

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 22.02.2013

Version 9.7

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

### 1.1 Product identifier

Catalogue No.	822100
Product name	(S)-(-)-Ethyl lactate for synthesis
REACH Registration Number	A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

Identified uses	Chemical for synthesis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merck-chemicals.com">www.merck-chemicals.com</a> ).
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### 1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0
Responsible Department	EQ-RS * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

1.4 Emergency telephone number	Please contact the regional company representation in your country.
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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquid, Category 3, H226

Specific target organ toxicity - single exposure, Category 3, H335

Serious eye damage, Category 1, H318

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

Classification (67/548/EEC or 1999/45/EC)

Xi	Irritant	R10
		R37 - 41

For the full text of the R-phrases mentioned in this Section, see Section 16.

### 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

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Danger

*Hazard statements*

H226 Flammable liquid and vapour.  
H318 Causes serious eye damage.  
H335 May cause respiratory irritation.

*Precautionary statements*

Prevention

P210 Keep away from heat.  
P280 Wear eye protection.

Response

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Reduced labelling (≤125 ml)**

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*


H318 Causes serious eye damage.

*Precautionary statements*

P280 Wear eye protection.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Index-No. 607-129-00-7

**Labelling (67/548/EEC or 1999/45/EC)**


Symbol(s)  Xi Irritant

R-phrases 10-37-41 Flammable. Irritating to respiratory system. Risk of serious damage to eyes.

S-phrases 24-26-39 Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

EC-No. 211-694-1 EC Label

**Reduced labelling (≤125 ml)**

Symbol(s)  Xi Irritant

R-phrases 10-41 Flammable. Risk of serious damage to eyes.

S-phrases 26-39 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

**2.3 Other hazards**

None known.

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### SECTION 3. Composition/information on ingredients

#### 3.1 Substance

Formula	CH <sub>3</sub> CH(OH)COOC <sub>2</sub> H <sub>5</sub>	C <sub>5</sub> H <sub>10</sub> O <sub>3</sub> (Hill)
CAS-No.	687-47-8	
Index-No.	607-129-00-7	
EC-No.	211-694-1	
Molar mass	118,13 g/mol	

#### Hazardous components (REGULATION (EC) No 1272/2008)

##### *Chemical Name (Concentration)*

CAS-No.	Registration number	Classification
Ethyl lactate (<= 100 % )		
687-47-8	*)	Flammable liquid, Category 3, H226 Specific target organ toxicity - single exposure, Category 3, H335 Serious eye damage, Category 1, H318

\*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

#### Hazardous components (1999/45/EC)

##### *Chemical Name (Concentration)*

CAS-No.	Classification
Ethyl lactate (<= 100 % )	
687-47-8	R10 Xi, Irritant; R37-41

For the full text of the R-phrases mentioned in this Section, see Section 16.

#### 3.2 Mixture

not applicable

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### SECTION 4. First aid measures

#### 4.1 Description of first aid measures

After inhalation: fresh air. Consult doctor if feeling unwell.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

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

irritant effects, Cough, Shortness of breath  
Risk of serious damage to eyes.

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

No information available.

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder, Water

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

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

### 5.3 Advice for firefighters

*Special protective equipment for firefighters*

In the event of fire, wear self-contained breathing apparatus.

*Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

Cool closed containers exposed to fire with water spray.

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## SECTION 6. Accidental release measures

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

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapours, aerosols. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

### 6.2 Environmental precautions

Do not empty into drains. Risk of explosion.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

Indications about waste treatment see section 13.

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## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

*Advice on safe handling*

Observe label precautions.

*Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

*Hygiene measures*

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

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## 7.2 Conditions for safe storage, including any incompatibilities

### *Storage conditions*

Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place. Protected from light.

Store at +15°C to +25°C.

## 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### **Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

#### **Individual protection measures**

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Tightly fitting safety goggles

#### *Hand protection*

full contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,40 mm
Break through time:	> 30 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 730 Camatril® -Velours (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet<(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

#### *Other protective equipment*

Flame retardant antistatic protective clothing

#### *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: filter ABEK

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The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

**Environmental exposure controls**

Do not empty into drains.

Risk of explosion.

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**SECTION 9. Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Form	liquid
Colour	colourless
Odour	like fruit
Odour Threshold	No information available.
pH	ca. 4 at 50 g/l 20 °C
Melting point	-25 °C
Boiling point/boiling range	154 °C at 1.013 hPa
Flash point	53 °C Method: c.c.
Evapouration rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1,5 %(V)
Upper explosion limit	16,4 %(V)
Vapour pressure	1,6 hPa at 20 °C
Relative vapour density	4,07
Relative density	1,03 g/cm <sup>3</sup> at 20 °C
Water solubility	at 25 °C soluble
Partition coefficient: n-octanol/water	log Pow: 0,06 Bioaccumulation is not expected. (Lit.)
Auto-ignition temperature	No information available.

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Decomposition temperature	No information available.
Viscosity, dynamic	2,8 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Ignition temperature	400 °C
Viscosity, kinematic	2,7 mm <sup>2</sup> /s at 25 °C

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

hydrolyses  
Vapour/air-mixtures are explosive at intense warming.

### 10.2 Chemical stability

Sensitive to air.

### 10.3 Possibility of hazardous reactions

increased reactivity with:  
Strong oxidizing agents

### 10.4 Conditions to avoid

Heating.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

### 10.5 Incompatible materials

various plastics

### 10.6 Hazardous decomposition products

no information available

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

*Acute oral toxicity*  
LD50 rat: > 2.000 mg/kg (External MSDS)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

*Acute inhalation toxicity*  
LC50 rat: > 5,4 mg/l; 4 h  
OECD Test Guideline 403

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

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*Acute dermal toxicity*

This information is not available.

*Skin irritation*

slight irritation

*Eye irritation*

Causes serious eye damage.

*Sensitisation*

Patch test: human

Result: negative

(racemate) (HSDB)

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Ames test

Result: negative

(External MSDS)

*Carcinogenicity*

This information is not available.

*Reproductive toxicity*

This information is not available.

*Teratogenicity*

This information is not available.

*Specific target organ toxicity - single exposure*

May cause respiratory irritation.

*Specific target organ toxicity - repeated exposure*

This information is not available.

*Aspiration hazard*

This information is not available.

**11.2 Further information**

Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 12. Ecological information**

**12.1 Toxicity**

*Toxicity to fish*

LC50 Danio rerio (zebra fish): 320 mg/l; 96 h

OECD Test Guideline 203

*Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 683 mg/l; 48 h

OECD Test Guideline 202

*Toxicity to algae*

IC50 Pseudokirchneriella subcapitata (green algae): 2.200 mg/l; 70 h (IUCLID)

**12.2 Persistence and degradability**

*Biodegradability*

86 %; 28 d

(IUCLID)

Readily biodegradable.

*Chemical Oxygen Demand (COD)*

1.620 mg/g

(Lit.)

**12.3 Bioaccumulative potential**



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*Partition coefficient: n-octanol/water*

log Pow: 0,06

Bioaccumulation is not expected. (Lit.)

**12.4 Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**12.6 Other adverse effects**

*Additional ecological information*

Biological effects:

Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities.

Further information on ecology

Discharge into the environment must be avoided.

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**SECTION 13. Disposal considerations**

*Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

14.1 UN number	UN 1192
14.2 Proper shipping name	ETHYL LACTATE
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

**Inland waterway transport (ADN)**

Not relevant

**Air transport (IATA)**

14.1 UN number	UN 1192
14.2 Proper shipping name	ETHYL LACTATE
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

**Sea transport (IMDG)**

14.1 UN number	UN 1192
14.2 Proper shipping name	ETHYL LACTATE
14.3 Class	3
14.4 Packing group	III

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14.5 Environmentally hazardous --

14.6 Special precautions for user yes

EmS F-E S-D

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

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## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard 96/82/EC  
Legislation Flammable.  
6  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

#### *National legislation*

Storage class 3

### 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

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

H226 Flammable liquid and vapour.  
H318 Causes serious eye damage.  
H335 May cause respiratory irritation.

### Full text of R-phrases referred to under sections 2 and 3

R10 Flammable.  
R37 Irritating to respiratory system.  
R41 Risk of serious damage to eyes.

### Training advice

Provide adequate information, instruction and training for operators.

### Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

### Regional representation

This information is given on the authorised Safety Data Sheet for your country.

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*

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