

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

Certificate of Analysis

Date of Testing: 2023-10-25 15:27:43
 Date of Next Testing: 2027-10-24 15:27:43
 Product Name: **L(+)-Glutamic acid**
 CAS Number: 56-86-0
 Specifications & Purity: Ultra pure, ≥99.5%(NT)
 Lot #: J2320398
 SKU #: **G103979**
Analysis: 285021

Parameter	Limit Values	Result
Nickel(Ni)	0-5 (ppm)	0.00 ppm
Ammonia (NH ₄)	0-0.02 (%)	0.01 %
Chloride (Cl ⁻)	0-0.02 (%)	0.01 %
Calcium(Ca)	0-200 (ppm)	22.06 ppm
Ignition Residue (as sulfate)	0-0.05 (%)	0.01 %
Cadmium(Cd)	0-5 (ppm)	2.15 ppm
Zinc(Zn)	0-5 (ppm)	3.10 ppm
Iron(Fe)	0-5 (ppm)	2.10 ppm
Potassium(K)	0-50 (ppm)	0.00 ppm
UV Absorbance 260nm	0-0.1	0.00
Bismuth(Bi)	0-5 (ppm)	0.03 ppm
UV Absorbance 280nm	0-0.1	0.00
Magnesium(Mg)	0-5 (ppm)	0.03 ppm
Lithium(Li)	0-5 (ppm)	0.01 ppm
Barium(Ba)	0-5 (ppm)	1.03 ppm
Purity((NT)	99.5-100.5 (%)	100.30 %
Sulfate(SO ₄ ²⁻)	0-200 (ppm)	23.90 ppm
Sodium(Na)	0-200 (ppm)	12.64 ppm
Manganese(Mn)	0-5	0.00
Aluminum(Al)	0-5 (ppm)	0.04 ppm
Cobalt(Co)	0-5 (ppm)	0.00 ppm
(Pb)Lead	0-5 (ppm)	1.00 ppm
Molybdenum(Mo)	0-5 (ppm)	0.00 ppm
Chromium(Cr)	0-5 (ppm)	0.21 ppm
Strontium(Sr)	0-5 (ppm)	0.01 ppm
Copper(Cu)	0-5 (ppm)	0.03 ppm
foreign amino acids	0-0.5 (%)	0.30 %

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Parameter	Limit Values	Result
Specific Rotation $[\alpha]_{20/D}(c=5 \text{ in } 5 \text{ M HCl})$	30.5-32.5 (°)	32.00°
Loss on drying	0-0.5 (%)	0.07%
Infrared spectrum	Conforms to Structure	Conforms to Structure
Insoluble matter	pass	Pass
$\lambda, 1 \text{ M in } 1 \text{ M HCl}$	Pass	Pass
Appearance (G103979)	white powder to crystal	White powder to crystal
Solubility 1M HCl , soluble 1 M at 20°C, clear, colorless	pass	Pass

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

John Su
QA & QC Manager