

## Certificate of Analysis

Date of Testing: 2022-07-29 00:53:36  
 Date of Next Testing: 2026-07-28 00:52:34  
 Product Name: **L-Tryptophan**  
 CAS Number: 73-22-3  
 Specifications & Purity: from non-animal source, meets EP, JP, USP testing specifications, for cell culture, 99.0-101.0%  
 Lot #: K2308182  
 SKU #: **T118579**  
 Analysis: **118839**

Parameter	Limit Values	Result
Ammonia (NH <sub>4</sub> )	0-0.02 (%)	0.01 %
Chloride	0-0.02 (%)	0.01 %
PH test(1% in water)	3-3.5	3.35
(As)Arsenic	0-1 (ppm)	0.00 ppm
Iron(Fe)	0-20 (ppm)	12.52 ppm
Heavy metals	0-10 (ppm)	0.00 ppm
Sulfate(SO <sub>4</sub> <sup>2-</sup> )	0-0.02 (%)	0.02 %
Assay(dry basis)	99-100.5 (%)	100.15 %
Specific Rotation [α] <sub>20</sub> /D(0.1g /10mL 1M HCl)EP and JP	-32.5--30.5 (°)	-31.62 °
Ignition Residue	0-0.1 (%)	0.07 %
Loss on drying	0-0.1 (%)	0.03 %
Endotoxin Assay	0-1 (EU/mg)	0.56 EU/mg
Specific Rotation [α] <sub>20</sub> /D(c=1 H <sub>2</sub> O)	29.4-32.8 (°)	-29.46 °
Appearance (T118579)	white to yellow crystals,powder,crystalline powder	white to yellow crystals,powder,crystalline powder
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,Clear , 0.5 g to 20 mL of 2M HCl	pass	Pass



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

John Su  
QA & QC Manager