

# BaseBulk

## CERTIFICATE OF ANALYSIS

<b>Product name</b>	L-THREONINE
<b>Standards</b>	EP5, USP29, AJI97
<b>Batch / Lot number</b>	CP3524030701
<b>Manufacturer</b>	35ZSBZ
<b>Manufactured (Date)</b>	07/03/2024
<b>Expiration (Date)</b>	06/03/2027
<b>Quantity</b>	5.000 Kg

### Physical & Chemical Characteristics — AJI97

<b>Analysis Item</b>	<b>Specification</b>	<b>Result</b>
Identification (Infrared Absorption)	Qualified	Qualified
Specific rotation [ $\alpha$ ]D20	-27.6° to -29.0°	-28.0°
State of solution (Transmittance)	Clear and colorless; not less than 98.0%	99.0%
Chloride (Cl)	Not more than 0.020%	<0.02%
Ammonium (NH <sub>4</sub> )	Not more than 0.02%	<0.02%
Sulfate (SO <sub>4</sub> )	Not more than 0.020%	<0.02%
Iron (Fe)	Not more than 10 ppm	<10 ppm
Heavy metals (Pb)	Not more than 10 ppm	<10 ppm
Arsenic (As <sub>2</sub> O <sub>3</sub> )	Not more than 1 ppm	<1 ppm
Other amino acids	Conforms	Qualified
Loss on drying	Not more than 0.20%	0.1%
Residue on ignition	Not more than 0.10%	0.05%
Assay	99.0% to 101.0%	99.3%
pH	5.2 to 6.2	5.67

### Physical & Chemical Characteristics — EP5

<b>Analysis Item</b>	<b>Specification</b>	<b>Result</b>
Characters	White or almost white crystalline powder or shiny flakes	Qualified
Identification	As per EP5 (Chemical examine & Infrared Absorption)	Qualified

Appearance of solution	Clear and not more intensely coloured than reference solution	Qualified
pH	5.0 to 6.5	5.67
Specific rotation	-27.6° to -29.0°	-28.0°
Ninhydrin-positive substances	Examine by thin-layer chromatography	Qualified
Chlorides	Not more than 200 ppm	<200 ppm
Sulphates	Not more than 300 ppm	<300 ppm
Ammonium	Not more than 200 ppm	<200 ppm
Iron (Fe)	Not more than 10 ppm	<10 ppm
Heavy metals (Pb)	Not more than 10 ppm	<10 ppm
Loss on drying	Not more than 0.5%	0.1%
Sulphated ash	Not more than 0.1%	0.05%
Assay	99.0% to 101.0%	99.3%

### Physical & Chemical Characteristics — USP29

Analysis Item	Specification	Result
Identification (Infrared Absorption)	Qualified	Qualified
Specific rotation	-26.7° to -29.1°	-28.0°
pH	5.0 to 6.5	5.67
Loss on drying	Not more than 0.2%	0.1%
Residue on ignition	Not more than 0.4%	0.05%
Chloride	Not more than 0.05%	<0.02%
Sulphate	Not more than 0.03%	<0.03%
Iron	Not more than 0.003%	<0.001%
Heavy Metals	Not more than 0.0015%	<0.001%
Chromatographic purity (TLC)	As per USP29	Qualified
Individual impurity	<0.5%	<0.5%
Total impurity	<2.0%	<2.0%
Organic volatile impurities	Meets the requirements	Qualified
Residual Solvents	Meets the requirements	Qualified
Assay	98.5% to 101.5%	99.3%

### Heavy Metals — Special Specification (EU)

Analysis Item	Specification	Result
Arsenic	Less than 2 ppm	<1 ppm
Lead	Less than 3 ppm	<2 ppm
Mercury	Less than 0.1 ppm	<0.1 ppm
Cadmium	Less than 1 ppm	<1 ppm

Conclusion: Material conforms to the AJI97 EP5 USP29 Standard.