

According to Regulation (EC) No 1907/2006

# DL-alpha-Lipoic acid (DL Thioctic acid)



Version number: 1  
Issued: 2023-09-06

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

### 1.1. Product identifier

**Trade name**

DL-alpha-Lipoic acid (DL Thioctic acid)

**CAS number**

1077-28-7

**EC number**

214-071-2

**Synonyms**

5-(dithiolan-3-yl)valeric acid

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

**Relevant identified uses**

Research and development.

**Not suitable for use in**

Not suitable for human consumption or veterinary purposes.

### 1.3. Details of the supplier of the safety data sheet

**Supplier**

Molekula Group

Street address

Molekula Ltd, Lingfield Way, Darlington,  
DL1 4XX Darlington  
United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

**Contact person**

Kevin Banks

**Email address**

+44 (0) 7769276927

### 1.4. Emergency telephone number

**Poison center/Additional emergency number**

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

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## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

#### **Classification**

Hazardous to the aquatic environment — Chronic hazard category 2  
Skin irritation, hazard category 2  
Skin sensitisation, hazard category 1  
Eye irritation, hazard category 2  
Acute toxicity, oral, hazard category 4

#### **Hazard statements**

H302, H315, H317, H319, H411

### 2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

#### **Hazard pictograms**



#### **Signal word**

Warning

#### **Hazard statements**

H302 Harmful if swallowed.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.

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## **Precautionary statements**

- P202 Do not handle until all safety precautions have been read and understood.  
 P233 Keep container tightly closed.  
 P261 Avoid breathing dust/fumes/gas/mist/vapours/spray.  
 P262 Do not get in eyes, on skin, or on clothing.  
 P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P271 Use only outdoors or in a well-ventilated area.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.  
 P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.  
 P302 + P352 IF ON SKIN: Wash with plenty of water/.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P314 Get medical advice/attention if you feel unwell.  
 P333 +P313 If skin irritation or rash occurs: Get medical advice/attention.  
 P337 + P313 If eye irritation persists: Get medical advice/attention.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.  
 P403 Store in a well-ventilated place.  
 P405 Store locked up.  
 P501 Dispose of contents/container to local regulations.

## **2.3. Other hazards**

No data available

## **SECTION 3: Composition/information on ingredients**

### **3.2. Mixtures**

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrase M factor acute M factor chronic	Note
DL-alpha-Lipoic acid (DL Thiocctic acid)	1077-28-7 214-071-2 - -	100%	Acute Tox. 4 - oral, Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2, Aquatic Chronic 2	H302, H315, H317, H319, H411 - -	-

### **Molecular weight**

206.33

### **Substance additional information**

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

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## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel.

#### **Inhalation**

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

#### **Skin contact**

IF ON SKIN: Wash with plenty of water. Continue to rinse for at least 15 minutes and seek medical attention. Get medical advice/attention if you feel unwell.

#### **Eye contact**

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

#### **Ingestion**

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

#### **Information for doctors**

First aiders/ medical personnel need to protect themselves.

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

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

#### **Inhalation**

Single exposure may cause the following adverse effects: Upper respiratory irritation. Difficulty in breathing.

#### **Skin contact**

Single exposure may cause the following adverse effects: Severe skin irritation.

#### **Eye contact**

Single exposure may cause the following adverse effects: Severe irritation.

#### **Ingestion**

Single exposure may cause the following adverse effects: Severe abdominal pain. Nausea, vomiting.

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

Treat symptomatically. No special treatment requirement.

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## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

#### Unsuitable extinguishing media

No specific fire fighting procedure given.

### 5.2. Special hazards arising from the substance or mixture

Specific hazards: Combustible.

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO).

Sulfur oxides

Development of hazardous combustion gases or vapours possible in the event of fire.

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing dust/fume/gas/mist/vapours/spray. Provide adequate ventilation. Avoid contact with skin and eyes. For personal protection, see section 8.

### 6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

### 6.3. Methods and material for containment and cleaning up

Collect spillage with shovel, broom or the like and reuse, if possible. Dispose of large amounts of spillage/waste according to agreement with local authorities.

### 6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Preventive handling precautions

Wear protective clothing, gloves, eye and face protection. Provide adequate ventilation. Avoid contact with skin and eyes. Avoid ingestion and inhalation. Avoid dust formation. For precautions see section 2.2.

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## General hygiene

Observe good chemical hygiene practices. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

## 7.2. Conditions for safe storage, including any incompatibilities

Store at ambient temperature. Store in a dry place. Store in a closed container. Keep containers tightly closed.

## 7.3. Specific end use(s)

No specific usage precautions noted.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No data available

### 8.2. Exposure controls

#### Eye / face protection

Wear eye protection.

#### Hand protection

Wear protective gloves. Recommended gloves: Nitrile.

Glove Thickness: 0.11mm

Breakthrough time: 8 hours

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash contaminated skin thoroughly after handling.

#### Other skin protection

Wash skin thoroughly after handling.

#### Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

#### Environmental exposure controls

Avoid discharge into drains.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Physical state

Solid

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## Colour

Yellowish.

## Odour

No data available

## Melting point / freezing point

60 - 62 °C

## Boiling point or initial boiling point and boiling range

> 286 °C

## Flammability

No data available

## Lower and upper explosion limit

No data available

## Flash point

No data available

## Auto-ignition temperature

No data available

## Decomposition temperature

No data available

## pH

No data available

## Kinematic viscosity

No data available

## Solubility

No data available

## Partition coefficient n-octanol/water

No data available

## Vapour pressure

No data available

## Density and/or relative density

No data available

## Relative vapour density

No data available

## Particle characteristics

No data available

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## 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

There are no known reactivity hazards associated with this product.

### 10.2. Chemical stability

Stable under the prescribed storage conditions.

### 10.3. Possibility of hazardous reactions

Violent reactions possible with:  
 Strong oxidising agents.

### 10.4. Conditions to avoid

No data available

### 10.5. Incompatible materials

Strong oxidising agents.

### 10.6. Hazardous decomposition products

See section 5.

## SECTION 11: Toxicological information

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

#### Acute toxicity

Product / Substance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Test animals
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	LD50	1190 mg/kg	Oral	Rat

#### Skin corrosion/irritation

Product / Substance name CAS / EC no.	Result	Species	Method / Guideline
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	non-corrosive	skin	In vitro study
DL-alpha-Lipoic acid (DL	Positive.	skin	In vitro study



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Product / Substance name CAS / EC no.	Result	Species	Method / Guideline
Thioctic acid) 1077-28-7 / 214-071-2			

### Respiratory or skin sensitisation

Product / Substance name CAS / EC no.	Result	Method / Guideline
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Positive.	Skin sensitisation:
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Positive.	In vitro study

### Germ cell mutagenicity

Product / Substance name CAS / EC no.	Result	Exposure route	Metabolic activation / Exposure	Species	Method / Guideline
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Negative.	-	with and without metabolic activation	Salmonella typhimurium	Ames test
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Negative.	-	with and without metabolic activation	Chinese hamster lung cells	Chromosome aberration: In Vitro Test
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Negative.	-	with and without metabolic activation	Chinese hamster lung cells	In vitro mammalian cell gene mutation test.
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	Negative.	Oral	-	Mouse	Micronucleus test

### Aspiration hazard

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

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## 11.2. Information on other hazards

No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Acute fish toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
DL-alpha-Lipoic acid (DL Thiocctic acid) 1077-28-7 / 214-071-2	LC50	43-96 mg/l	96 hours	Brachydanio rerio (Zebra Fish)

#### Acute algae toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
DL-alpha-Lipoic acid (DL Thiocctic acid) 1077-28-7 / 214-071-2	EC10	0.583 mg/l	72 hours	Pseudokirchneriella subcapitata
DL-alpha-Lipoic acid (DL Thiocctic acid) 1077-28-7 / 214-071-2	ErC50	5.51 mg/l	72 hours	Pseudokirchneriella subcapitata

#### Acute crustacean toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
DL-alpha-Lipoic acid (DL Thiocctic acid) 1077-28-7 / 214-071-2	EC50	15.1 mg/l	48 hours	Daphnia magna

### 12.2. Persistence and degradability

#### Persistence and degradability

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Product / Substance name CAS / EC no.	Type of test	Duration	Result	Degradation
DL-alpha-Lipoic acid (DL Thioctic acid) 1077-28-7 / 214-071-2	aerobic	28 days	26%	The product is not readily biodegradable.

### 12.3. Bioaccumulative potential

No data available

### 12.4. Mobility in soil

No data available

### 12.5. Results of PBT and vPvB assessment

No data available

### 12.6. Endocrine disrupting properties

No data available

### 12.7. Other adverse effects

No data available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Disposal considerations

Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

### 14.1. UN number

3077

### 14.2. UN proper shipping name

#### ADR / RID / ADN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DL-alpha-Lipoic acid (DL Thioctic acid))

#### IMDG proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DL-alpha-Lipoic acid (DL Thioctic acid))

#### IATA proper shipping name

Environmentally hazardous substance, solid, n.o.s. (DL-alpha-Lipoic acid (DL Thioctic acid))

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## 14.3. Transport hazard class(es)

### Label

ADR/RID/ADN



9 Environmental hazard

IMDG



9

IATA



9 Environmental hazard

### ADR / RID Class

9

### ADR / RID Classification code

M7

### ADR / RID hazard identification number

90

### IMDG Class

9

### IATA Class

9

### ADN Class

9

### ADN Class Code

M7

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## 14.4. Packing group

ADR / RID / ADN: III  
IMDG: III  
IATA: III

## 14.5. Environmental hazards

ADR/RID/ADN: Hazardous for the environment

### IMDG EmS

F-A, S-F

## 14.6. Special precautions for user

Tunnel restriction code: -  
Transport category: 3

## 14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC08

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### EU regulations

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

#### National regulations

Directive: 2012/18/EU E2 ENVIRONMENTAL HAZARDS

### 15.2. Chemical safety assessment

No data available

## SECTION 16: Other information

### Phrase meaning

Aquatic Chronic 2 - Hazardous to the aquatic environment — Chronic hazard category 2

Skin Irrit. 2 - Skin irritation, hazard category 2

Skin Sens. 1 - Skin sensitisation, hazard category 1

Eye Irrit. 2 - Eye irritation, hazard category 2

Acute Tox. 4 - oral - Acute toxicity, oral, hazard category 4

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H411 Toxic to aquatic life with long lasting effects.