

## Ethyl-(S)-Lactate

REVISION DATE 04/08/05  
REF. SD0310/2005-01

### 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY / UNDERTAKING

<b>Product name</b>	PURASOLV <sup>®</sup> EL, PURASOLV <sup>®</sup> ELECT		
<b>Use of the Substance</b>	Solvent, Flavour, Specialty chemical		
<b>Supplier</b>	PURAC biochem Arkelsedijk 46 NL-4206 AC Gorinchem The Netherlands	PURAC bioquímica Gran Vial 19 -25 08160 Montmelo-Barcelona Spain	
<b>Telephone</b>	++31 183 695695	++34 93 568 6300	
<b>Fax</b>	++31 183 695604	++34 93 568 3955	
<b>Emergency telephone</b>	++31 183 695695	++34 93 568 6300 (Ext 222)	

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<b>Chemical name of the substance</b>	Ethyl (S)-2-Hydroxy Propanoate			
<b>Synonyms</b>	Lactic Acid Ethyl Ester, Ethyl-L-Lactate			
<b>Components</b>	<b>CAS-No.</b> 687-47-8	<b>EC-No.</b> 211-694-1	<b>RTECS-No.</b> 0D5075000	<b>Weight, %</b> 100
<b># Hazard classification</b>	R10, R37, R41. For details see chapter 15.			

### 3. HAZARDS IDENTIFICATION

<b>Most important hazards</b>	Risk of serious damage to eyes. Irritating to eyes. Combustible liquid.
<b>Specific hazards</b>	May degrease the skin. Effects of skin contacts may include erythema.

### 4. FIRST AID MEASURES

<b>General advice</b>	Show this safety data sheet to the doctor in attendance.
<b>Inhalation</b>	Move to fresh air.
<b>Skin contact</b>	Wash off immediately with plenty of water.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
<b>Ingestion</b>	Induce vomiting if person is conscious. Consult a physician.
<b>Major effects of exposure</b>	Inhalation of vapors is irritating to the respiratory system, and may cause coughing. Irritating to eyes. May degrease the skin.
<b>Protection of firstaiders</b>	Wear tightly fitting safety goggles.

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### 5. FIRE-FIGHTING MEASURES

<b>Suitable extinguishing media</b>	Water spray, carbon dioxide (CO <sub>2</sub> ), dry powder, AFFF, foam.
<b>Extinguishing media which must not be used for safety reasons</b>	None.
<b>Specific hazards</b>	Thermal decomposition can lead to release of irritating gases and vapors.
<b>Special protective equipment for firefighters</b>	None.
<b>Specific methods</b>	Standard procedure for chemical fires. Cool containers / tanks with water spray.

### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions</b>	Remove all sources of ignition. Wear tightly fitting safety goggles.
<b>Environmental precautions</b>	No special environmental precautions required.
<b>Methods for cleaning up</b>	Soak up with inert absorbent material (e.g. sand, silica gel, universal binder, sawdust). Shovel into suitable container for disposal. After cleaning, flush away traces with water.

### 7. HANDLING AND STORAGE

<b>Handling</b>	
<b>Technical measures/Precautions</b>	Remove all sources of ignition. Avoid temperatures above 139°F (59°C).
<b>Safe handling advice</b>	Wear tightly fitting safety goggles. Handle in accordance with good industrial hygiene and safety practice.
<b>Storage</b>	
<b>Technical measures/Storage conditions</b>	Keep container tightly closed. In order to prevent oxidation, the product is supplied under a nitrogen or argon blanket. After opening the packaging, it is recommended to use or store the product under inert conditions (e.g. nitrogen or argon).
<b>Packaging material</b>	High density polyethylene containers.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Engineering measures to reduce exposure</b>	Insure adequate ventilation, especially in confined areas.
<b>Control parameters</b>	None.
<b>Personal protection equipment</b>	
<b>Respiratory protection</b>	In case of insufficient ventilation wear suitable respiratory equipment.
<b>Hand protection</b>	Solvent-resistant gloves (PVA / H4).
<b>Eye protection</b>	Tightly fitting safety goggles.
<b>Skin and body protection</b>	Solvent-resistant apron.
<b>Hygiene measures</b>	When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use.

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For further information:

<http://www.purac.com/>

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	liquid
Color	colorless
Odor	mild, characteristic
Odor Threshold	0.18 ppm
pH	not applicable
Molecular Weight	118.15
Boiling point/range	307°F (153°C)
Melting point/range	26.6°F (-3 °C)
Decomposition temperature	> 307°F (153°C)
Autoignition temperature	752°F (400°C)
Flash point	139°F (59°C) (Tested according to: ISO 2719, closed cup)
Explosion limits	- lower: 1.5% @ 212°F (100°C) - upper: 11.4% @ 212°F (100°C)
Density	1.033 g/ml @ 68°F (20°C)
Vapor density	4.07 (Air = 1)
Vapor pressure	2.7 mbar @ 68°F (20°C), 172 mbar @ 212°F (100°C)
Solubility	Water solubility: completely miscible, miscible with most organic solvents
	Partition coefficient (n-octanol/water) log Pow = 0.06
Viscosity	2.8 mPa.S @ 68°F (20°C)
Surface Tension	30.6 mN/m @ 77°F (25°C)

### 10. STABILITY AND REACTIVITY

Stability	Stable at normal conditions. Hydrolyses in presence of water, acids, bases.
Conditions to avoid	Avoid temperatures above 139°F (59°C).
Materials to avoid	None.
Hazardous decomposition products	Carbon oxides.

### 11. TOXICOLOGICAL INFORMATION

Acute toxicity	LD50/oral/mouse = 2500 mg/kg LC50/inhalation/8h/rat > 5400 mg/m <sup>3</sup>
Sub acute Toxicity (28 day inhalation)	NOAEL (systemic toxicity) 600mg/m <sup>3</sup> , NOAEL (local toxicity) 200 mg/m <sup>3</sup>
Local effects	Effects of skin contacts may include erythema. Irritating to eyes. Risk of serious damage to eyes. May cause irritation of the mucous membranes. Inhalation of high vapor concentrations can cause CNS-depression and narcosis.
Specific effects	Based on tests with L-lactic acid and its esters, there is no evidence to suggest carcinogenic nor mutagenic properties from lactic acid itself nor from the lactate portion of its esters. Developmental toxicity in rats: No effect at 3.619 g/kg/day.
Long term toxicity	Repeated or prolonged exposure may cause irritation of eyes and skin.
Further information	Lactate esters are readily hydrolyzed in vivo.

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### 12. ECOLOGICAL INFORMATION

**Mobility** Completely miscible in water.  
**Persistence / degradability** Readily biodegradable, according to appropriate OECD test.  
Biochemical oxygen demand (BOD)=1.43 mg O<sub>2</sub>/mg  
Chemical oxygen demand (COD)=1.66 mg O<sub>2</sub>/mg.  
**Bioaccumulation** Unlikely, hydrolyses in presence of: water, acids, bases.  
**Ecotoxicity** EC50/48h/Daphnia = 683mg/l  
EC50/48h/Fish = 320 mg/l  
EC50/Algae = 2200 mg/l

### 13. DISPOSAL CONSIDERATIONS

**Waste from residues / unused products** Subject to disposal regulations US EPA 40 CFR 2 62.  
**Contaminated packaging** Clean container with water. Empty containers should be taken for local recycling, recovery or waste disposal.

### 14. TRANSPORT INFORMATION

**HI/UN No:** 30/1192  
**ADR/RID** Class 3 Item 31°(c) ADR/RID-Labels 3  
Proper shipping name Ethyl Lactate, 3,31°(c)  
**IMO** Class 3.3 IMDG Page 3343 IMO-Labels Flammable liquid  
Packaging group. III EmS. F-E S-D MFAG. 330  
Proper shipping name Ethyl Lactate, UN 1192  
**ICAO** Class 3 UN/ID No. 1192 ICAO-Labels Flammable liquid  
Packing group. III  
Proper shipping name Ethyl Lactate, UN 1192  
**US DOT (see further information below)**  
UN 1192 Class 3 DOT Labels Flammable liquid  
Packaging group. III  
Maximum quantity (passenger aircraft): 60 liters Maximum quantity (cargo aircraft): 220 liters

#### Further information

In the US, PURASOLV EL is a combustible liquid, and not regulated for non bulk shipments (truck). It is regulated for air and rail shipments.

### 15. REGULATORY INFORMATION

**US Regulations** TSCA Inventory Status: Y  
SARA III: N  
California Proposition 65: N  
Carcinogen status: OSHA: N. NTP: N, IARC: N  
Gras as food flavor, ADI not specified.  
Massachusetts Substances List: Y  
Pennsylvania Right to Know List: Y  
According to National equivalent of EC-Dir. 67/548, as amended, the product is labeled as follows:  
**EU Status** Xi - Irritant  
**Symbol** R41 - Risk of serious damage to eyes  
**R-Phrases** R37 - Irritation to respiratory system  
R10 - Flammable  
**S-Phrases** S24 - Avoid contact with skin.  
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S39 - Wear eye/face protection.

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## 16. OTHER INFORMATION

**NFPA Ratings (Scale 0-4):** 2(health)-2(flammability)-0(reactivity)  
**HMIS Rating:** 1(health)-2(flammability)-0(reactivity)-B (protective equipment)

For further information on the safety assessment of lactic acid esters, see the paper titled: Safety Assessment of Lactate Esters, published in Regulatory Toxicology and Pharmacology, 27, 88-97, 1998.

Additional data on the calculated ecotoxicity of lactic acid and its salts and esters can be obtained in a report entitled 'The ecotoxicity and biodegradability of lactic acid, alkyl lactate esters and lactic acid salts' by Bowmer et al. (Reference: Chemosphere 37: 1317-1333 (1998)).

# This information only concerns the above mentioned product and is not valid if used with other product(s) or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to make sure that the information is appropriate and complete for his special use of this product.

# Indicates updated section.