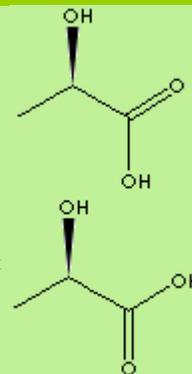


LACTIC ACID

PRODUCT IDENTIFICATION

CAS NO	50-21-5, 79-33-4 (L), 10326-41-7 (D)
EINECS NO.	200-018-0
FORMULA	CH ₃ CH(OH)COOH
MOL WT.	90.08
H.S. CODE	2918.11
TOXICITY	Oral rat LD50: 3543 mg/kg
SYNONYMS	2-Hydroxypropanoic acid; 1-Hydroxyethanecarboxylic acid; Ethylidenelactic acid; alpha-Hydroxypropionic Acid; Milchsäure (Dutch); ácido lactico (Spanish); Aacide lactique (French);



DERIVATION

CLASSIFICATION

PHYSICAL AND CHEMICAL PROPERTIES (99%)

PHYSICAL STATE	Colorless to slightly yellow, syrupy liquid
MELTING POINT	17 C
BOILING POINT	122 C
SPECIFIC GRAVITY	1.2
SOLUBILITY IN WATER	Miscible
pH	
VAPOR DENSITY	
REFRACTIVE INDEX	
NFPA RATINGS	Health: 3 Flammability: 1 Reactivity: 1
AUTOIGNITION	
FLASH POINT	112 C
STABILITY	Stable under ordinary conditions

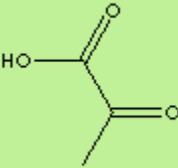
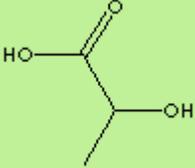
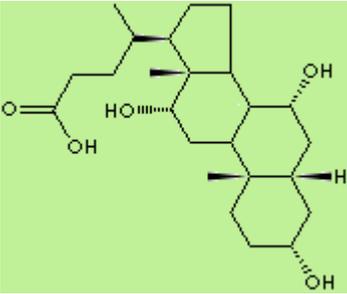
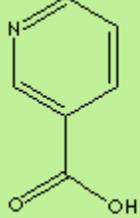
GENERAL DESCRIPTION & APPLICATIONS

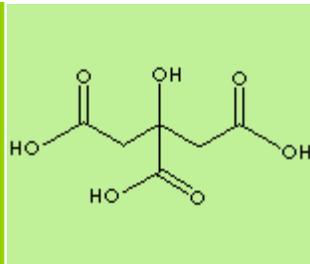
Lactic acid (chemically, alpha or 2-Hydroxypropionic acid) takes roles in metabolic processes in the body; in red blood and in skeletal muscle tissues as a product of glucose and glycogen metabolism. Lactic acid is an "alpha hydroxy acid: which has a hydroxyl group on the carbon atom next to the acid group. If the hydroxy group is on the second carbon next to the acid group, it is called beta-hydroxy acid. Lactic acid is converted in vivo to pyruvic acid (an alpha keto acid) which occurs as an intermediate product in carbohydrate and protein metabolism in the body. Lactic acid occurs as two optical isomers since the central carbon atom is bound to four different groups; a dextro and a levo form (or an inactive racemic mixture of the two); only the levo form takes part in animal metabolism. Lactic acid is present in sour milk and dairy products such as cheese, yogurt, and koumiss, leban, wines. Lactic acid causes tooth decay since lactic acid bacteria operates in the mouth. Although it can be prepared by chemical synthesis, production of lactic acid by fermentation of glucose and other sugar substances in the presence of alkaline such as lime or calcium carbonate is a less expensive method. The six-carbon glucose molecule is broken down to two molecules of the three-carbon compounds (lactic acid), during this anaerobic condition. Synthetic lactic acid is used commercially in tanning leather and dyeing wool; as a flavouring agent and preservative in food processing and carbonated beverages; and as a raw material in making plastics, solvents, inks, and lacquers; as a catalyst in numerous chemical processes. Lactic Acid is available as aqueous solutions of various concentrations, usually 22 - 85 percent (pure lactic acid is a colourless,

crystalline substance.) Some examples of lactates (salts or esters of lactic acid) are:

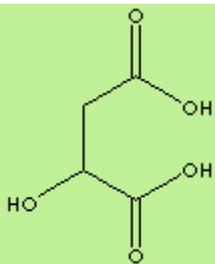
- Ammonium Lactate ($\text{NH}_4\text{C}_3\text{H}_5\text{O}_3$, CAS RN: 515-98-0): clear to yellow, syrupy liquid used in electroplating, in finishing leather and as humectant for food, pharmaceutical, and cosmetics.
- Butyl Lactate ($\text{CH}_3\text{CHOHCOOC}_4\text{H}_9$, CAS RN:138-22-7): a clear liquid: nontoxic, miscible with many solvents; used as a solvent for varnish, lacquers, resins and gums, used in making paints, inks, dry cleaning fluid, flavoring and as a chemical intermediate.
- Calcium Lactate Pentahydrate [$\text{Ca}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 5\text{H}_2\text{O}$, CAS RN: 814-80-2] : white crystals; soluble in water; used as a calcium source; administered orally in the treatment of calcium deficiency; as a blood coagulant.
- Ethyl Lactate ($\text{CH}_3\text{CHOHCOOC}_2\text{H}_5$, CAS RN: 97-64-3): clear liquid with mild odor; boiling point 154 C; miscible with alcohols, ketones, esters, and hydrocarbons as well as with water; used in pharmaceutical preparations, feed additive, as a flavoring (odor description: sweet butter, coconut, fruity, creamy dairy, butterscotch) and as a solvent for cellulose compounds such as nitrocellulose, cellulose acetate, and cellulose ethers.
- Magnesium Lactate Trihydrate [$\text{Mg}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 3\text{H}_2\text{O}$, CAS RN: 18917-93-6]: white crystals with bitter taste; soluble in water, slightly soluble in alcohol; used in medicine and as an electrolyte replenisher.
- Manganese Lactate Trihydrate [$\text{Mn}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 3\text{H}_2\text{O}$]: pale red crystals; insoluble in water and alcohol; used in medicine.
- Mercuric Lactate [$\text{Hg}(\text{C}_3\text{H}_5\text{O}_3)_2$]: poisonous white powder that decomposes when heated; soluble in water; used in medicine.
- Methyl Lactate ($\text{CH}_3\text{CHCHCOOCH}_3$): clear liquid with mild odor; boiling point 145 C; miscible with alcohols, ketones, esters, and hydrocarbons as well as with water; used in pharmaceutical preparations, feed additive, as a flavoring and as a solvent for cellulose compounds such as nitrocellulose, cellulose acetate, and cellulose ethers.
- Sodium Lactate ($\text{CH}_3\text{CHOHCOONa}$, CAS RN: 72-17-3) clear to yellow, hygroscopic syrupy liquid; soluble in water; melting point 17 C; used in medicine, in antifreeze, and hygroscopic agent and as a corrosion inhibitor.
- Zinc Lactate ($\text{Zn}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 2\text{H}_2\text{O}$, CAS RN: 16039-53-5): white crystals; used as an additive in toothpaste and food; preparation of drugs.

EXAMPLES OF NATURALLY OCCURRING CARBOXYLIC ACIDS
(excluding fatty acids)

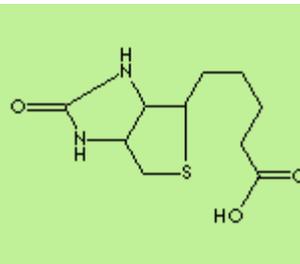
Pyruvic acid	Lactic Acid	Cholic acid	Nicotinic acid
			
metabolic intermediate	metabolic intermediate	from bile	vitamin B
Citric acid	Malic Acid	Biotin	Abietic acid



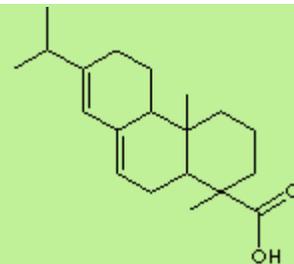
in plants



in fruits



cell growth factor



pine rosin

SALES SPECIFICATION

FCC IV 80 GRADE

APPEARANCE Clear to slightly yellow liquid

PURITY 80% min

CHLORIDE 20ppm max

SULFATE 0.01% max

RESIDUE ON IGNITION 0.1% max

Fe 10ppm max

As 1ppm max

HEAVY METALS 10ppm max

TRANSPORTATION

PACKING 25kgs in plastic drum, 18mts in container

HAZARD CLASS 8 (Packing group: II)

UN NO. 3265

OTHER INFORMATION

Hazard Symbols: O C, Risk Phrases: 35/36/37/38/8, Safety Phrases: 2/23/24/25/26/27/28B/45