



洛阳华荣生物技术有限公司

Luoyang Huarong Biotechnology Co.,Ltd.

CERTIFICATE OF ANALYSIS

Product Name	L-Citrulline-DL-Malate (2:1)		
CAS No.	-	Reference	In-house
Batch No.	20230712	Quantity	1000kg
Manufacture Date	Jul. 21, 2023	Retest Date	Jul. 20, 2025


Test Items	Specifications	Results	Test Methods
Appearance	White powder	Conforms	Visual observation
Identification	HPLC retention time correspond to WRS	Conforms	HPLC
Solubility	Clear	Clear	ChP
Specific rotation $[\alpha]_D^{20}$	+16.5° ~+18.5° (C8, 6N HCl)	+17.28°	USP<781>
Loss on drying	≤0.30%	0.19%	USP<731>
Residue on ignition	≤0.10%	0.02%	USP<281>
Chloride(Cl)	≤0.020%	Conforms	USP<221>
Sulfate(SO ₄)	≤0.020%	Conforms	USP<221>
Ammonium(NH ₄)	≤0.020%	Conforms	In-house
Heavy metals(Pb)	≤10ppm	Conforms	USP<231>
Arsenic (As)	≤0.5ppm	Conforms	ICP-MS
Lead (Pb)	≤1ppm	Conforms	ICP-MS
Mercury (Hg)	≤0.1ppm	Conforms	ICP-MS
Cadmium (Cd)	≤0.5ppm	Conforms	ICP-MS
Iron (Fe)	≤10ppm	Conforms	USP<241>
Assay	≥98.5%	99.25%	HPLC
L-Citrulline	62.5~74.2%	66.13%	HPLC
DL-Malate	26.4~36.4%	33.12%	HPLC
Total plate count	≤1000cfu/g	Conforms	USP<61>
Yeast & Molds	≤100cfu/g	Conforms	USP<61>
Coliforms	≤10mpn/g	Conforms	MPN
E.Coli	Negative	Negative	USP<62>
Salmonella	Negative	Negative	USP<62>
S. aureus	Negative	Negative	USP<62>

Conclusion: The product conforms to In-house standard.

Storage: Stored in tightly sealed container at controlled room temperature, away from moisture and direct sunlight.

Analyst: 邓志杰

Checked by: 刘永雷

Approved by: 

ADD: No.9 Ankang Road, Luoyang Industrial Park, Xigong District, Luoyang City, Henan Province, China

TEL: +86-379-60690061 FAX: +86-379-60690061

