

SAFETY DATA SHEET**L(+)-Lactic Acid**

Version	Revision Date:	SDS Number:	Date of last issue: 06/30/2017
2.0	11/27/23	100000000108	Date of first issue: 06/30/2017
US / EN			

SECTION 1. IDENTIFICATION

Product name	: L(+)-Lactic Acid
Substance name	: L(+)-lactic acid
Trade name	: L(+)-lactic acid aqueous solution
Molecular formula	: C3-H6-O3
Chemical identity	: S(+)-2-Hydroxypropanoic acid
CAS-No.	: 79-33-4
Chemical nature	: Mixture

Manufacturer or supplier's details**Details of the supplier of the safety data sheet**

Company	: Lab Alley LLC 22111 Highway 71 West, Suite 601 Spicewood, Texas 78669 Tel.: 512-668-9918
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Emergency telephone number

Emergency telephone number	: InfoTrac: 800-535-5053
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Recommended use of the chemical and restrictions on use

Recommended use	: Food/ feedstuff additives Personal care Pharmaceutical substance Cleaning agent Biocidal product Industrial use
Restrictions on use	: None known.

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200**

Eye irritation	: Category 1
Skin irritation	: Category 2

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GHS label elements

Hazard pictograms

:



Signal word

:

Danger

Hazard statements

:

H318 Causes serious eye damage.
H315 Causes skin irritation.

Precautionary statements

:

Prevention:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and 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.
P310 Immediately call a POISON CENTER/doctor.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332 + P313 If skin irritation occurs: Get medical advice/ attention.

P362 Take off contaminated clothing.

Hazards Not Otherwise Classified

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

:

Mixture

Substance name

:

L(+)-lactic acid

CAS-No.

:

79-33-4

Chemical nature

:

Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
L(+)-lactic acid	79-33-4	>= 50
Non-hazardous ingredients		
H2O	7732-18-5	<= 50

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SECTION 4. FIRST AID MEASURES

- | | |
|---|---|
| General advice | : Avoid inhalation, ingestion and contact with skin and eyes.
Consult a physician. |
| If inhaled | : Immediate medical attention is not required.
If breathed in, move person into fresh air.
If symptoms persist, call a physician.

If breathed in, move person into fresh air.
If symptoms persist, call a physician.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen. |
| In case of skin contact | : Immediate medical attention is not required.
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
If skin irritation persists, call a physician.

Take off contaminated clothing and shoes immediately.
If on skin, rinse well with water.
If on clothes, remove clothes. |
| In case of eye contact | : Immediate medical attention is not required.
Protect unharmed eye.
If easy to do, remove contact lens, if worn.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If eye irritation persists, consult a specialist.

If easy to do, remove contact lens, if worn.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If eye irritation persists, consult a specialist. |
| If swallowed | : Drink plenty of water.
If swallowed, DO NOT induce vomiting. |
| Most important symptoms and effects, both acute and delayed | : Severe eye irritation
Erythema
Skin disorders
Causes skin irritation.
Causes serious eye damage. |
| Protection of first-aiders | : Wear personal protective equipment. |
| Notes to physician | : Treat symptomatically. |

SECTION 5. FIREFIGHTING MEASURES

- | | |
|------------------------------|---|
| Suitable extinguishing media | : Water spray
Dry powder
Foam
Carbon dioxide (CO2) |
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- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.
Hazardous decomposition products may be formed under fire conditions (see section 10).
Exposure to decomposition products may be a hazard to health.
- Specific extinguishing methods : Standard procedure for chemical fires.
- Further information : Standard procedure for chemical fires.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
In the event of fire and/or explosion do not breathe fumes.
Use water spray to cool unopened containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
In the event of fire and/or explosion do not breathe fumes.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Wear fire resistant or flame retardant clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
Use personal protective equipment.
Ensure adequate ventilation.
Avoid inhalation of vapour or mist.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : Prevent further leakage or spillage if safe to do so.
Do not discharge large quantities of concentrated spills or residues into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Neutralize with lime milk or soda and flush with plenty of water.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Pick up and transfer to properly labelled containers.
Keep in suitable, closed containers for disposal.
Clean contaminated surface thoroughly.
- Use mechanical handling equipment.

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Keep in suitable, closed containers for disposal.
Clean contaminated floors and objects thoroughly while observing environmental regulations.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures : Avoid temperatures above 200°C.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Avoid contact with skin and eyes.
Do not breathe vapours or spray mist.
Wear personal protective equipment.

Conditions for safe storage : Store in original container.
Keep in properly labelled containers.
Keep container tightly closed in a dry and well-ventilated place.
Keep in an area equipped with acid resistant flooring.

Technical measures/Precautions : Keep away from direct sunlight.

Materials to avoid : Incompatible with bases.

Packaging material : Suitable material: Plastic container of HDPE, Stainless steel 316L

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Provide adequate ventilation.

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
Use NIOSH approved respiratory protection.

Hand protection
Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.

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Eye protection	: Safety glasses with side-shields Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Avoid breathing vapours, mist or gas. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Aqueous solution, viscous
Colour	: colourless, light yellow
Odour	: characteristic
Odour Threshold	: Not relevant
pH	: < 2 (77 °F)
Melting point/freezing point	: < -112 °F (ca. 1,013.25 hPa)
Boiling point/boiling range	: 230 - 266 °F
Flash point	: Not applicable (as aqueous solution)
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Not applicable
Upper explosion limit	: Not applicable
Lower explosion limit	: Not applicable
Vapour pressure	: ca. 0.004 hPa (68 °F)
Relative vapour density	: No data available
Relative density	: No data available
Density	: 1.0 - 1.25 g/cm3
Solubility(ies)	
Water solubility	: completely miscible

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Ignition temperature	: 752 °F
Decomposition temperature	: No data available
Viscosity	
Viscosity, dynamic	: 5 - 60 mPa.s (77 °F)
Viscosity, kinematic	: No data available
Explosive properties	: Not applicable
Oxidizing properties	: No data available
Surface tension	: 70.7 mN/m, 1 g/l, 20 °C
Molecular weight	: 90.08 g/mol
Dust explosion class	: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use. Hazardous decomposition products formed under fire conditions.
Conditions to avoid	: Temperature > 392 °F
Incompatible materials	: Bases Oxidizing agents
Hazardous decomposition products	: Build-up of dangerous/toxic fumes possible in cases of fire/high temperature. Carbon dioxide (CO ₂) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

L(+)-lactic acid:

Acute oral toxicity	: LD50 Oral (Rat, female): 3,543 mg/kg Test substance: Lactic acid
	: LD50 Oral (Rat, male): 4,936 mg/kg Test substance: Lactic acid
Acute inhalation toxicity	: LC50 (Rat, male and female): 7.94 mg/l

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Test substance: Lactic acid

Acute dermal toxicity : LD50 Dermal (Rabbit): > 2,000 mg/kg
Test substance: Lactic acid

Skin corrosion/irritation

Components:

L(+)-lactic acid:

Species: Rabbit
Assessment: Irritating to skin.
Test substance: Lactic acid

Serious eye damage/eye irritation

Components:

L(+)-lactic acid:

Species: chicken
Result: Severe irritation
Test substance: Lactic acid

Respiratory or skin sensitisation

Components:

L(+)-lactic acid:

Species: Guinea pig
Result: Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

L(+)-lactic acid:

Genotoxicity in vitro : Test substance: Lactic acid
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Components:

L(+)-lactic acid:

Species: Rat, (male and female)
Result: Animal testing did not show any carcinogenic effects.
Test substance: Calcium lactate

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STOT - single exposure

Components:

L(+)-lactic acid:
No data available

STOT - repeated exposure

Components:

L(+)-lactic acid:
No data available

Repeated dose toxicity

Components:

L(+)-lactic acid:

Species: **Rat**
LOAEL: **886 mg/kg**
Application Route: **Dermal**
Exposure time: **13 wk**
Number of exposures: **5 d/wk**
Dose: **886 mg/kg bw**
Assessment: **slight irritation**

Species: **Rat, male and female**
NOAEL: **5,000 mg/l**
Application Route: **Oral**
Exposure time: **13 wk**
Number of exposures: **1/d**
Dose: **5 %**
Test substance: **Calcium lactate**
Symptoms: **No adverse effects**

Aspiration toxicity

Components:

L(+)-lactic acid:
No data available

Experience with human exposure

Product:

Inhalation	:	Target Organs: Respiratory system Symptoms: No information available.
Skin contact	:	Target Organs: Skin Symptoms: May cause skin irritation in susceptible persons.
Eye contact	:	Target Organs: Eyes Symptoms: Redness, Itching

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Ingestion : Target Organs: Digestive organs
Symptoms: No information available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

L(+)-lactic acid:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 130 mg/l Exposure time: 96 h Test substance: Lactic acid
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 130 mg/l Exposure time: 48 h
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (algae)): > 2,8 Exposure time: 72 h NOEC (Pseudokirchneriella subcapitata (green algae)): 1,9 Exposure time: 70 h
Toxicity to fish (Chronic toxicity)	: LOEC (Fish (Oreochromus mossambica)): ca. 2.18 mg/l Exposure time: 90 d Test substance: Lactic acid
Toxicity to microorganisms	: EC50 (activated sludge): > 100 mg/l Exposure time: 3 h
Toxicity to terrestrial organisms	: LC50 (Colinus virginianus (Bobwhite quail)): > 2,250 mg/kg Exposure time: 14 d Test substance: Lactic acid

Persistence and degradability

Components:

L(+)-lactic acid:

Biodegradability	: Inoculum: activated sludge, non-adapted Biochemical oxygen demand Exposure time: 20 d Readily biodegradable. The 10 day time window criterion is not fulfilled.
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Biochemical Oxygen Demand (BOD)	: 450 mg/g Incubation time: 5 d 600 mg/g Incubation time: 20 d
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Chemical Oxygen Demand (COD)	: 900 mg/g
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Bioaccumulative potential

Components:

L(+)-lactic acid:

Bioaccumulation : The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

Partition coefficient: n-octanol/water : log Pow: **-0.72 (68 °F)**

Mobility in soil

Components:

L(+)-lactic acid:

Mobility : Method: **Calculation, Mackay Level III Fugacity Model**
After release, disperses through ground water.

Other adverse effects

Product:

Additional ecological information : No data available

Components:

L(+)-lactic acid:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of wastes in an approved waste disposal facility. In accordance with local and national regulations. Do not dispose of with domestic refuse. Do not dispose of waste into sewer.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

Not regulated as a dangerous good

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IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

National Regulations

DOT

Not regulated as a hazardous material

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

California Prop. 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA_12b : Not applicable

REACH : On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Indus-

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trial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 11/12/2018

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.