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# Material Safety Data Sheet

## Citric Acid Crystals

### Section 1 - Chemical Product

**MSDS Name:** Citric Acid Anhydrous

**Synonyms:** 2-Hydroxy-1,2,3-propanetricarboxylic acid.

**For CHEMTREC assistance, call:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
77-92-9	Citric acid	99.0	201-069-1

**Hazard Symbols:** XI

**Risk Phrases:**

36/37/38

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

**Appearance:** White powder. **Caution!** Causes respiratory tract irritation. May cause digestive tract irritation. Moisture sensitive. Causes severe eye irritation. May cause skin sensitization by skin contact. Causes skin irritation.

**Target Organs:** Eyes, skin, mucous membranes.

#### Potential Health Effects

**Eye:** Causes severe eye irritation and possible injury.

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

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

**Inhalation:** Causes respiratory tract irritation.

**Chronic:** Repeated exposure may cause sensitization dermatitis.

## Section 4 - First Aid Measures

**Eyes:** 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:** Flush skin with plenty of 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 and move 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.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**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.

**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.

**Flash Point:** 100 deg C ( 212.00 deg F)

**Autoignition Temperature:** 1850 deg F ( 1,010.00 deg C)

Explosion Limits, Lower:.28

**Upper:** 2.29

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 0

## Section 6 - Accidental Release Measures

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

**Spills/Leaks:** 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. 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 carefully neutralized with lime (calcium oxide, CaO). Do not get water inside containers.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust 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.

## Section 8 - Exposure Controls, Personal Protection

**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.

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Limit

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Citric acid	none listed	none listed	none listed

**OSHA Vacated PELs:** Citric acid: No OSHA Vacated PELs are listed for this chemical.

## Personal Protective Equipment

**Eyes:** 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:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary .

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance:** White powder

**Odor:** Odorless.

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available. Freezing/Melting Point:153 - 154.5 deg C

**Decomposition Temperature:** Not available. Solubility: 59.2% (20 °C)

**Specific Gravity/Density:** 1.6650g/cm<sup>3</sup> Molecular Formula:C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>

**Molecular Weight:** 192.12

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, dust generation, moisture, exposure to moist air or water.

**Incompatibilities with Other Materials:** Oxidizing agents, sulfides (inorganic, e.g. ferric sulfide, lead sulfide, sodium sulfide), metal nitrates, alkali carbonates, alkalis, potassium tartrate, acetates, bicarbonates.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 77-92-9:** GE7350000

**LDSO/LCSO:**

**CAS# 77-92-9:**

Draize test, rabbit, eye: 750 ug/24H Severe;

Draize test, rabbit, skin: 500 mg/24H Mild;

Oral, mouse: LD50 = 5040 mg/kg;

Oral, rat: LD50 = 3 gm/kg;

**Carcinogenicity:**

**CAS# 77-92-9:** Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information available.

**Teratogenicity:** No information available.

**Reproductive Effects:** No information available.

**Neurotoxicity:** No information available.

**Mutagenicity:** No information available.

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. Fish toxicity: LC100 goldfish 894 mg/lifetime exposure in hard water, LDO goldfish 625 mg/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, LDO 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:** Nitrification inhibition. Nitrosomonas sp 100 mg/l no inhibition of ammonia oxidation (Hockenbury,M.R. et al J.Water Pollut.Control Fed.1799,49(5),768-777). Degradation studies. 70-100% removal by activated sludge at 200C for 120 hr (Muto,N.et al Kenkyu HokokuKanto Gakuin Daigaku Kogakubu 1987,31(2),257-266 (Japan)).

**Physical:** No information available.

**Other:** BODS 0.420; BOD20 0.610; ThOD 0.686 mg/l O2 respectively (Meinck,F. et al Les Eaux Residuaires Industrielles 1970). Biodegradable (Ministry of International Trade and Industry (MITI) Report 1984, Japan).

## 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	IATA	RID/ ADR	IMO Canada	TDG
<b>Shipping Name:</b>	No information available.			No information available.
<b>Hazard Class:</b>				
<b>UN Number:</b>				
<b>Packing Group:</b>				

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 77-92-9 is listed on the TSCA inventory.

#### 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.

### **SARA**

### **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 # 77-92-9: acute.

### **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 depleters. This material does not contain any Class 2 Ozone depleters.

### **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# 77-92-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

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# 77-92-9: 0

### **Canada - DSL/NDSL**

CAS# 77-92-9 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D2B.

### **Canadian Ingredient Disclosure List**

CAS# 77-92-9 is listed on the Canadian Ingredient Disclosure List.

### **Exposure Limits**

## **Section 16 - Additional Information**

**MSDS Creation Date:** 2/09/1999

**Revision #3 Date:** 3/18/2003

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the manufacturer be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the manufacturer has been advised of the possibility of such damages.*