

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 1 of 9

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Triethylcitrat

Substance name: Triethyl Citrate
 CAS No: 77-93-0
 EC No: 201-070-7

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture

Laboratory chemicals
 Equipment maintenance

Uses advised against

The product is only to be used for the intended application.

1.3. Details of the supplier of the safety data sheet

Company name: KERN & SOHN GmbH
 Street: Ziegelei 1
 Place: D-72336 Balingen-Frommen
 Telephone: +49743399330
 E-mail: info@kern-sohn.com
 Contact person: Daniel Junger
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 Internet: www.kern-sohn.com

Telefax: +4974339933149

Telephone: +497433 9933 155

1.4. Emergency telephone number:

+353 1 8092566 (Healthcare Professionals) +353 1 8092166 (consumer | 8am – 10pm | 7 days a week)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

This substance is not classified as hazardous in accordance with Regulation (EC) No 1272/2008.

2.2. Label elements

Additional advice on labelling

The product is not subject to labelling.

2.3. Other hazards

This substance does not meet the criteria for classification as PBT or vPvB.
 This substance does not have endocrine disrupting properties with respect to humans.
 This substance does not have endocrine disrupting properties with respect to non-target organisms.

SECTION 3: Composition/information on ingredients

3.1. Substances

Relevant ingredients

CAS No	Chemical name	Index No	REACH No	Quantity
	EC No			
	Classification (Regulation (EC) No 1272/2008)			
77-93-0	Triethyl Citrate			98-100 %
	201-070-7			

Full text of H and EUH statements: see section 16.

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 2 of 9

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
77-93-0	201-070-7	Triethyl Citrate	98-100 %
		dermal: LD50 = > 5000 mg/kg; oral: LD50 = 5900 mg/kg	

SECTION 4: First aid measures**4.1. Description of first aid measures****General information**

First aider: Pay attention to self-protection! When in doubt or if symptoms are observed, get medical advice.

After inhalation

Provide fresh air. If experiencing respiratory symptoms: Get medical advice/attention.

If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. In case of skin irritation, seek medical treatment.

After contact with eyes

Remove contact lenses. In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. In case of troubles or persistent symptoms, consult an ophthalmologist.

After ingestion

Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Seek medical attention if problems persist.

4.2. Most important symptoms and effects, both acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Water spray. Foam. Extinguishing powder. Carbon dioxide (CO₂).

Co-ordinate fire-fighting measures to the fire surroundings.

Fight larger fire with water spray jet or alcohol-resistant foam.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

Vapours can form explosive mixtures with air.

Upon exposure to fire, harmful gases may be emitted.

Carbon monoxide. Carbon dioxide.

5.3. Advice for firefighters

Co-ordinate fire-fighting measures to the fire surroundings. Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information

Use water spray jet to protect personnel and to cool endangered containers.

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 3 of 9

General advice

Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray.
Keep away from unprotected people. Keep upwind.

For non-emergency personnel

Avoid contact with skin, eyes and clothes.

For emergency responders

Wear personal protection equipment.

6.2. Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.

6.3. Methods and material for containment and cleaning up**For containment**

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

For cleaning up

Clean contaminated articles and floor according to the environmental legislation.
Cleaning agent: Water.

6.4. Reference to other sections

Handling and storage: see section 7
Personal protection equipment: see section 8
For waste disposal see section 13.

SECTION 7: Handling and storage**7.1. Precautions for safe handling****Advice on safe handling**

Provide adequate ventilation. Avoid the formation of aerosol. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Wear personal protection equipment.

Advice on protection against fire and explosion

Keep away from heat.
Take precautionary measures against static discharges.

Advice on general occupational hygiene

Consider the usual precautions for handling chemicals.
Remove contaminated, saturated clothing immediately. After work, wash hands and face. When using do not eat or drink.

7.2. Conditions for safe storage, including any incompatibilities**Requirements for storage rooms and vessels**

Keep container tightly closed in a cool, well-ventilated place.

Hints on joint storage

Store separately from foodstuff.
Do not store together with: Oxidizing agents.

Further information on storage conditions

Keep away from heat. Protect from direct sunlight.

7.3. Specific end use(s)

Laboratory chemicals
Equipment maintenance

SECTION 8: Exposure controls/personal protection**8.1. Control parameters**

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 4 of 9

DNEL/DMEL values

CAS No	Substance		
DNEL type	Exposure route	Effect	Value
77-93-0	Triethyl Citrate		
Consumer DNEL, long-term	oral	systemic	12,5 mg/kg bw/day
Worker DNEL, long-term	dermal	systemic	20,8 mg/kg bw/day
Consumer DNEL, long-term	dermal	systemic	12,5 mg/kg bw/day
Worker DNEL, long-term	inhalation	systemic	73,5 mg/m ³
Consumer DNEL, long-term	inhalation	systemic	28,8 mg/m ³

PNEC values

CAS No	Substance	
Environmental compartment	Value	
77-93-0	Triethyl Citrate	
Freshwater sediment	0,124 mg/kg	
Marine sediment	0,018 mg/kg	
Secondary poisoning	222,22 mg/kg	

Additional advice on limit values

To date, no national critical limit values exist.

8.2. Exposure controls

Appropriate engineering controls

Provide adequate ventilation as well as local exhaust at critical locations.

Individual protection measures, such as personal protective equipment

Eye/face protection

At the place of work (in production and when refilling): Tightly sealed safety glasses.

Hand protection

Tested protective gloves are to be worn:
 Unsuitable material: Natural fibres (e.g. cotton): leather

Recommended material: NBR (Nitrile rubber).
 Thickness of glove material: >0,4 mm
 penetration time (maximum wearing period): >480 min.

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin protection

Protective clothing.

Respiratory protection

In exceptional situations (eg accidental release of substances, occupational exposure limit is exceeded) the wearing of respiratory protection is required.

short-term:

Filtering device (full mask or mouthpiece) with filter: A (Colour: brown; Initial boiling point and boiling range: > 65 °C)

long-term:

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 5 of 9

Protective respiration apparatus not using surrounding air (breathing apparatus) (DIN EN 133).

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	liquid
Colour:	colourless, clear
Odour:	characteristic
Melting point/freezing point:	<-40 °C
Boiling point or initial boiling point and boiling range:	approx. 286 °C
Flammability:	no data available
Lower explosion limits:	no data available
Upper explosion limits:	no data available
Flash point:	>155 °C
Auto-ignition temperature:	355 °C
Decomposition temperature:	no data available
pH-Value:	no data available
Viscosity / kinematic: (at 20 °C)	32,17 mm ² /s
Water solubility: (at 20 °C)	58,1 g/L
Dissolution rate:	no data available
Partition coefficient n-octanol/water:	1,17
Dispersion stability:	no data available
Vapour pressure: (at 20 °C)	0,0025 hPa
Density (at 20 °C):	1,1399 g/cm ³
Relative density:	no data available
Bulk density:	no data available
Relative vapour density:	no data available
Particle characteristics:	no data available

9.2. Other information

Information with regard to physical hazard classes

Explosive properties

no data available

Self-ignition temperature

Solid:

no data available

Gas:

no data available

Other safety characteristics

Solvent content:

no data available

Sublimation point:

no data available

Softening point:

no data available

Pour point:

no data available

Further Information

No data available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactivity under regular conditions.

10.2. Chemical stability

The product is stable under regular conditions.

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 6 of 9

10.3. Possibility of hazardous reactions

Reaction with: Oxidizing agents, strong.
Vapours can form explosive mixtures with air.

10.4. Conditions to avoid

Keep away from heat. Protect from direct sunlight.

10.5. Incompatible materials

Oxidizing agents, strong.

10.6. Hazardous decomposition products

Upon exposure to fire, harmful gases may be emitted.
Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
77-93-0	Triethyl Citrate				
	oral	LD50 mg/kg	5900	Rat	
	dermal	LD50 mg/kg	> 5000	Rabbit	

Irritation and corrosivity

Based on available data, the classification criteria are not met.

Sensitising effects

Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction

Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to humans.

SECTION 12: Ecological information

12.1. Toxicity

Based on available data, the classification criteria are not met.

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 7 of 9

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h] [d]	Species	Source	Method
77-93-0	Triethyl Citrate					
	Acute fish toxicity	LC50 mg/l	112,02	96 h	Piscis	QSAR
	Acute algae toxicity	ErC50 mg/l	> 100	72 h	Pseudokirchneriella subcapitata	OECD 201
	Acute crustacea toxicity	EC50 mg/l	> 100	48 h	Daphnia magna	OECD 202
	Algae toxicity	NOEC mg/l	> 100	3 d	Pseudokirchneriella subcapitata	OECD 201
	Crustacea toxicity	NOEC mg/l	> 100	2 d		OECD 202

12.2. Persistence and degradability

CAS No	Chemical name				
	Method	Value	d	Source	
	Evaluation				
77-93-0	Triethyl Citrate				
	OECD 301F	77%	28		
	Easily biodegradable (concerning to the criteria of the OECD)				

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
77-93-0	Triethyl Citrate	1,17

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms.

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Dispose of waste according to applicable legislation.

According to EAKV, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number:

No dangerous good in sense of this transport regulation.

14.2. UN proper shipping name:

No dangerous good in sense of this transport regulation.

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 8 of 9

14.3. Transport hazard class(es): No dangerous good in sense of this transport regulation.**14.4. Packing group:** No dangerous good in sense of this transport regulation.**Inland waterways transport (ADN)****14.1. UN number or ID number:** No dangerous good in sense of this transport regulation.**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.**14.4. Packing group:** No dangerous good in sense of this transport regulation.**Marine transport (IMDG)****14.1. UN number or ID number:** No dangerous good in sense of this transport regulation.**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.**14.4. Packing group:** No dangerous good in sense of this transport regulation.**Air transport (ICAO-TI/IATA-DGR)****14.1. UN number or ID number:** No dangerous good in sense of this transport regulation.**14.2. UN proper shipping name:** No dangerous good in sense of this transport regulation.**14.3. Transport hazard class(es):** No dangerous good in sense of this transport regulation.**14.4. Packing group:** No dangerous good in sense of this transport regulation.**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

Danger releasing substance: No data available.

14.6. Special precautions for user

No special precautions known.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Information according to Directive 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

Additional information

Regulation (EC) No. 648/2004 [Detergents regulation]: not applicable

Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer: not applicable

Regulation (EC) No 2019/1021 on persistent organic pollutants: not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council concerning the export and import of dangerous chemicals: This mix contains no chemicals that are subject to the export notification procedures (annex 1).

This mixture contains the following substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH: none

This mixture contains the following substances of very high concern (SVHC) which are subject to authorisation according to Annex XIV of REACH: none

National regulatory information

Water hazard class (D): 1 - slightly hazardous to water

Additional information

Observe in addition any national regulations!

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Triethylcitrat

Revision date: 12.03.2024

Product code: KSO-007

Page 9 of 9

Changes

This data sheet contains changes from the previous version in section(s): 1,2,3,4,5,6,7,8,9,10,11,12,15,16.

Version 1,00 - 05.07.2019 - first draft

Version 1,01 - 12.03.2024 - General update

Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

BImSchV (Fed.Imm.Prot.Act): Directive on the Implementation of the Federal Immission Protection Act

CAS: Chemical Abstracts Service

DIN: Norm of the Deutsche Institut für Normung (German Institute for Standardization)

EC: Effective Concentration

EG: European Community (Europäische Gemeinschaft)

EN: European Norm

IATA: International Air Transport Association

IBC Code: International Code for the Construction and Equipment of ships carrying Dangerous Chemicals in Bulk

ICAO: International Civil Aviation Organization

IMDG: International Maritime Code for Dangerous Goods

ISO: Norm of the International Standards Organization

CLP: Classification, Labeling, Packaging

IUCLID: International Uniform Chemical Information Database

LC: Lethal concentration

LD: Lethal dose

log Kow: Octanol/water partition coefficient

MARPOL: Maritime Pollution Convention = Convention for the Prevention of Maritime Pollution from Ships

OECD: Organisation for Economic Co-operation and Development

PBT: Persistent, bio-cumulative, toxic

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail

TRGS: Technische Regeln für Gefahrstoffe

UN: United Nations

VOC: Volatile Organic Compounds

vPvB: very persistent and very bio-cumulative

WGK: German Water Hazard Class

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

DNEL: Derived No Effect Level

PNEC: Predicted No Effect Concentration

TLV: Threshold Limiting Value

STOT: Specific Target Organ Toxicity

AwSV: Ordinance on Installations for Handling Substances Hazardous to Water

Further Information

The information given in this safety data sheet is to describe the product's safety regulations. It is not for guaranteeing certain characteristics and is based on today's knowledge. The safety data sheet was generated upon information of pre-suppliers by:

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