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For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is: 1/22/2005

I. PRODUCT IDENTIFICATION:

PRODUCT NAME.....: Citric Acid Solution, 50% Liquid
MSDS NUMBER: HX17030
CHEMICAL FAMILY.....: Organic Acid
CHEMICAL NAME.....: 2-Hydroxy-1,2,3 Propanetricarboxylic Acid, Aqueous Solution
FORMULA.....: C₆H₈O₇ - 50% WT/WT Aqueous Solution

II. HAZARDOUS INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
2-Hydroxy-1,2,3 Propanetricarboxylic Acid 77-92-9	OSHA : Not Established ACGIH: Not Established	50.000 %

III. PHYSICAL PROPERTIES:

PHYSICAL FORM.....: Liquid
COLOR.....: Clear white
ODOR.....: Essentially odorless to very slight sugar odor
BOILING POINT.....: 219 F (104 C)
MELTING/FREEZING POINT....: Not Established
VISCOSITY.....: Not Established
SOLUBILITY IN WATER: Completely miscible
SOLUBILITY (NON AQUEOUS)..: Methyl alcohol: completely miscible
SPECIFIC GRAVITY: 1.24 at 59 F (15 C)
BULK DENSITY.....: Not Established
% VOLATILE BY VOLUME.....: 50%
EVAPORATION RATE: Less than 1 (Butyl acetate = 1)
VAPOR PRESSURE: 16 mmHg at 68 F (20 C)
VAPOR DENSITY: 0.62 (Air = 1)

IV. FIRE AND EXPLOSION DATA:

FLASH POINT.....: Not Applicable
EXTINGUISHING MEDIA.....: Material is not combustible. Use
extinguishing media suitable for other
combustible materials in the area.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE / EXPLOSION HAZARDS: None known.

V. HUMAN HEALTH DATA:

ROUTE(S) OF ENTRY.....: Skin Contact; Eye Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE SKIN CONTACT.....: This product is irritating to the skin resulting in reddening, stinging, and swelling.

ACUTE EYE CONTACT.....: This product is irritating to the eyes resulting in stinging, reddening, tearing, and swelling.

CHRONIC EFFECTS OF EXPOSURE...: No applicable information was found concerning any adverse chronic health effects from overexposure to this product.

CARCINOGENICITY.....: The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: Persons with pre-existing eye or skin disorders may be more susceptible to the effects of this product.

VI. EMERGENCY AND FIRST AID PROCEDURES:

FIRST AID FOR EYES.....: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

FIRST AID FOR SKIN.....: Flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse. Call a physician.

FIRST AID FOR INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

FIRST AID FOR INGESTION.: If swallowed, call a physician.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS:

EYE PROTECTION REQUIREMENTS.....: Chemical safety goggles or face shield

SKIN PROTECTION REQUIREMENTS.....: Rubber or vinyl gloves and long sleeved shirts and pants to minimize skin contact. Employees should wash their hands and face before eating, drinking or using tobacco products.

RESPIRATOR REQUIREMENTS.....: Under normal conditions of use, respirator protection is not required.

VENTILATION REQUIREMENTS.....: Use local exhaust ventilation to maintain air levels below the recommended exposure limits.

ADDITIONAL PROTECTIVE MEASURES.....: Emergency showers and eye wash stations should be made available. Educate and train employees in the safe use and handling of this product.

VIII. REACTIVITY DATA:

STABILITY.....: This is a stable material.

HAZARDOUS POLYMERIZATION...: Will not occur.

INCOMPATIBILITIES.....: Reaction with caustic can create heat (strong exotherm)

INSTABILITY CONDITIONS.....: None known.

DECOMPOSITION PRODUCTS.....: None known.

IX. SPILL AND LEAK PROCEDURES:

SPILL OR LEAK PROCEDURES....: Utilize recommended protective clothing. Spills should be taken up with an appropriate absorbent and placed in approved containers. Spill area can be washed with water. Collect wash water for approved disposal.

WASTE DISPOSAL METHOD.....: Cover with soda ash or sodium bicarbonate to neutralize. Flush with residual water into approved sewer. Prevent bulk, concentrated material from entering sewer or open waterways. Waste disposal should be in accordance with existing federal, state and local environmental control regulations.

X. SPECIAL PRECAUTIONS & STORAGE DATA:

STORAGE TEMPERATURE(MIN/MAX): 4 C / 49 C

SHELF LIFE.....: 5 years at 4 C and 3 years at 49 C

SPECIAL SENSITIVITY.....: None Known

X. SPECIAL PRECAUTIONS & STORAGE DATA (Continued)

HANDLING/STORAGE PRECAUTIONS: Avoid breathing mist and vapors. Avoid contact with eyes and skin. Wash thoroughly after handling. Store in a dry place away from excessive heat, in original or similar waterproof containers. Reseal containers immediately after use. Keep from freezing.

XI. SHIPPING INFORMATION:

TECHNICAL SHIPPING NAME.....: Organic Acid

FREIGHT CLASS BULK.....: Chemicals, NOI

FREIGHT CLASS PACKAGE.....: Chemicals, NOI, (NMFC 60000)

DOT (HM-181) (DOMESTIC SURFACE)

HAZARD CLASS OR DIVISION: Non-Regulated

IMO / IMDG CODE (OCEAN)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

XV. APPROVALS:

For Additional Information:

Contact: MSDS Coordinator - NuGeneration Technologies, LLC

During business hours, Pacific Time - (707) 820-4080

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END OF MSDS