SDS: Triethyl citrate

Ver. 3.0 Rev. 20-03-2019

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1. Identification

Chemical Name. Triethyl citrate

CAS Number. 77-93-0

Recommendation for the chemical and restrictions on use

Applications Research and development/Performance chemical/ Industrial solvent.

Restricions No specific uses advised against are identified.

Supplier's Details

InKemia Green Chemicals, Inc.
1213 West Loop North Suite 140 , Houston, TX 77005
+1 (713) 909-7717
web@inkemiagreenchemicals.com

Emergency contact number

InKemia Green Chemicals, Inc.
Tel: +1 (713) 909-7717
For emergency calls only.

2. Hazards

Classification of the substance or mixture

Classification Not classified as a hazardous product.

Label elements

GHS label statements, including pictograms, hazard, and precautionary statements.

The product does not need to be labeled. The product is n ot classified as a hazardous substance or mixture according to 29 CFR 1910 (OSHA HCS).

Signal word

Other Hazards None.

3 – Composition/information on ingredients

Substances

Chemical Name. Triethyl citrate

Synonyms. 2-Hydroxy-1,2,3-propanetricarboxylic acid, triethyl ester; Ethyl citrate; Citric acid triethyl ester.

CAS Number. 77-93-0

Molecular Formula. C12H20O7

Molecular Weight. (g/mol) 276.285

Hazardous components

Component	Classification	Concentration
Triethyl citrate	...	<=100 wt.%

Note: For the full text of the H-Statements mentioned in this Section, see Section 16.

Impurities and stabilizing additives No data available.

Mixtures Not applicable.

4 – First-aid measures

Description of first aid measures

General information No applicable data available.

Inhalation If breathed in, move person into fresh air. If not breathing, give artificial respiration.

Ingestion Never give anything by mouth to an unconscious person. Rinse mouth with water.

Skin contact No hazards which require special first aid measure.Wash off with soap and plenty of water.

Eye contact Immediately irrigate with copious amounts of water for 15 minutes. Consult a physician.

Protection of first-aiders No applicable data available.

Most important symptoms and effects, both acute and delayed

General information No applicable data available.

Inhalation No hazards which require special first aid measure.

Ingestion No hazards which require special first aid measure.

Skin contact No hazards which require special first aid measure.

Eye contact No hazards which require special first aid measure.

Indication of immediate medical attention and special treatment need

Notes for the doctor No applicable data available.

5 – Fire-fighting measure

Extinguishing media

Suitable extinguisher media Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguisher media No data available.

Special hazards arising from the substance of mixture

Specific hazards No data available.

Hazardous combustion products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

Advice for firefighters

Protective actions during firefighting

Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Avoid discharge to the aquatic environment. Control runoff water by containing and keeping it out of sewers and watercourses. If the risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighting

Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots, and gloves provide a basic level of protection for chemical incidents.

6 – Accidental release measures

Personal precautions, protective equipment, and emergency procedures

Personal Precautions

Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into the spilled material.

Environmental precautions

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleanup

Methods for cleaning

Contain and remove the spillage, soaking up the residue with non-flammable absorbent. Place in an adequate container for immediate disposal. Eliminate sources of ignition. For waste disposal see Section 13.

Reference to other sections

For personal protection see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For disposal see section 13.

7 – Handling and storage

Precautions for safe handling

Usage precautions

Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink, and animal feeding stuff. Keep container tightly sealed when not in use. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers. For precautions see Section 2.

Advice on general occupational hygiene

Wash if in contact with skin. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

Conditions for safe storage, including any Incompatibilities

Storage precautions

Store away from incompatible materials (see Section 10). Keep only in the original container. Keep container tightly closed, in a cool, well-ventilated place. Keep containers upright. Protect containers from damage. Keep in a fresh and dry place, avoiding direct sunlight. Keep container tightly sealed, in a fireproof place.

Storage class

Miscellaneous hazardous material storage. Preferably in a well-ventilated solvent cabinet.

Specific end uses

The identified uses for this product are in Section 1.

8 – Exposure controls/personal protection

Control parameters

Occupational exposure limits:

OSHA Permissible Exposure Limit (PEL):

Contains no substances with occupational exposure limit values.

Protective equipment

Engineering control measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Eye/Face protection

Wear safety glasses with side-shields.

Hand protection

Where there is potential for skin contact have available and wear as appropriate impervious gloves, apron, pants, and jacket.

Other skin and body protection

Where risk assessment shows use engineering controls to reduce air contamination to permissible exposure level. Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapor contact.

Hygiene measures

Wash hands before and use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with a multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls.If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environmental exposure

Not available.

9 – Physical and chemical properties

Appearance	Clear colorless liquid.
Odor threshold	No data available.
Melting point/Freezing point, °C	-46
Boiling point, °C	294
Flash point	112
Evaporation rate	No data available.
Upper / lower flammability or/and explosive limits	No data available.
Vapor pressure @ 20 °C, kPa	0.003
Vapor density (air=1)	No data available.
Relative density @ 25 °C, g/cm³	1.137
Water miscibility @ 20 °C, g/L	65 (Moderately miscible)
Solubility (other)	Miscible with alcohols, ethanol and diethyl ether.
Partition coefficient, log Pow @ 25 °C	0.33 (EPI Suite estimation).
Autoignition temperature, °C	355
Decomposition temperature, °C	No data available.
Dynamic viscosity @ 25 °C, cP	35.20
Explosive properties	Not classified.
Oxidizing properties	No data available.
Flammability	Non-flammable liquid.
Surface tension @ 20 °C, mN/m	41.5

10 – Stability and reactivity

Reactivity	No data available.
Chemical stability	Stable under normal storage conditions.
Possibility of hazardous reactions	No data available.
Incompatible materials	Strong oxidizing agents. Strong bases. Strong acids.
Conditions to avoid	High temperatures and ignition sources.
Hazardous decomposition products	No data available.

11 – Toxicological information

Acute toxicity – oral

Acute toxicity – oral (LD50,mg/kg)	>5,000
Species	Rat

Notes (oral LD50)	Based on available data the classification criteria are not met.
Acute toxicity – dermal	
Acute toxicity – dermal (LD50,mg/kg)	>5,000
Species	Rabbit
Notes (Dermal LD50)	Based on available data the classification criteria are not met.
Acute toxicity – inhalation	
Acute toxicity – inhalation (LC50,dust/mist mg/l)	1,300 (vapor/mist)
Species	Rat
Notes (Inhalation LD50)	Based on available data the classification criteria are not met.
Skin corrosion/irritation	
Result	No data available.
Serious eye damage/irritation	
Result	No data available.
Respiratory sensitization	
Result	No data available.
Skin sensitization	
Result	No data available.
Germ cell mutagenicity	
Genotoxicity – in vitro	No data available.
Carcinogenicity	
IARC	No component of this product present at levels greater than or equal to 0.1% is identified as human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity	
Fertility	No data available.
Development	No data available.
Specific target organ toxicity	

STOT-single exposure	No data available.
STOT-repeated exposure	No data available.

Additional information

General information	This product is not classified as hazardous.
Inhalation	No data available.
Ingestion	No data available.
Skin contact	No data available.
Eye contact	No data available.
Route of entry	Ingestion, Inhalation, skin and/or eye contact.
Target organs	Not specific target organ known.

12 – Ecological information

Toxicity

Ecotoxicity	Not regarded as dangerous for the environment. However, large or frequent spills may have dangerous effects on the environment.

Acute toxicity

Toxicity to fish	No data available.
Aquatic invertebrates	EC50 (48h) > 100 mg/l (Daphnia magna)
Aquatic plants	EC50 (72h) > 100mg/l (Green algae, OECD Test Guideline 201)

Chronic toxicity

Toxicity to fish	No data available.
Aquatic invertebrates	No data available.
Aquatic plants	No data available.

Persistency and biodegradability

Persistency and biodegradability	Readily biodegradable (77 wt.% (28 days), OECD Test Guideline 301F).
Result: -	This product is readily biodegradable (EPI Suite estimation).

Biological oxygen demand(mg/g)	No data available.
Chemical oxygen demand(mg/g)	No data available.
BOD/COD ratio	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Results of PBT and vPvB	No data available.
Other adverse effects	No data available.

13 – Disposal considerations

Waste treatment methods

General information

The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of safely. When handling waste, the safety precautions applying to the handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues.

Disposal methods

Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration and landfill should only be considered when recycling is not feasible.

14 – Transport information

DOT (US)	Not dangerous goods.
IMDG	Not dangerous goods.
IATA	Not dangerous goods.
Transport in bulk according to	Annex II of MARPOL 73/78, and the IBC Code Not applicable.

15 – Regulatory information

US Federal Regulations and state regulations

Components of the product are listed in the quoted regulations. For details, please refer to the regulations directly. This list is not exhaustive; please check for other applicable regulations.

This product has been classified by hazard criteria of the Controlled Products Regulations, and the SDS contains all the information required by the Controlled Products Regulations.

US Federal Regulations

SARA 302 Section 302 (Specific toxic chemical listings)

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA Section 311/312 (Specific toxic chemical listings)

No SARA Hazards.

SARA Section 313 (Specific toxic chemical listings)

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

RCRA (hazardous waste code)

None of the ingredients are listed.

TSCA (Toxic Substances Control Act)

CAS 77-93-0 is listed on the TSCA inventory.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

None of the ingredients are listed.

US State Regulations

Proposition 65 (California)

Chemicals are known to cause cancer

None of the chemicals in this product are listed.

Chemicals are known to cause reproductive toxicity for females

None of the chemicals in this product are listed.

Chemicals are known to cause reproductive toxicity for males

None of the chemicals in this product are listed.

Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right to Know Components

Triethyl citrate CAS: 77-93-0

New Jersey Right to Know Components

Triethyl citrate CAS: 77-93-0

Rhode Island Right to Know Components

No components are subject to the Rhode Island Right to Know Act.

Canada

Canadian Domestic Substances List (DSL)

CAS: 77-93-0 is listed on Canada's DSL List.

Canadian NPRI Ingredient Disclosure list (limit 0.1%)

The substance is not specified on any list. There is no control measure imposed to this substance.

Canadian NPRI Ingredient Disclosure list (limit 1%)

The substance is not specified on any list. There is no control measure imposed to this substance.

16 – Other information

Full text of H-Statements referred to under sections 2 and 3

Not a hazardous substance or mixture.

GHS Column Model 2017 Classification

Acute health hazards (single exp)	Negligible
Chronic health hazards (repeated exp.)	Negligible
Environmental hazards	Negligible
Physical-chemical hazards	Negligible

Further Information

The information above is believed to be accurate and represents the best information available. However, we make no warranty of merchantability or any other warranty, express or implied, on such information and we assume no liability resulting from its use. Users should make their investigations to determine the suitability of the information for their purposes. In no event shall the InKemia Green Chemicals, Inc. be liable for any claims, losses or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages arising, even if the InKemia Green Chemicals, Inc. has been advised of the possibility of such damages.

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