

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00072

# SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Citric Acid  
**Catalog Number:** 2106269

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00072  
**Chemical Name:** 2-Hydroxy-1,2,3-Propanetricarboxylic Acid  
**CAS Number:** 77-92-9  
**Additional CAS No. (for hydrated forms):** -  
5949-29-1, monohydrate  
**Chemical Formula:** C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>  
**Chemical Family:** Organic Acid  
**Intended Use:** Laboratory Use

## 2. HAZARDS IDENTIFICATION

**GHS Classification:**

**Hazard categories:** Serious Eye Damage/Eye Irritation:Eye Irrit. 2 Skin Corrosion/Irritation: Skin Irrit. 2 . .

**GHS Label Elements:**

WARNING



**Hazard statements:** . . Causes serious eye irritation. Causes skin irritation.

Not applicable

**Precautionary statements:** Wear protective gloves / protective clothing / eye protection / face protection. Call a POISON CENTER or doctor/physician if you feel unwell. Take off contaminated clothing and wash before reuse. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**HMIS:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**WHMIS Hazard Classification:** Class D, Division 2, Subdivision B - Toxic material (other toxic effects)

**WHMIS Symbols:** Other Toxic Effects

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

#### *Hazardous Components according to GHS:*

##### Citric Acid

*CAS Number:* 77-92-9

*Chemical Formula:* C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>

*GHS Classification:* Eye Irrit. 2 H319; Skin irrit. 2, H315

*Percent Range (Trade Secret):* 100.0

*Percent Range Units:* weight / weight

*PEL:* 15 mg/m<sup>3</sup> as total dust; 5 mg/m<sup>3</sup> as respirable dust

*TLV:* 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

*WHMIS Symbols:* Other Toxic Effects

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### 4. FIRST AID MEASURES

*General Information:* In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

*Advice to doctor:* Treat symptomatically.

*Eye Contact:* Immediately flush eyes with water for 15 minutes. Call physician.

*Skin Contact (First Aid):* Wash skin with plenty of water. Call physician if irritation develops. Remove contaminated clothing.

*Inhalation:* Remove to fresh air. Give artificial respiration if necessary.

*Ingestion (First Aid):* Give large quantities of water. If you feel unwell, contact a physician. Never give anything by mouth to an unconscious person.

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### 5. FIRE FIGHTING MEASURES

*Flammable Properties:* Can burn in fire, releasing toxic vapors. Material is not classified as flammable according to GHS criteria.

*Fire Fighting Instruction:* As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

*Extinguishing Media:* Carbon dioxide Dry chemical. Water.

*Extinguishing Media NOT To Be Used:* Not applicable

*Fire / Explosion Hazards:* Contact with metal nitrates may cause explosion.

*Hazardous Combustion Products:* Toxic fumes of: carbon monoxide, carbon dioxide.

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### 6. ACCIDENTAL RELEASE MEASURES

#### *Spill Response Notice:*

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

*Containment Technique:* Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.

*Clean-up Technique:* If permitted by regulation, Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution. Otherwise, Pick up spill for disposal and place in a closed container. Dispose of in accordance with local, state and federal regulations or laws.

*Evacuation Procedure:* Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

*DOT Emergency Response Guide Number:* Not applicable

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### 7. HANDLING AND STORAGE

*Handling:* Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

*Storage:* Keep container tightly closed when not in use.

*Flammability Class:* Not applicable

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** lab coat nitrile gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it.

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling.

**TLV:** 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

**PEL:** 15 mg/m<sup>3</sup> as total dust; 5 mg/m<sup>3</sup> as respirable dust

**For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:**

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** 192

**Odor:** Odorless

**Odor Threshold:** Not applicable

**pH:** 2 (1% solution)

**Metal Corrosivity:**

**Corrosivity Classification:** Not classified as corrosive to metals according to GHS criteria.

**Steel:** Not Applicable

**Aluminum:** Not Applicable

**Specific Gravity/ Relative Density (water = 1; air =1):** 1.67

**Viscosity:** Not applicable

**Solubility:**

**Water:** 750 g/L

**Acid:** Soluble

**Other:** Soluble in ethanol and methanol. Insoluble in chloroform and benzene.

**Partition Coefficient (n-octanol / water):** -1.64

**Coefficient of Water / Oil:** Not available

**Melting Point:** 153 °C (307 °F)

**Decomposition Temperature:** 175 °C (347 °F)

**Boiling Point:** Not applicable

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Flammable Properties:** Can burn in fire, releasing toxic vapors. Material is not classified as flammable according to GHS criteria.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** 18%

**Upper Explosion Limits:** 64%

**Autoignition Temperature:** 540 °C (1004 °F)

**Explosive Properties:**

Not classified according to GHS criteria.

**Oxidizing Properties:**

Not classified according to GHS criteria.

**Reactivity Properties:**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

**Gas under Pressure:**

Not classified according to GHS criteria.

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## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Mechanical Impact:** None reported

**Static Discharge:** None reported.

**Reactivity / Incompatibility:** May explode in contact with: metal nitrates

**Hazardous Decomposition:** Heating to decomposition releases toxic fumes of carbon monoxide and carbon dioxide.

**Conditions to Avoid:** Excess moisture

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## 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, Metabolism and Distribution:** Summary of findings reported in the literature follow.

Important metabolite of Krebs cycle. Chronic exposure may cause effects due to its ability to chelate metals, which could impair body's ability to absorb Ca and Fe.

**Toxicologically Synergistic Products:** None reported

**Acute Toxicity:** Toxicological Testing Route Data Given Below Based on classification principles, the classification criteria are not met. Generally Recognized as Safe (GRAS) designation by US Food and Drug Administration

Oral Rat LD50 = 3000 mg/kg

Dermal Rat LD50 > 2000 mg/kg

**Specific Target Organ Toxicity - Single Exposure (STOT-SE):** Data insufficient for classification

Inhalation Rat TDLo = 0.180 mg/L - Impaired liver and biochemical changes.

**Specific Target Organ Toxicity - Repeat Exposure (STOT-RE):** Data insufficient for classification

Oral Rat TDLo 9300 mg/kg/15 days - Biochemical changes and changes in blood serum composition. Inhalation Rat TDLo = 0.180 mg/L - Impaired liver and biochemical changes.

**Skin Corrosion/Irritation:** Irritating to skin.

Skin - Rabbit - 500 mg/24 hr - Moderate irritation.

**Eye Damage:** Irritating to eyes.

**Sensitization:** Based on classification principles, the classification criteria are not met.

**CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction):** No germ cell mutagenicity, carcinogenicity or reproductive toxicity data found. Based on classification principles, the classification criteria are not met.

IARC Listed: No

NTP Listed: No

O.S.H.A. Listed: No

**Symptoms/Effects:**

**Ingestion:** May be harmful if swallowed Large doses may cause: gastrointestinal tract irritation abdominal pain vomiting

**Inhalation:** No effects anticipated Large doses may cause: respiratory tract irritation

**Skin Absorption:** May be harmful if absorbed through skin.

**Chronic Effects:** Citric acid chronic overexposure may cause effects due to the ability of citric acid to chelate metals, which could impair the body's ability to absorb calcium and iron.

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** 96 hr Lepomis macrochirus LC50 = 1516 mg/L; 72 hr Daphnia magna LC50 = 120mg/L; LC50 48 hr Leuciscus idus melanotus LC50 = 440 mg/L; 48 hr Crustaceans LC50 = 160 mg/L.

Based on classification principles, not classified as hazardous to the environment. Mobility in soil: Highly mobile No bioaccumulation potential. Rapidly biodegradable.

CEPA Categorization: Not Persistent or Bioaccumulative. Not inherently toxic to aquatic organisms.

**Ingredient Ecological Information:** --

Not applicable

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable

**Special Instructions (Disposal):** Work in an approved fume hood. Dilute to 3 to 5 times the volume with cold water.

Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. If permitted by regulation, Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system. Otherwise, Check with national, local municipal and state authorities and waste contractors for pertinent local information on the disposal of this article.

**Empty Containers:** Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of

at an E.P. A. approved facility. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

### **T.D.G.:**

**Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**UN Number/PIN:** NA

**Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

### **I.M.O.:**

**Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

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**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:** Not applicable

**Trade Secret Registry:** Not applicable  
**National Inventories:**  
**U.S. Inventory Status:** TSCA Listed: Yes  
**CAS Number:** 77-92-9  
**Canadian Inventory Status:** DSL Listed: Yes  
**EEC Inventory Status:** EINECS Listed: Yes  
**Australian Inventory (AICS) Status:** Listed  
**New Zealand Inventory (NZIoC) Status:** Listed  
**Korean Inventory (KECI) Status:** Listed  
**Japan (ENCs) Inventory Status:** Listed  
**China (PRC) Inventory (MEP) Status:** Listed

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## 16. OTHER INFORMATION

**References:** Technical Judgment. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Sax, N. Irving and Richard J. Lewis, Sr., revised by. Hawley's Condensed Chemical Dictionary, Eleventh Ed. New York: Van Nostrand Reinhold Co., 1987. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. In-house information. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. IUCLID Dataset Year 2000 for CAS No. Hoyt & Gewanter (1992) Citrate. In de Oude NT (ed). The handbook of environmental chemistry. Volume 3 Part F, Anthropogenic compounds, Detergents. Springer Verlag: Berlin. Pp. 229-242 P & G Ingredient Safety Information (www.ScienceInA Box.com)  
**Complete Text of H phrases referred to in Section 3:** H319 Causes serious eye irritation. H315 Causes skin irritation.  
**Revision Summary:** Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

**Date of MSDS Preparation:**

**Day:** 28  
**Month:** May  
**Year:** 2014

**MSDS Prepared:** MSDS prepared by Product Compliance Department extension 3350

**CCOHS Evaluation Note:** It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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