OXY	Oxidizer
☢	Radioactive
W	Reacts violently or explosively with water
W OX	Reacts violently or explosively with water or oxidizer

MSDS Issue Date: n/a
Revised Date: 3-26-2010
Supersedes: n/a

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