

Revision date 16/01/2017  
Date of the previous version 24/02/2015

SAFETY DATA SHEET  
Version 4.1 - EN

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

<b>Product Name</b>	<b>L-lactic acid</b>
<b>Trade name</b>	PURAC® 50-100 PURAC® 80 FG PURAC® 88-LT, 88-T PURAC® 93 Technical PURAC® FCC 50, FCC 80, FCC 85, FCC 88 PURAC® FIT Plus 90 PURAC® HiPure 51, HiPure 90 PURAC® HS 50, HS 80, HS 88, HS 90, HS 93, HS 95, HS 100 PURAC® PF 90 PURAC® PH 91 PURAC® Sanilac, Sanilac 88 PURAC® UltraPure 50, UltraPure 90 PURAC® Vin LACTIC ACID 50% FCC, 80% FCC, 88% FCC LACTIC ACID 88% Heat Stable

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

<b>Recommended Use</b>	Food additive, Specialty chemical See annex for more detailed information.
<b>Uses advised against</b>	No information available.

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

Purac Biochem  
Arkelsedijk 46  
NL-4206 AC Gorinchem  
The Netherlands  
Tel.: +31 183 695695  
Fax: +31 183 695604  
E-mail: sds@corbion.com

### 1.4 Emergency telephone number

UK National Health Service (NHS) call 111 or, in life-threatening emergencies, call 999

WAL National Health Service (NHS) call 0845 46 47

IE National Poisons Information Centre  
+353 1 809 2566 or +353 1 837 9964 (only for healthcare professionals)

Purac Biochem  
+31 183 695695

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

Classification according to EU  
Regulation 1272/2008/EC

<b>Skin Corrosion/Irritation</b>	Category 2 - H315
<b>Serious eye damage/eye irritation</b>	Category 1 - H318

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

**2.2 Label elements**


<b>Signal word</b>	Danger
<b>Hazard statements</b>	H315 - Causes skin irritation H318 - Causes serious eye damage
<b>Precautionary Statements</b>	P280 - Wear protective gloves/protective clothing/eye protection/face protection P302 + P352 - IF ON SKIN: Wash with plenty of water and soap P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P310 - Immediately call a POISON CENTER/doctor P362 - Take off contaminated clothing
<b>Contains</b>	S-lactic acid

**2.3 Other hazards**

None known.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**
**3.2 Mixtures**

Chemical name	EC-No	CAS-No	Weight %	Classification (1272/2008/EC)	REACH registration number
S-lactic acid	201-196-2	79-33-4	>= 50	Skin Irrit. 2 H315 Eye Dam. 1 H318	01-2119474164-39-000

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

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

<b>General Advice</b>	Keep person warm and at rest. When symptoms persist or in all cases of doubt seek medical advice. Wash contaminated clothing before re-use.
<b>Eye Contact</b>	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Consult a physician.
<b>Skin Contact</b>	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Consult a physician.
<b>Ingestion</b>	Rinse mouth. Get medical attention immediately if symptoms occur.
<b>Inhalation</b>	Move to fresh air. Get medical attention immediately if symptoms occur.
<b>Protection of first-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

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

<b>Main symptoms</b>	If in eyes: Burning feeling, Redness, Pain. If on skin: Itching, Redness.
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### 4.3 Indication of any immediate medical attention and special treatment needed

<b>Notes to physician</b>	Treat symptomatically. If breathing is difficult, give oxygen. Keep victim under observation. Symptoms may be delayed.
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## SECTION 5: FIREFIGHTING MEASURES

### 5.1 Extinguishing media

<b>Suitable Extinguishing Media</b>	Water spray, Foam, Dry powder, Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable Extinguishing Media</b>	Do not use a solid water stream as it may scatter and spread fire.

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

<b>Special Hazard</b>	None in particular.
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### 5.3 Advice for firefighters

<b>Fire fighting measures</b>	Evacuate non-essential personnel. Move containers from fire area if you can do it without risk. Keep containers and surroundings cool with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.
<b>Special protective equipment for fire-fighters</b>	Wear self-contained breathing apparatus and protective suit.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Evacuate personnel to safe areas. Do not touch or walk through spilled material. Avoid contact with skin, eyes and clothing. Avoid breathing vapours or mists. Use personal protective equipment. Ensure adequate ventilation.

### 6.2 Environmental precautions

Should not be released into the environment. Prevent further leakage or spillage if safe to do so.

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

Large amounts: Prevent further leakage or spillage if safe to do so. Dike to collect large spills. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small amounts: Wipe up with absorbent material (e.g. cloth, fleece). After cleaning, flush away traces with water. Never return spills in original containers for re-use.

### 6.4 Reference to other sections

See sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Avoid breathing vapours or mists. Ensure adequate ventilation. Wear personal protective equipment. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

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

Store in accordance with local regulations. Keep containers tightly closed in a cool, well-ventilated place. Incompatible with oxidising agents.

### 7.3 Specific end use(s)

No information available.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**Exposure Limits** Contains no substances with occupational exposure limit values.

**Biological Limit Values** Not established.

**Recommended monitoring procedures** No information available.

**Derived No Effect Level (DNEL)** Not determined.

**Predicted No Effect Concentration (PNEC)**

Chemical name	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Freshwater sediment	Marine sediment	Soil	Oral
S-lactic acid	1.3 mg/L			10 mg/L				

**8.2 Exposure controls**

**Appropriate Engineering Controls** Ensure adequate ventilation, especially in confined areas Keep at temperatures below 200 °C / 392 °F Ensure that eyewash stations and safety showers are close to the workstation location See annex for more detailed information.

**Individual protection measures, such as personal protective equipment**

**Eye Protection**

Safety glasses with side-shields (EN166).

**Hand Protection**

Protective gloves (EN374): Butyl rubber. Glove thickness: 0.5 mm . Break through time: >8 hours. Unsuitable materials: Natural Rubber, Nitrile rubber, Fluorinated rubber, PVC.

**Skin and body protection**

Long sleeved clothing.

**Respiratory Protection**

In case of insufficient ventilation wear suitable respiratory equipment (APF).

**Recommended Filter Type**

A, Brown.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Workers must be trained in the proper use and handling of this product as required under applicable regulations. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before re-use.

**Environmental exposure controls**

The product should not be allowed to enter drains, water courses or the soil.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

<b>Physical state @20°C</b>	Liquid
<b>Appearance</b>	Clear
<b>Colour</b>	Colourless / Yellowish
<b>Odour</b>	Characteristic
<b>pH</b>	< 1.2 (@25 °C)
<b>Melting/freezing point</b>	No information available
<b>Boiling point/boiling range</b>	120-130 °C / 249-266 °F (@ 1013 hPa)
<b>Flash point</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable
<b>Flammability (solid, gas)</b>	No information available
<b>Flammability Limits in Air</b>	No information available
<b>Explosive limits</b>	Not applicable
<b>Vapour pressure</b>	Not applicable
<b>Vapour density</b>	Not applicable
<b>Relative density</b>	No information available
<b>Solubility</b>	
<b>Water solubility</b>	Miscible
<b>Partition coefficient (n-octanol/water)</b>	-0.62
<b>Autoignition temperature</b>	> 400 °C / > 752 °F (solution 93 % w/w)
<b>Decomposition temperature</b>	> 200 °C / > 392 °F
<b>Viscosity, dynamic</b>	5-60 mPa.s (@25°C)
<b>Explosive properties</b>	Not applicable
<b>Oxidising properties</b>	Not applicable

### 9.2 Other information

<b>Density</b>	1.2 g/cm <sup>3</sup>
<b>Surface tension</b>	44-50 mN/m (@ 50-90%)

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

None known.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No information available.

### 10.4 Conditions to avoid

Temperatures above 200 °C / 392 °F.

### 10.5 Incompatible materials

Oxidizing agents.

### 10.6 Hazardous decomposition products

None under normal use.

**SECTION 11: TOXICOLOGICAL INFORMATION**
**11.1 Information on toxicological effects**

<b>Acute Toxicity</b>	
<b>Ingestion</b>	No known effect.
<b>Skin Contact</b>	No known effect ( LD50 Dermal, Rabbit: >2000 mg/kg ).
<b>Inhalation</b>	No known effect.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
S-lactic acid	3543 mg/kg ( Rat, female ) 4936 mg/kg ( Rat, male )	>2000 mg/kg ( Rabbit )	>7.94 mg/L ( Rat ) 4h mist

**Skin Corrosion/Irritation** Mixture: Causes skin irritation.

**Serious eye damage/irritation** Mixture: Causes serious eye damage.

Chemical name	Skin Corrosion/Irritation	Serious eye damage/irritation
S-lactic acid	OECD 404, In vivo, Rabbit, solution (88 %) Result: Irritating	CEET, Ex vivo, solution (88 %) Result: Severe eye irritation

**Respiratory or skin sensitisation** No known effect.

**Germ Cell Mutagenicity** Not known to cause heritable genetic damage.

**Carcinogenicity** Contains no ingredient listed as a carcinogen.

**Reproductive Toxicity** Not known to cause birth defects or have a deleterious effect on a developing fetus. Not known to adversely affect reproductive functions and organs.

**STOT-single exposure** No known effect.

**STOT-repeated exposure** No known effect.

**Aspiration Hazard** No known effect.



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## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

Contains no substances known to be hazardous for the environment.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Micro-organisms	Toxicity to daphnia and other aquatic invertebrates
S-lactic acid	EC50: >2.8 g/L 72h Pseudokirchnerella subcapitata EC50: 3.5 g/L 72h Pseudokirchnerella subcapitata	LC50: 130 mg/L 96h Oncorhynchus mykiss LC50: 320 mg/L 96h Danio rerio	LC50: >88.2 mg/L 3h	EC50: 130 mg/L 48h Daphnia magna EC50: 250 mg/L 48h Daphnia magna

### 12.2 Persistence and degradability

Readily biodegradable.

### 12.3 Bioaccumulative potential

Does not bioaccumulate.

Chemical name	Log P <sub>ow</sub>	Bioconcentration factor (BCF)
S-lactic acid	-0.62	

### 12.4 Mobility in soil

No information available.

### 12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

### 12.6 Other adverse effects

No information available.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

**Waste from residues / unused products** Dispose of in accordance with local regulations.

**Contaminated Packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal.

## SECTION 14: TRANSPORT INFORMATION

According to: ADR, RID, ADN, IMDG, IATA/ICAO.

### 14.1 UN number

Not regulated.

### 14.2 UN proper shipping name

Not regulated.

### 14.3 Transport hazard class(es)

Not regulated.

### 14.4 Packing group

Not regulated.

### 14.5 Environmental hazards

Not applicable.

### 14.6 Special precautions for user

Not applicable.

### 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable.

## SECTION 15: REGULATORY INFORMATION

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

**Restrictions on use** None.

**Other Regulations** No information available.

### 15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance. See annex for more detailed information.

## SECTION 16: OTHER INFORMATION

<b>Full text of H-Statements referred to under sections 2 and 3</b>	H315 - Causes skin irritation H318 - Causes serious eye damage
<b>Revision note</b>	Indication of the changes made to the previous version of the SDS: Trade name, Toxicological information ( Skin irritation ).
<b>Training Advice</b>	Workers must be trained in the proper use and handling of this product as required under applicable regulations.
<b>Abbreviations and acronyms</b>	REACH: Registration, Evaluation, Authorisation and Restriction of Chemical substances EC: European Commission STOT: Specific Target Organ Toxicity PBT: Persistent, Bioaccumulative, Toxic vPvB: very Persistent and very Bioaccumulating PROC: Process Category ADR: Accord européen relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) ADN: Accord européen relatif au transport international des marchandises Dangereuses par voies de Navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways) IMDG: International Maritime Dangerous Goods Code ICAO: International Civil Aviation Organization
<b>SDS No.</b>	CO00006
<b>Subformat</b>	COEU

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006 and Regulation (EC) No. 2015/830. Label element according to Regulation (EC) No 1272/2008.

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

## READER'S GUIDE

The generic Exposure Scenario GES1 is covering following identified uses:

1. Use in agriculture, forestry, fishery
2. Use in mining
3. Use in mining without offshore industries
4. Industrial manufacturing
5. Manufacture of pulp, paper and paper products
6. Manufacture of bulk, large scale chemicals
7. Manufacture of fine chemicals
8. Manufacture of plastic products
9. Building and construction work
10. Health services
11. Formulation of preparations and/or re-packaging,
12. Manufacture of food products

Generic Exposure Scenario GES1: Production, transport and downstream use of lactic acid: acid is a non-toxic substance that is a basic metabolic and energetic building block in practically all life-forms, from bacteria to primates. It is not labeled for environmental effects or ecotoxicity, and is also not labeled for any human effects, with the exception of skin and eye irritation (Lactic acid is classified for skin as Xi; R38, GHS: Category 2, and for eyes as Xi; R41, GHS: Category 1). Note that the skin and eye irritation potential of lactic acid is a pH effect - buffered lactic acid, even up to 70% aqueous solutions is not irritating.

As such, no risk assessment for the environment is required, and no environmental exposure assessment is necessary. For human health, lactic acid is not labeled for any 'dose-effect' endpoint, and thus no quantitative risk assessment is necessary or possible.

Lactic acid is labeled for skin and eye irritation. Under the current classification and labeling requirements for preparations, preparations containing less than 10% lactic acid do not have to be classified and labeled for skin irritation, and preparations containing less than 5% lactic acid do not have to be classified for eye irritation.

No end use products are made from PURAC's lactic acid that contains more than 5% lactic acid, therefore no end use product has to be classified based solely on the presence of lactic acid.

Intermediate formulations and products, relevant in the preparation of any PURAC-supported end use product, such as aqueous dilutions of lactic acid, may contain more than 5% lactic acid, and thus may have to be labeled for irritation.

In all production, storage and transportation conditions and processes, regardless of use, where PURAC's lactic acid, pure or as dilutions or formulations containing  $\geq 5\%$  lactic acid, is handled, i.e. where there would be a potential for human exposure to a 'dangerous substance or preparation', Risk Management Measures are already prescribed, and enforced, that exclude any possible skin and eye exposure to lactic acid. In all identified downstream uses where lactic acid, and its dilutions or formulations containing  $\geq 5\%$  lactic acid are handled (such as the receipt of transported lactic acid, the storage of lactic acid, the introduction of lactic acid in any relevant process, the preparation, handling and storage of any intermediate dilution or formulation, all the way down to dilutions and products containing  $< 5\%$  lactic acid), i.e. where there would be a potential for human exposure to a 'dangerous substance or preparation', Risk Management Measures are already prescribed, and enforced, that exclude any possible skin and eye exposure to lactic acid.

As such, a generic exposure scenario for all identified uses of lactic acid can be defined:

- For the environment, no hazards are identified, and no exposure assessment is required.
- For human exposure, the only identified hazards are skin and eye irritation, and due to RMM, no exposure to lactic acid or its relevant dilutions is possible. Exposure is 0.

## 1. EXPOSURE SCENARIO

<b>Exposure scenario</b>	GES1
<b>Title</b>	Production, transport and downstream use of D-lactide (pure substance or $\geq 5\%$ in a mixture)
<b>Use descriptor</b>	
<b>Sector of use</b>	SU1, SU2a, SU2b, SU3, SU4, SU6b, SU8, SU9, SU10, SU19, SU20, SU21, SU22
<b>Environmental release categories</b>	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6d, ERC7, ERC8a, ERC8b, ERC8d, ERC8e, ERC8f, ERC9a, ERC9b, ERC10b
<b>Product category</b>	PC0, PC1, PC2, PC3, PC4, PC8, PC9a, PC9b, PC9c, PC12, PC13, PC14, PC15, PC17, PC19, PC20, PC21, PC24, PC25, PC28, PC29, PC31, PC32, PC34, PC35, PC36, PC37, PC38, PC39
<b>Process categories</b>	PROC0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC16, PROC17, PROC18, PROC19, PROC20, PROC21, PROC24, PROC26
<b>Article categories</b>	AC0, AC1, AC2, AC13

## 2. CONDITIONS OF USE AFFECTING EXPOSURE

### 2.1 Contributing Scenario - Environment

Not applicable.

## 2.2 Contributing Scenario - Worker & Consumer

### Product characteristics

**Physical state @20°C** Liquid @ STP, Vapour pressure <1 Pa.  
**Concentration of substance in product** Covers percentage substance in the product up to 100 % (unless stated differently).

**Frequency and duration of use** Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting worker exposure** Assumes a good basic standard of occupational hygiene is implemented.

**Work area** Indoor/outdoor use.

**Technical conditions and measures to control dispersion from source towards the worker** Conditions to avoid: Temperatures above 200 °C / 392 °F. Ensure adequate ventilation, especially in confined areas.

### Contributing scenarios

#### General measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Aerosol or mist formation: Use suitable breathing apparatus.

Use suitable eye protection ( Safety glasses with side-shields, EN 166 ).

#### General measures applicable to all activities

No other specific measures identified.

## 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

**Environment Exposure Estimation** L-(+)-Lactic acid is not classified as hazardous for environmental endpoints. A quantitative exposure assessment for the environment has not been conducted.

**Health Exposure Estimation** L-(+)-Lactic acid is classified as a skin and eye irritant, which requires a qualitative risk characterization of any dermal or eye exposures according to REACH guidance Chapter E. A quantitative assessment of dermal and eye exposures has not been conducted.

## 4. GUIDANCE TO DOWNSTREAM USER FOR EVALUATING EMPLOYEE WHETHER HE WORKS INSIDE THE BOUNDARIES SET BY THE ES

**Control of environmental exposure** Not applicable.

**Control of worker exposure** Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not enable the derivation of a DNEL for eye irritant effects. Risk management measures are based on qualitative risk characterization.

Available hazard data does not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.