



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 (www.merck-chemicals.com).
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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: prodsafe@merckgroup.com

1.4 Emergency telephone number Please contact the regional company representation in your country.

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

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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)

<i>Symbol(s)</i>	Xi	Irritant
<i>R-phrase(s)</i>	10-37-41	Flammable. Irritating to respiratory system. Risk of serious damage to eyes.
<i>S-phrase(s)</i>	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)

<i>Symbol(s)</i>	Xi	Irritant
<i>R-phrase(s)</i>	10-41	Flammable. Risk of serious damage to eyes.
<i>S-phrase(s)</i>	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.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	CH ₃ CH(OH)COOC ₂ H ₅	C ₅ H ₁₀ O ₃ (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
<i>Ethyl lactate (<= 100 %)</i>		
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
<i>Ethyl lactate (<= 100 %)</i>	
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

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.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), 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.

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.

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.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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.

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).

Other protective equipment

Flame retardant antistatic protective clothing

Respiratory protection

required when vapours/aerosols are generated.

Recommended Filter type: filter ABEK

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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.

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 ³ 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.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
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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 mm²/s
at 25 °C

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

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

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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.

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

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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.

SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 822100
Product name (S)-(-)-Ethyl lactate for synthesis

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

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.

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.

Regional representation

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

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.
