

### **CERTIFICATE OF ANALYSIS**

Product Name	L-Valine powder	Batch Number	010052200917
Package	25.0kg per drum	Manufacture Date	Sept 17, 2020
CAS Number	72-18-4	Best Used Before	Sept 16, 2022

<b>Items</b>	<b>Specifications</b>	<b>Results</b>
Appearance	White crystals or crystalline powder	Conforms
Identification	Infrared Absorption	Conforms
Specific rotation $[\alpha]_{D_{20}}$	+ 26.6° to + 28.8°	+ 27.2°
pH	5.5 to 7.0	6.6
Loss on drying	≤0.3%	0.15%
Residue on ignition	≤0.10%	0.05%
Chloride (Cl)	≤0.05%	<0.005%
Sulfate(SO <sub>4</sub> )	≤0.03%	<0.03%
Iron(Fe)	≤0.003%	<0.003%
Heavy metals	≤0.0015%	<0.0015%
Organic volatile impurities	Meet the requirements	Conforms
Assay	98.5% to 101.5%	99.4%
Total Plate Count	≤1000cfu/g	Conforms
Yeast and Mould	≤100cfu/g	Conforms
E.Coli	Negative	Negative
Salmonella	Negative	Negative
S.aureus	Negative	Negative

**Conclusion:** Qualified