

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2023-11-21 14:39:18  
 Date of Next Testing: 2027-11-20 14:39:18  
 Product Name: **L-Lactic Acid**  
 CAS Number: 79-33-4  
 Specifications & Purity: Chiral grade, 90%  
 Lot #: K2316059  
 SKU #: **L122090**  
**Analysis:** **159906**  
 Storage Temperature: Store at 2-8°C, Argon charged

Parameter	Limit Values	Result
Methanol(CH <sub>3</sub> OH)	0-0.2 (%)	0.20 %
Chloride	0-0.001 (%)	0.00 %
(As)Arsenic	0-0.0001 (%)	0.00 %
Purity(Neutralization titration)	89.5-110.5 (%)	90.40 %
Sulfate(SO <sub>4</sub> <sup>2-</sup> )	0-0.001 (%)	0.00 %
Heavy metals	0-0.0005 (%)	0.00 %
Ignition Residue	0-0.05 (%)	0.01 %
Density (20°C)	1.2-1.22 (g/ml)	1.21 g/ml
Cyanide	0-0.0001 (%)	0.00 %
Iron(Fe)	0-0.0005 (%)	0.00 %
Optical purity	99.5-100 (%)	99.80 %
Calcium(Ca)	0-0.0001 (%)	0.00 %
Refractive index n <sub>20</sub> /D	1.426-1.431	1.43
Specific Rotation [α] <sub>20</sub> /D(c=2.5 in 1.5mol/L NaOH sol.)	-15--10 (°)	-11.20 °
Mercury	0-1 (ppm)	0.51 ppm
Lead(Pb)	< 2.0 (ppm)	1.90 ppm
Appearance (L122090)	Colorless Liquid	Colorless liquid
Citric acid, oxalic acid, tartaric acid, and phosphoric acid	is not muddy	is not muddy
Easy carbon compounds	does not change to dark gray	does not change to dark gray
Identification (Acidic aqueous solution)	lactate positive reaction	lactate positive reaction
Reducing sugars	No red precipitate	No red precipitate
The ether insolubles	by EP	by EP
Volatile fatty acids	passes test	Passes test



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A handwritten signature in black ink that reads "John Su".

John Su  
QA & QC Manager