

MATERIAL SAFETY DATA SHEET

HMIS Hazard Rating: Health = 2 Fire = 0 Reactivity = 1

0 - Insignificant 1 - Slight 2 - Moderate 3 - High 4 - Extreme

Section I General Information

Product Name: Citric Acid, Anhydrous
 Product Description: 2-hydroxy 1, 2, 3, Propanetricarboxylic Acid
 Manufacturer: Benchmark Energy Products, L.P.
 Address: 4113 West Industrial
 Midland, Texas 79703

For information on health hazards call: (432) 697-8171
 For product sales information call: (432) 697-8171
 24 Hour Emergency Information call: (800) 349-8171
 Chemtrec Emergency Number: (800) 424-9300
 Information effective date: February 2004
 Replaces: February 1994
 Preparer: Benchmark Energy Products, L.P.

Section II Composition - Information on Ingredients

Principle Component(s)	%/wt	TLV	OSHA PEL
Citric Acid CAS# 77-92-9	100	Not Regulated	

Section III Physical and Chemical Properties

Boiling Point: Decomposes
 Specific Gravity: 1.54
 Vapor Pressure: NA
 Evaporation Rate (Water=1): NA1
 Pour Point: NA
 Odor/Appearance: Colorless crystals, no odor

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Section IV Fire and Explosion Information

Flashpoint: NA
Flammable Limits in Air: NA

Lower Flammability Limit: NA
Upper Flammability Limit: NA

Unusual Fire and Explosion Hazards: None Known

This chemical is not combustible. Use media suitable for surrounding fires. Use water spray to cool exposed containers

Section V Health Effects Information

Potential Health Effects:

- **Eye Contact:** Moderate to severe irritation. May cause permanent eye damage if not treated immediately.
- **Skin Contact:** May cause irritation
- **Inhalation:** Dust may irritate nose, throat, and mucous membranes. However, if allowed to become airborne, may cause irritation of nose, throat and lungs.
- **Ingestion:** May be harmful if ingested. Large doses may cause nausea, vomiting and diarrhea.
- **Chronic:** Loss of tooth enamel may result from long term over-exposure

Carcinogenicity: IARC Monographs no NTP no OSHA no

First Aid Measures

- **Eye:** Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get immediate medical attention.
- **Skin:** Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get immediate medical attention. Discard contaminated clothing and leather goods.
- **Inhalation:** Remove exposed person from source of exposure. If not breathing, ensure clear airway and institute cardiopulmonary resuscitation (CPR). If breathing is difficult, administer oxygen if available. Get immediate medical attention.
- **Ingestion:** Do not induce vomiting. If victim is conscious, give 1-3 glasses of water to dilute stomach contents. Keep affected person warm and at rest. Get immediate medical attention.

Toxicity:	LD50 (Oral-Rat)	11.7 g/kg (as dry material)
	LD50 (SCU-Rat)	5500 g/kg (as dry material)
	LD50 (IPR-Rat)	883 mg/kg (as dry material)
	LD50 (Oral-Mouse)	5040 mg/kg (as dry material)

Section VI Reactivity Information

Stability/Incompatibility: Stable. Incompatible with strong bases, alkali metals, organic acids, oxides of sulfur.

Hazardous Reactions/Decomposition Products: When heated to decomposition it emits acrid smoke and fumes. Also oxides of carbon. Aqueous solutions of citric acid can (if in contact with reactive metals - iron, zinc or aluminum) form hydrogen.

Hazardous Polymerization: Will not occur

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Section VII Spill and Leak Procedures

All spills can be handled routinely. Surfaces subject to spill or dusting can become slippery when wet. To the extent possible, clean up spillage using shovels, sweeping or vacuuming. If possible, clean up spill area on a dry basis and then flush with plenty of water. Place in appropriate containers for disposal.

Handling Precautions: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the materials from eyes, skin and clothing. Avoid prolonged or repeated breathing of the dust. Wash thoroughly after handling product.

Section VIII Personal Protection

Respiratory Protection: Not generally required unless needed to prevent respiratory irritation. If concentrations exist at levels greater than the permissible exposure level, use a NIOSH approved dust respirator as a minimum. Follow guidelines contained in 29CFR § 1910.134, OSHA's respiratory protection standard.

Ventilation: Provide adequate ventilation. Use local exhaust as needed to maintain airborne exposure below control limits.

Personal Protective Equipment: Rubber or neoprene gloves, safety glasses or goggles and chemical apron.

Work Hygiene Practices: Avoid contact with skin, eyes, and clothing. After handling this product, wash hands before eating, drinking or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action shown in Section V. Launder contaminated clothing before reuse.

Section IX Transportation Information

OSHA Label:

Citric Acid, Anhydrous

Avoid contact with skin, eyes and clothing.

Wear protective eyewear, rubber or neoprene gloves and chemical apron.

Benchmark Energy Products, L.P.

4113 W. Industrial, Midland, TX 79703

24-Hour Emergency Information call: (800) 349-8171

Not D.O. T. Regulated

Section X Regulatory Information

TSCA Inventory Status: This product, or its components, if a mixture, is listed on the TSCA inventory.

SARA TITLE III

Section 302/304: This product does not contain ingredients listed as an Extremely Hazardous Substance.

Section 311/312: IMMEDIATE & DELAYED

Section 313: This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

All ingredients are included on the Environment Canada's Domestic Substances List.

Superfund Amendments and Reauthorization Act (SARA) Title III Information:

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Section XI DISCLAIMER

This Material Safety Data Sheet (MSDS) was prepared in accordance with the provisions and requirements of 29 CFR § 1910.1200 (g) and discloses the physical and health hazards of all hazardous chemicals contained in the Product described in this MSDS, but unless otherwise noted, does NOT describe or disclose ALL of the chemicals/components in the Product, some of which may be Trade Secrets. The information included in this MSDS is based on data developed or compiled by Benchmark Energy Products, L.P. ("Benchmark") from open literature, independent laboratory studies, and other available scientific evidence and is believed to be accurate and complete, but Benchmark makes no warranty with respect thereto. Neither does Benchmark make any representation or warranty, express or implied, with respect to the Product or its suitability for any purpose or use, hereby disclaiming all such warranties, including the implied warranties of merchantability and fitness for a particular purpose and the implied warranty that the Product is free of claims of third persons by way of infringement or the like. Anyone intending to use the Product described in this MSDS should satisfy himself that the Product is suitable for their particular purposes and intended uses. It is the obligation of each user of the Product described in this MSDS to determine and comply with the requirements of all statutes – local, state and federal – applicable to its use, storage and disposal.

Footnote

ACGIH = American Conference of Governmental Industrial Hygienists"
NIOSH = National Institute for Occupational Safety and Health Hygienists
CAS # = Chemical Abstracts Service Register number
NTP = National Toxicology Program
CL = Ceiling Limit
OSHA TWA = Occupational Safety and Health Administration, Time Weighted Average
IARC = International Agency for Research on Cancer
PMCC = Pensky - Martens Closed Cup Flash Point Determination.
ASTM D93-19 34
NA = Not Applicable
STEL = Short Term Exposure Limit
ICC = Tagliabue Closed Cup flash point determination
ND = Not Determined
TLV = Threshold Limit Value
NFPA = National Fire Protection Association
TWA = Time Weighted Average, 8 hours