

## Certificate of Analysis

Date of Testing: 2023-09-14 13:47:23  
 Date of Next Testing: 2027-09-13 13:47:23  
 Product Name: **L(+)-Glutamic acid**  
 CAS Number: 56-86-0  
 Specifications & Purity: from non-animal source,EP,JP,USP ; for cell culture,98.5 to 101.0%  
 Lot #: I2308625  
 SKU #: **G107510**  
 Analysis: **251746**

Parameter	Limit Values	Result
(As)Arsenic	0-1 (ppm)	0.30 ppm
Sulfate(SO42-)	0-0.02 (%)	0.01 %
PH test	3-3.5	3.30
Ammonia (NH4)	0-0.02 (%)	0.01 %
Endonuclease Detection	0-0.1 (EU/g)	0.05 EU/g
Iron(Fe)	0-10 (ppm)	0.00 ppm
Ignition Residue (as sulfate)	0-0.1 (%)	0.01 %
Chloride	0-0.02 (%)	0.01 %
Heavy metal (as Pb)	0-10 (ppm)	0.00 ppm
Specific Rotation [α] <sub>20</sub> /D(c=10 in 2N HCl)	31.5-32.5 (°)	31.51°
Loss on drying	0-0.1 (%)	0.03 %
Assay(dry basis)	98.5-101 (%)	99.52 %
Appearance (G107510)	White powder	White powder
Ninhydrin-positive substances (other amino acids)	Conforms	Conforms
Residual solvents	complies	complies
Solubility,Colorless , Clear , 1.0 g to 10 ml of 2 M HCl	pass	Pass
Cell Culture Test	pass	Pass
Infrared 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