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## Certificate of Analysis

**Product** L-Lysine Monohydrochloride  
**Production Date** 2018.01.21  
**Expiration Date** 2020.01.20  
**Lot Number** IEAF180121  
**Quantity** 1,225kgs  
**Country of Origin** Ningbo, China

Analysis Item	Specification	Method	Result
Characters, Appearance	White or almost white, crystalline powder or colourless crystals	-	White colourless crystals
Characters, Solubility	Freely soluble in water, very slightly soluble in alcohol	-	conform
Identification	Infrared absorption	USP 39 <197K>	conform
Assay	NLT 98.5% and NMT 101.0%	USP 39 <541>	100.28%
Residue on Ignition (Sulfated Ash)	NMT 0.1%	USP 39 <281>	0.06%
Chloride	19.0 ~ 19.6%	USP 39 <541>	19.47%
Sulfate	NMT 0.03%	USP 39 <221>	< 0.03%
Ammonium	NMT 0.02%	AJI 97	< 0.02%
Iron	NMT 10 ppm	USP 39 <241>	< 10 ppm
Lead	NMT 1 ppm	USP 39 <233>	< 1 ppm
Arsenic	NMT 0.5 ppm	USP 39 <233>	< 0.5 ppm
Cadmium	NMT 0.5 ppm	USP 39 <233>	< 0.5 ppm
Mercury	NMT 0.1 ppm	USP 39 <261>	< 0.1 ppm
Heavy Metals	NMT 10 ppm	USP 39 <231>	< 10 ppm
Individual Impurities (Ninhydrin Positive)	NMT 0.2%	USP 39 <621>	< 0.2%
Total Impurities (Ninhydrin Positive)	NMT 1.0%	USP 39 <621>	< 1.0%
Optical Rotation	+20.4° to +21.4° (t = 25°C)	USP 39 <781S>	+20.68°
pH	5.0 ~ 6.0	AJI 97	5.76
Loss on Drying	NMT 0.4%	USP 39 <731>	0.13%
Total viable count	NMT 1000 cfu/g	USP 39 <2021>	< 1000 cfu/g
Yeast & mould	NMT 100 cfu/g	USP 39 <2021>	< 100 cfu/g
Enterobacteriaceae	Negative/10g	USP 39 <2021>	Negative
Salmonella sp.	Negative/10g	USP 39 <2022>	Negative
Coliforms bacteria	Negative/g	USP 39 <2022>	Negative
Escherichia coli	Negative/g	USP 39 <2022>	Negative
Staphylococcus aureus	Negative/g	USP 39 <2022>	Negative
Bacillus sp.	Negative/g	USP 39 <2022>	Negative
Clostridium sp.	Negative/g	USP 39 <2022>	Negative

This product meets quality requirements of USP39,FCC10 monographs.

Store in dry conditions and fresh place in sealed or closed container that is to be protected from water, sunlight and heat.

Avoid direct contact with floor and any source of combustion.

Shelf life: Recommend usage within 2 years from date of production



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