



3050 Spruce Street  
Saint Louis, Missouri 63103 USA  
Telephone 800-325-5832 • (314) 771-5765  
Fax (314) 286-7828  
email: techserv@sia.com  
sigma-aldrich.com

## Product Information

### L(+)-Lactic acid

Product Number **L 1750**  
Storage Temperature 2-8 °C

#### Product Description

Molecular Formula:  $C_3H_6O_3$   
Molecular Weight: 90.08  
CAS Number: 79-33-4  
 $pK_a$ : 3.73 (25 °C)<sup>1</sup>; 3.79 (25 °C)<sup>2</sup>  
Melting point: 53-54 °C<sup>1</sup>  
Specific rotation: +2.67° (c= 2.51 in water at 15 °C)<sup>1</sup>;  
+2.6° (c= 2.5 in water at 21-22 °C)<sup>2</sup>  
Synonyms: dextrorotatory lactic acid; d-lactic acid;  
sarcolactic acid; paralactic acid.

This product is named L-lactic acid because the absolute configuration is related to L-glyceraldehyde. However, since it is dextrorotatory, it can also be called d-lactic acid. The complete name for this compound, showing both absolute configuration and rotation, is L-(+)-lactic acid. Most of the salts of L-lactic acid are levorotatory.<sup>2</sup>

L-lactic acid occurs in the blood and muscle fluid of man and animals. The lactic acid concentration increases in muscle and blood after vigorous activity. It is also present in other organs including liver, kidney, and thymus gland, and other body fluids including amniotic fluid.<sup>2</sup>

A review article on L-lactic acid has been published.<sup>3</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

The product is soluble in water (100 mg/ml), yielding a clear, colorless solution.

#### Storage/Stability

A freshly prepared solution of lactic acid, free acid (50 mg/ml) contains little or no polymer. A 15% solution contains 0.5% polymer, and a 30% solution will contain 1% polymer. Polymerization is relatively slow even at elevated temperatures (100 °C) and high concentrations (greater than 80%). Dimers and trimers form over a period of hours; more than a day is required for formation of higher polymers. At low temperatures and concentrations, polymer formation should proceed much more slowly.

#### References

1. Data for Biochemical Research, 3rd ed., Dawson, R.M.C. et al. Eds. (Clarendon Press, Oxford, 1986) pp. 44-45.
2. The Merck Index, 12th ed., Entry# 5350.
3. Dunlop, Chemistry and Metabolism of L- and D-Lactic Acids, Ann. N.Y. Acad. Sci., **119(3)**, 851-1165 (1965).

IRB/NSB 1/03

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.