

## Product Information

### L(+)-Lactic Acid

Food Grade

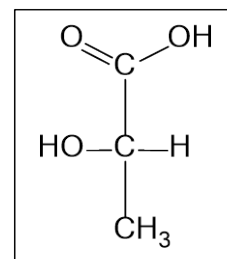
#### General Information

Lactic acid is an organic acid occurring naturally in the human body and in fermented foods. The commercial production of lactic acid is typically done by fermentation. There are two optical forms of lactic acid existing whereby Jungbunzlauer has chosen to produce pure L(+)-lactic acid by traditional fermentation of carbohydrates. L(+)-lactic acid is better metabolised.

Jungbunzlauer L(+)-lactic acid is a mild tasting acidity regulator with flavour enhancing and antibacterial and antiviral properties. It can be used in a wide range of food, personal care and chemical products. Jungbunzlauer L(+)-lactic acid is vegan and manufactured from renewable raw materials without the use of GMO.

#### Chemical Data

Chem. Nomenclature	S(+)-2-hydroxypropanoic acid
Chem. Formula	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>
Molecular weight	90.08 g/mol
pH (50%)	< 2
Density at 20°C	1.11 – 1.13 g/cm <sup>3</sup> (50 %)
	1.18 – 1.20 g/cm <sup>3</sup> (80 %)
	1.19 – 1.21 g/cm <sup>3</sup> (88 %)
	1.20 – 1.21 g/cm <sup>3</sup> (90 %)
EC No.	201-196-2 (general 200-018-0)
CAS No.	79-33-4 (general 50-21-5)
E-No.	E 270



#### Characteristics

Jungbunzlauer L(+)-lactic acid is a colourless to yellowish, nearly odourless, syrupy liquid with a mild acid taste. It is commercially available as aqueous solutions of various concentrations. These solutions are stable under normal storage conditions.

L(+)-lactic acid is non-toxic to human and the environment, but concentrated solutions of L(+)-lactic acid can cause skin corrosion and eye damage. They have thus to be labelled with a hazard pictogram and related statements. L(+)-lactic acid falls under the dangerous goods definition and carries the UN number 3265 (Corrosive liquid, acidic, organic, n.o.s. (lactic acid)).


L(+)-lactic acid is readily biodegradable.

#### Legal Aspects

In Europe, lactic acid is listed as a generally permitted food additive (E 270) and may be added to all foodstuffs, following the “quantum satis” principle, as long as no special regulation restricts the use.

The US Food and Drug Administration (FDA) affirmed lactic acid as GRAS (generally recognized as safe) substance and permitted the use in food except infant food with no limitation other than current good manufacturing practice for use as antimicrobial agent, curing or pickling agent, flavor enhancer, flavoring agent or adjuvant, pH control agent, solvent or vehicle (CFR § 184.1061).

L(+)-lactic acid is classified and labelled according to GHS (Globally Harmonized System), implemented by the European Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) as follows:

Pictogram:	Signal Word:	Hazard statement:	Precautionary statements:
	Danger	H314 Causes severe skin burns and eye damage. EUH071 Corrosive to the respiratory tract.	P260 Do not breathe vapours. P264 Wash hands thoroughly after handling. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. P301 + P330 + P331 + P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/ doctor. P303 + P361 + P353 + P310 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER/ doctor. P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if pre-sent and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor. P501 Dispose of contents/ container to an approved waste disposal plant.

### Packaging and Storage

Jungbunzlauer L(+)-lactic acid is currently supplied in bulk, in intermediate bulk containers (IBCs) with 1200 kg net weight (1100 kg net for 50% solution), in drums with 250 kg net weight (240 kg net for 50% solution) and small drums with 25 kg net weight. We recommend not to triple stack the pallets. Our L(+)-lactic acid packaging conforms to the UN packaging group III.

Jungbunzlauer guarantees a shelf life of 36 months from production date for L(+)-lactic acid if the product is stored in its original packaging at temperatures between 5 and 30 °C.

L(+)-lactic acid has to be stored as corrosive material. The relevant regulations for storing hazardous materials are not harmonised but defined individually by each country (e.g. Code de l'Environnement/ICPE in France, GefStoffVO/TRGS 510 in Germany, PGS15 in the Netherlands, MIEAPQ in Spain, COSHH in the UK). Please check your local requirements.

### Standards and Certificates

Jungbunzlauer L(+)-lactic acid is Halal certified. A Halal certificate is available on request.

Jungbunzlauer L(+)-lactic acid is Kosher certified. A Kosher certificate is available on request. The Kosher certified Jungbunzlauer products carry a Kosher U on the original packaging.

Kosher product in bulk is supplied as follows:

- For deliveries in bulk tank truck there is a specific (Kosher) material number, since the tank truck for transport of bulk Kosher material has to be maintained by Kosher wash.

**Unique Formulation Identifier (UFI)**

L(+)-Lactic Acid 50%	Y51V-4JJG-T000-W2SX
L(+)-Lactic Acid 80%	6R3V-AJ8D-Y00U-RA8V
L(+)-Lactic Acid 88%	JF4V-CJSK-E00T-11XD
L(+)-Lactic Acid 90%	5M4V-DJ5D-100S-CR3H

## Specification

Jungbunzlauer L(+)-lactic acid food grade is supplied in accordance with the requirements of Commission Regulation (EU) No 231/2012 and of the latest edition of the Food Chemicals Codex (FCC).

Jungbunzlauer parameters and limits	50%	80%	80% heat stable	88%	88% heat stable	90% heat stable
Assay	50.0 – 51.0 %	79.5 – 80.5 %	79.5 – 80.5 %	87.5 – 88.5 %	88.0 – 89.0 %	89.5 – 90.5 %
Stereochemical purity (L-isomer)	min. 97 %					
Colour fresh	max. 50 apha	max. 50 apha	max. 35 apha	max. 50 apha	max. 35 apha	max. 35 apha
Colour (6 months, 25°C)	max. 50 apha	max. 50 apha	not specified	max. 50 apha	not specified	not specified
Colour (after heating at 200°C, 2h)	not specified	not specified	max. 50 apha	not specified	max. 50 apha	max. 50 apha
Identification	conforms					
Density (20°C)	1.11 – 1.13 g/cm <sup>3</sup>	1.18 – 1.20 g/cm <sup>3</sup>		1.19 – 1.21 g/cm <sup>3</sup>		1.20 – 1.21 g/cm <sup>3</sup>
Sulphated Ash	max. 0.05 % w/w	max. 0.1 % w/w	max. 0.05 % w/w	max. 0.1 % w/w	max. 0.05 % w/w	max. 0.05 % w/w
Chloride	max. 10 mg/kg	max. 20 mg/kg				
Sulphate	max. 100 mg/kg	max. 100 mg/kg	max. 20 mg/kg	max. 100 mg/kg	max. 20 mg/kg	max. 20 mg/kg
Cyanide	max. 5 mg/kg	max. 5 mg/kg	max. 1 mg/kg	max. 5 mg/kg	max. 1 mg/kg	max. 1 mg/kg
Iron	max. 5 mg/kg	max. 10 mg/kg	max. 5 mg/kg	max. 10 mg/kg	max. 5 mg/kg	max. 5 mg/kg
Arsenic	max. 1 mg/kg					
Lead	max. 0.5 mg/kg					
Mercury	max. 0.5 mg/kg	max. 1 mg/kg				
Calcium	max. 20 mg/kg					
Citric, oxalic, phosphoric, or tartaric acid	conforms					
Readily carbonisable substances	conforms					
Reducing sugars	conforms					

The information contained herein has been compiled carefully to the best of our knowledge. We do not accept any responsibility or liability for the information given in respect to the described product. Our product has to be applied under full and own responsibility of the user, especially in respect to any patent rights of others and any law or government regulation.