MATERIAL SAFETY DATA SHEET

Product: Citric Acid Anhydrous Revision Date 8/14/96 Print Date:8/14/96

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMMERCIAL PRODUCT NAME: Citric Acid Anhydrous

COMPANY/SUPPLIER: Humco Holding Group, Inc.
7400 Alumax Drive
Texarkana, TX 75501

24 Hour Emergency Phone Number: 903-831-7808

PRODUCT USE: Widely used acidulant for flavoring, beverages, food, and as a basic chemical.

2. COMPOSITION, INFORMATION ON INGREDIENTS

CHEMICAL NAME OF THE MATERIAL: 2-hydroxy-1,2,3-propane tricarboxylic acid

CHEMICAL CHARACTERIZATION $C_6H_8O_7$

SYNONYMS: Citric Acid, Beta-hydroxytricarboxylic acid.

COMPOSITION:	CAS Reg. No.	%
Citric Acid Anhydrous	77-92-9	100

HAZARDOUS IMPURITIES None

3. HAZARDS IDENTIFICATION

Emergency Overview: Odorless, colorless translucent crystals with strong acidic taste. Citric acid is a skin and mucous membrane irritant and a severe eye irritant. It may cause allergic reactions in some individuals.

Most important Hazard Potential Health Effects: Irritating to eyes.

Inhalation: May cause mucous membrane irritation with sore throat, coughing and shortness of breath.

Eye contact: May cause irritation with redness, pain, possible eye burns, conjunctivitis, ulceration and permanent cloudiness.

Skin contact: May cause irritation with swelling, redness and pain.

Ingestion: May cause acute gastrointestinal irritation with abdominal pain.

Chronic: Repeated or prolonged skin contact may result in dermatitis. Prolonged or repeated eye contact may result in conjunctivitis. Long term oral overexposure may cause damage to tooth enamel.

Carcinogen status: None

4. FIRST AID MEASURES

General advice	Consult a physician.
Major effects of exposure:	Irritating to eyes and skin.
Inhalation	Move to fresh air.
Skin contact	Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.
Eye contact	Rinse immediately with plenty of water and seek medical advice.
Ingestion	Drink plenty of water. Do not induce vomiting. Consult a physician if necessary
Protection of first-aiders	Use personal protective equipment.

5. FIRE FIGHTING MEASURES

FLASH POINT	Not Applicable
FLAMMABLE LIMITS	Lower 8 gm/FT^3 Upper 65 gm/FT^3
Autoignition temperature:	345 °C
Suitable extinguishing media	water, water spray, dry powder, foam , carbon dioxide (CO2), remove containers if possible. Cool container exposed to fire with water spray.
Extinguishing media which must not be used for safety reasons	None
Hazardous decomposition products	carbon oxides
Special protective equipment for firefighters	Use personal protective equipment including self-contained breathing apparatus when fighting fire in enclosed area.
Specific methods	Standard procedure for chemical fires.

6. ACCIDENTAL RELEASE MEASURES

General:	Wear dust respirator and protective clothing. Keep unnecessary personnel away. Sweep or vacuum into closed containers for disposal. Dispose in compliance with local, state, and federal regulations.

7. HANDLING AND STORAGE

Handling:	**Avoid contact with eyes and prolonged contact with skin. Avoid breating large amounts of dust, Wash away splashes and spillages with water.**
Storage Temperature:	Ambient storage pressure: atmospheric
General:	Store in cool dry area away from incompatible materials. Protect containers from damage.
Incompatible products	Incompatible with strong bases and oxidizing agents
Empty Containers:	Empty containers retain product residue and vapors. Observe all label precautions even after container is emptied. Do not reuse unless thoroughly cleaned.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering measures	Provide general dilute ventilation.
Exposure limit(s)	None established
Personal protection equipment	
Respiratory protection	NIOSH approved dust respirator
Hand protection	Gloves
Eye Protection	Safety glasses
Skin and body protection	Lightweight protective clothing
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form		powder
Color		colorless / white
Odor		none
pH	(5 % solution)	1.8
Vapor pressure		not volatile
Vapor density		not applicable
Boiling point		not established
Evaporation rate		essentially 0
Coefficient of water/oil distribution		not established
Melting point/range		153 C
Decomposition temperature		> 170 C
Relative density		1.665 g/cm3
Bulk density		650 - 950 kg/m3
Solubility, Water solubility (25 C)		576 g/kg
Solubility in other solvents, Alcohol (25 C)		383 g/l

10. STABILITY AND REACTIVITY

Stability	Stable at normal conditions
Conditions to avoid	Avoid dust formation. Take precautionary measures against static discharges.
Materials to avoid	Incompatible with strong bases and oxidizing agents.
Hazardous polymerization	Does not occur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	LD50/p.o./rat	11,700 mg/kg
	LD50/i.p./rat	885 mg/kg
	LD50/p.o./mouse	5,040 mg/kg
	LD50/i.p./mouse	961 mg/kg
Local effects	Irritating to eyes and skin	
Chronic toxicity	None	
Human experience	Health injuries are not known or expected under normal use.	

12. ECOLOGICAL INFORMATION

Mobility	Completely soluble
Persistence and degradability	
Chemical oxygen demand	(COD) = 728 mg O2/g
Biological oxygen demand/5 days	(BOD) = 528 mg O2/g
Readily biodegradable	98% after 2 days
Bioaccumulation	None
Ecotoxicity effects	Toxicity to fish (LC50/96h/goldfish) = 440-706 mg/l
	Toxicity to bacteria(EC0) = >10,000 mg/l

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products — Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules).

14. TRANSPORT INFORMATION

Not Regulated

15. REGULATORY INFORMATION

Citric acid is generally regarded as safe (GRAS) by USA FDA. 29 CFR 182.1033
Listed European Food Additive E330
The material is listed on the TSCA Inventory List.
CERCLA (Comprehensive Response Compensation, and Liability Act): Not hazardous
SARA Title III (Superfund Amendments and Reauthorization Bill): Not Considered Hazardous
Foreign Inventory Status
Canadian DSL (Domestic Substance List)
Does not contain any California Prop 65 substances.

16. OTHER INFORMATION

HMIS* Rating Health = 0, Fire = 0, Reactivity =0
*Hazardous Materials Identification System of the National Paint and Coating Association.

MSDS Status: Revised 8/14/1996 by Technical Service Department