

## Certificate of Analysis

Date of Testing: 2022-01-07 07:31:18  
 Date of Next Testing: 2026-01-06 07:29:55  
 Product Name: **L-Threonine**  
 CAS Number: 72-19-5  
 Specifications & Purity: from non-animal source,EP,JP,USP ; for cell culture,99.0-101.0%  
 Lot #: B2311384  
 SKU #: **T108222**  
**Analysis: 064806**

Parameter	Limit Values	Result
Specific Rotation [a] <sub>20</sub> /D(c=6 in H <sub>2</sub> O)	-29--27.6 (°)	-28.46°
Purity(as dry basis)	99-101 (%)	99.69%
PH test (USP)	5-6.5	5.64
Specific Rotation [a] <sub>25</sub> /D(c=6 in H <sub>2</sub> O)	-29.1--26.7 (°)	-28.41°
Loss on drying	0-0.2 (%)	0.15%
(As)Arsenic	0-1 (ppm)	0.00 ppm
Ammonia (NH <sub>4</sub> )	0-0.02 (%)	0.01%
Iron(Fe)	0-10 (ppm)	0.41 ppm
Heavy metals	0-10 (ppm)	1.45 ppm
Chloride (Cl <sup>-</sup> )	0-0.02 (%)	0.01%
Sulfate(SO <sub>4</sub> <sup>2-</sup> )	0-0.02 (%)	0.01%
Ignition Residue	0-0.1 (%)	0.10%
Appearance (T108222)	White Powder or Crystals	White Powder or Crystals
Cell Culture Test	pass	Pass
Infrared spectrum	Conforms to Structure	Conforms to Structure
Ninhydrin-positive substances (other amino acids)	Conforms	Conforms
Origin	non-animal source	non-animal source
Residual solvents	complies	complies
Solubility in H <sub>2</sub> O , Colorless,Clear,100 mg/mL, H <sub>2</sub> O	pass	Pass



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

John Su  
QA & QC Manager