Safety Data Sheet

Martrex, Inc.

Section 1: Chemical Product and Company Information

Product name: Citric Acid Anhydrous

Supplier/ Further Information: Martrex, Inc.

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Suite 535 MD 27,
Chaska, Minnesota 55318

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

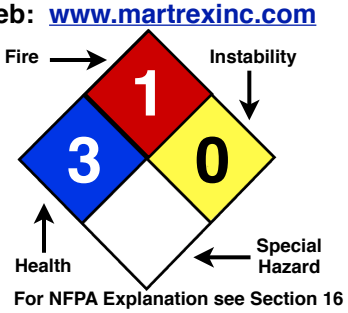
EPA Registration Number: n/a

CAS#: 77-92-9

Chemical Name: 2-Hydroxy -1,2,3 propanetricarboxylic acid

Synonyms: Citric Acid, Citric Acid Anhydrous

Chemical Family: Amides



For NFPA Explanation see Section 16

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

Section 2: Hazards Identification

Emergency Overview

Danger! **Causes serious eye irritation and possible damage.**
Causes skin and respiratory tract irritation.

GHS Classification (Global Harmonized Classification see Section 16)**:**

Serious eye damage/eye irritation	**Category 1**	(H318)
Skin corrosion/irritation	**Category 2**	(H315)
Specific target organ toxicity, single exposure; respiratory tract irritation	**Category 3**	(H335)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:

(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Danger**

Hazard Statements:

- Causes serious eye damage. (H318)
- Causes skin irritation. (H315)
- May causes respiratory irritation. (H335)

Precautionary Statements:

Prevention:

Wear protective gloves, protective clothing, eye protection, face protection. (P280)
User only outdoors or in well ventilated area. (P271)
Avoid breathing dust, fume, gas, mist, vapors, spray. (P261)
Wash skin thoroughly after handling. (P264)

Response:

IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. (P302+P352+P362+P364)

Specific Treatment see Section 4: First Aid Measures, Skin Exposure. (P321)

If skin irritation occurs: Get medical advice/attention. (P332+P313)

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)

Immediately call a Poison Center/doctor (P310)

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. ↳(P304+P340)

Call a POISON CENTER/doctor, If you feel unwell. (P312)

WASH contaminated clothing before reuse. (P363)

Storage:

Store in well-ventilated place. (P403)

Keep container tightly closed. (P233)

Store Locked-Up. (P405)

Disposal Considerations:

Dispose of this material and its container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

NFPA: Health: **3** Flammability: **1** Reactivity: **0**

Potential Health Effects:.

Primary Routes of Exposure / Entry: Skin contact, Ingestion, Inhalation of mist.

Target Organs: no data

Acute and Chronic Exposure Symptoms: Prolonged contact with the product may cause irritation.

Inhalation (breathing): Causes respiratory tract irritation.

Eye Contact: Causes severe eye irritation and possible injury.

Skin Contact: Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

Ingestion (swallowing): 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 sensitization dermatitis.

Medical Conditions Aggravated By Long-Term Exposure: No information available.

Carcinogenicity Data:

ACGIH: no **NIOSH:** no **NTP:** No **OSHA:** No **IARC Monograph:** No

Also See: Section 11 for more Toxicological information

Section 3: Composition/Information on Ingredients

Component	SARA Listed Hazardous?	CAS#	%	RTECS#	Other Limits
1. 2-Hydroxy -1,2,3 propanetricarboxylic acid	Yes	77-92-9	>99.5%	no data	See Sections 11,12,15
2. Water	No	7732-18-5	<0.21%	no data	no data

Section 4: First Aid Measures

Eye Exposure: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. **Get medical aid. Do NOT allow victim to rub or keep eyes closed.**

Skin Exposure: Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. **Never give anything by mouth to an unconscious person. Get medical aid.**

Inhalation: Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. **Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.**
NOTE TO THE PHYSICIAN: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Flammability Classification:
A Flash Point: no data
Auto-ignition Temperature: 1000-1020ºC
Lower explosion limit (LEL): .28
Upper explosion limit (UEL): 2.29
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam. Use agent most appropriate to extinguish fire. **Do NOT get water inside containers.**
Unusual Fire and Explosive Hazards: Aqueous solutions of Citric Acid can, if in contact with reactive metal (iron, zinc, aluminum) form hydrogen which may form explosive mixtures.
Hazardous Decomposition Materials: no data
Special Procedures: no data
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: Fire fighters should use MSHA/NIOSH approved self-contained breathing apparatus and full protective equipment when fighting chemical fires.

Section 6: Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill: Vacuum or sweep up material and place into a suitable disposal container. Very fine particles can cause a fire or explosion. **Eliminate all ignition sources**.
Spill and Leak Personal Procedures: Use proper personal protective equipment as indicated in Section 8.
Containment of Spill: no data
Cleanup and Disposal of Spill: Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. Spill may be neutralized with lime. **Do not get water inside containers.**
Environmental and Regulatory Reporting: Conform to applicable federal, state and local regulations

Section 7: Handling and Storage

Minimum/maximum Storage Temperature: Do not store above 23°C (73.4°F).
Handling: Wear suitable protective clothing, eye protection and suitable respiratory equipment. Use with adequate ventilation. Minimizedust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. **Do not allow contact with water. Keep from contact with moist air and steam.**
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

Ventilation/Engineering Protection: Local exhaust sufficient to control dust. 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 (specify type): Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149approved respirator when necessary.
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.
Skin Protection: Wear appropriate protective gloves to prevent skin exposure.
Other Protective Clothing and Equipment: Wear appropriate protective clothing to prevent skin exposure.
Hygienic Work Practices: Clean protective equipment before reuse. Wash after handling. Wash clothing and clean shoes before reuse.

Section 9: Physical and Chemical Properties

Chemical Name: 2-Hydroxy -1,2,3propanetricarboxylic acid
Percent Equivalent: >99.5%
Physical State: Solid
Color and Appearance: White powder and or granules
Odor: Odorless
Odor Threshold: no data
pH: 2.2 @ 1% solution
Specific Gravity (water=1)**:** 1.665
Vapor Pressure: no data
Vapor Density (Air = 1)**:** no data
Density: no data
Bulk Density: no data
Volatiles by Volume: 0
Boiling Point: no data
Freezing / Melting Point: 153ºC (307°F)
Evaporation Rate (Butyl Acetate=1): <1
Solubility in water @ 20ºC(68ºF)**:** 59.2%
Viscosity: no data
Other Solubilities: no data
Chemical Formula: $C_6H_8O_7$
Formula Wt: 192.12

Section 10: Stability and Reactivity

Chemical Stability (under normal conditions of storage, handling, use)**:** Stable__X__ Unstable____
Hazardous Polymerization: May Occur____
Will Not Occur__X__
Conditions to Avoid: Incompatible materials, dust generation, moisture, exposure to moist air or water.
Chemical Incompatibility and Materials to Avoid: Oxidizing agents, sulfides (inorganic, e.g. ferric sulfide, lead sulfide, sodium sulfide), metal nitrates, alkali carbonates, alkalis, potassium tartrate, acetates, bicarbonates.
Hazardous Decomposition Products: None known

Section 11: Toxicological Information

RTECS#:
Acute Data: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of the respiratory tract, nose, and throat, coughing and sneezing.
Eye Effects: Draize test, rabbit, eye: 750 ug/24 hours Severe
Skin Effects: Draize test, rabbit, skin: 500 mg/24 hours Mild
Acute Oral LD_{50}: (mouse)= 5040 mg/kg
Acute Oral LD_{50}: (rat)= 3 gm/kg
Additional Information: no data

Chronic Data

Carcinogenicity Data:

ACGIH: no **NIOSH:** no **NTP:** No **OSHA:** No **IARC Monograph:** No

Other Effects on Humans: no data

Section 12: Ecological Information

Eco-acute Toxicity:

Fish toxicity: LC100 goldfish 894 mg/l life time exposure in hard water, LD0 goldfish 625 mg/l lifetime exposure in hard water(Ellis,M.M.Detection and measurement of Stream Pollution 1937,22,XLVII,365,US Brit.Fisheries Bull.)

Invertebrate toxicity: LD100 Daphnia magna 120 mg/l lifetime exposure in soft water, LD0 Daphnia magna 80 mg/l lifetime exposure in soft water. Toxicity threshold: Pseudomonas putida > 10 g/l; Scenedesmus quadricauda 640 mg/l; Entosiphon sulcatum 485 mg/l (Bringmann,G.et al Water Res. 1980,14,231-241).

Environmental Fate:

Nitrification inhibition. Nitrosomonas sp 100 mg/l no inhibition of ammonia oxidation (Hockenbury,M.R. et al J.Water Pollution Control Fed.1799,49(5),768-777).

Degradation studies. 70-100% removal by activated sludge at 20øC for 120 hr (Muto,N.et al Kenkyu Hokuku-Kanto Gakuin Daigaku Kogakubu 1987,31(2),257-266 (Japan)).

Degradation Products:

Biodegradation: Biodegradable (Ministry of International Trade and Industry (MITI) Report 1984, Japan).

Other: BOD5 0.420; BOD20 0.610; ThOD 0.686 mg/l O2 respectively (Meinck,F. et al Les Eaux Residuaires Industrielles 1970).

Section 13: Disposal Considerations

Disposal Procedures: 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.

Disposal Regulatory Requirements: Consult local or state environmental regulatory agencies for acceptable disposal procedures and locations. Follow standard disposal procedures.

Section 14: Transport Information

No information available

Section 15: Regulatory Information

TSCA: Listed

DSL (Canadian)**:** Listed

WHMIS Classification: This product has a WHMIS classification of D2B.

EPA Regulations:

TSCA 8(b) inventory: None of the chemicals in this material have a SNUR under TSCA.

RCRA Hazardous Waste Number: not listed

SARA Codes: CAS# 77-92-9: acute

SARA 313 Toxic Chemical: No chemicals are reportable under Section 313.

SARA 302 (RQ): None of the chemicals in this product have a RQ.

SARA 302 (TPQ): None of the chemicals in this product have a TPQ.

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 Regulations: None of the chemicals in this product are considered highly hazardous by OSHA.
State Regulations: Since state and local laws vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

Section 16: Other Information

Acronyms

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
CPR - Controlled Products Regulations
CWC - Chemical Weapons Convention
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
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
SDS - Safety Data Sheet
STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of

GHS Pictograms and Hazards

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

accidental injury, impair self-rescue or materially reduce work efficiency.

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

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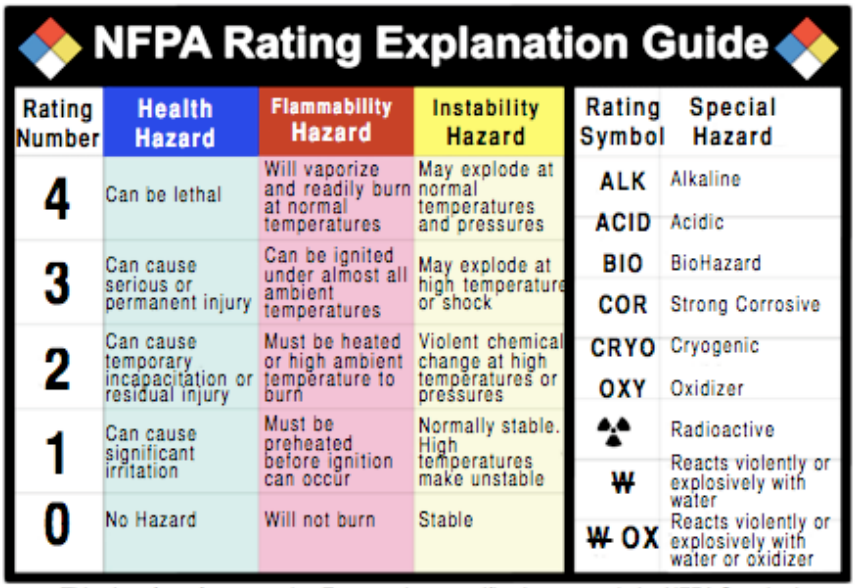

This chart for reference only - For complete specifications consult the NFPA Standard

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