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E-Mail: rajesh@macl.co.in**SAFETY DATA SHEET****TRIETHYL CITRATE****1. Product Identification :****Synonyms:** Ethyl citrate; 1,2,3-propanetricarboxylic acid, 2-hydroxy-triethyl citrate**CAS No.:** 77-93-0**Molecular Weight:** 276.29 g/mole**Chemical Formula:** C₁₂H₂₀O₇**Product Codes:****2. Composition/Information on Ingredients**

Ingradient	CAS NO.	Percent	GHS Signal words	GHS Codes	GHS pictogram codes
Triethyl Citrate	77-93-0	99 – 100%	Warning	H332	None

3. Hazards Identification :**OSHA Hazards**

No known OSHA hazards

GHS Classification**Skin irritation**

Not irritating to the skin

Eye irritation

Not irritating to the eyes.

GHS Label elements, including precautionary statements

Pictogram none

Signal word Warning

Hazard statement(s)

H332 Harmful if inhaled

HMIS Classification**Health hazard:** 2**Flammability:** 1

Physical hazards: 0
NFPA Rating
Health hazard: 0
Fire: 1
Reactivity Hazard: 0

Potential Health Effects

Inhalation:

Low vapor pressure indicates a low inhalation hazard unless this material is heated or misted. If heated, inhalation may cause irritation to respiratory tract. Symptoms may include coughing, chest pain and shortness of breath. Higher exposures may cause central nervous system effects.

Ingestion:

Large oral doses may cause irritation to the gastrointestinal tract.

Skin Contact:

Not expected to be a health hazard from skin exposure.

Eye Contact:

May cause irritation, redness and pain.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Seek medical attention immediately in all cases of exposure.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

If swallowed, wash mouth out with water. Call physician.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

5. Fire Fighting Measures

Fire:

Flash point: 151°C

Explosion:

Above the flash point, explosive vapor-air mixtures may be formed.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water or foam may cause frothing. Water spray may be used to keep fire exposed containers cool.

Protection Equipment to fire – fighting :



Wear full protective clothing to prevent contact with skin and eyes and self-contained breathing apparatus approved by proper authority.

Dangerous combustion products :

Oxides of carbon.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective

threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

9. Physical and Chemical Properties

Appearance : Clear, colorless liquid.

Odor : Odourless

Solubility : very slightly soluble in cold water.

Specific Gravity : 1.135 – 1.139 @ 20°C

pH : No information found.

Boiling Point : 292 – 295°C @760 mm Hg

Melting Point : -55°C

Vapor Pressure (mm Hg): No information found.

Evaporation Rate (BuAc=1): No information found.



10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers. Will attack some forms of plastics, rubber and coatings.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Acute toxicity :

Oral :

Oral rat LD50: 5900 mg/kg.

Inhalation :

LC50/rat : 1300ppm/6h

Dermal :

LD50/rabbit : >5000mg/kg

Acute Effect :

Skin :

Not irritant to skin

Eyes :

Not irritant to eyes.

Sensitization :

No sensitization effect known in animals and humans.

Carcinogenicity :

Not listed as carcinogen by OSHA, IARC, NTP,ACGIH or RTECS.

12. Ecological Information :

Ecotoxicity :

Acute toxicity to fish :

Leuciscus idus : EC50(48h) : 2300 – 2700mg/L

Acute toxicity to aquatic invertebrates:

Not available.

Acute toxicity to microorganisms:

Not available.

Persistence of degradability:

The product is easily degradable.

13. Disposal Considerations

Waste disposal of product :

Must be dumped or incinerated with all federal, state and local environment regulations.



Container disposal ;

Dispose of container and unused contents in accordance with requirements.

14. Transport Information

Not regulated as dangerous good by land, sea and accordance with requirements.

15. Regulatory Information

This chemical substance is not classified as a hazardous product in the Annex I of directive 67/548/EEC.

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Label Hazard Warning:

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT.

Label Precautions:

Avoid breathing vapor.

Avoid contact with eyes.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Get medical attention. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

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