

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2023-09-07 16:15:55  
 Date of Next Testing: 2027-09-06 16:15:55  
 Product Name: **L-Serine**  
 CAS Number: 56-45-1  
 Specifications & Purity: Animal Free, USP, Moligand™, Ph.Eur., ≥98.5%  
 Lot #: H2331284  
 SKU #: **S137887**  
 Version: **3**  
 Analysis #: **257380**  
 Storage Temperature: Protected from light, Room temperature

Parameter	Limit Values	Result
Chloride	0-0.02 (%)	0.01200 %
Sulfate(SO42-)	0-0.02 (%)	0.00800 %
Iron(Fe)	0-10 (ppm)	0.00000 ppm
Heavy metals	0-10 (ppm)	0.00000 ppm
Loss on drying	0-0.2 (%)	0.12120 %
Ignition Residue(Ash)	0-0.1 (%)	0.00000 %
(As)Arsenic	0-1 (ppm)	0.00000 ppm
Ammonia (NH4)	0-0.02 (%)	0.00300 %
Assay(Nonaqueous Titration anhydrous)	98.5-101.5 (%)	98.73000 %
Specific Rotation(25°C, C = 10 in 2 M HCl, USP)	14-15.6 (°)	15.57000 °
Specific rotation(20°C, C = 10 in 2 M HCl, EP)	14.4-15.5 (°)	15.41000 °
Appearance (S137887)	White crystals or Crystalline powder	White crystals or crystalline powder
Origin	non-animal source	non-animal source
Solubility in H2O , Colorless Clear, 0.5 g to 10 ml of H2O	pass	Pass
Proton NMR spectrum	Conforms to structure	Conforms to Structure



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A handwritten signature in black ink that reads "John Su". The signature is written in a cursive, flowing style.

John Su  
QA & QC Manager