BioKyowa Inc.
5469 Nash Road
Cape Girardeau, MO 63702-1550
U.S.A.
Phone: (573) 335-4849
Fax: (573) 335-1466

CERTIFICATE OF ANALYSIS

PRODUCT: L-CITRULLINE
LOT NUMBER: CIT-PL-22026
DATE OF MANUFACTURE: May-27-2022
DATE OF ANALYSIS: Jun-23-2022
RETEST DATE: May-27-2025

TEST	METHOD	SPECIFICATION	RESULT
APPEARANCE	Visual	White crystalline powder	White crystalline powder
IDENTIFICATION	USP	Conforms	CONFORMS
STATE OF SOLUTION	Visual	Colorless and Clear	Colorless and Clear
pH	USP	5.7 - 6.7	6.3
SPECIFIC ROTATION (AT 20°C)	USP	+24.5 to +26.5	+26.5
AMMONIUM	BIOKYOWA	NMT 0.020%	NMT 0.020%
CHLORIDE	USP	NMT 0.017%	NMT 0.017%
SULFATE	USP	NMT 0.020%	NMT 0.020%
IRON	USP	NMT 10 PPM	NMT 10 PPM
ARSENIC	USP	NMT 1.4 PPM	NMT 0.1 PPM
CADMIUM	USP	NMT 0.5 PPM	NMT 0.1 PPM
LEAD	USP	NMT 0.5 PPM	NMT 0.1 PPM
MERCURY	USP	NMT 0.2 PPM	NMT 0.1 PPM
FOREIGN AMINO ACIDS	BIOKYOWA	NMT 0.5%	NMT 0.5%
LOSS ON DRYING	USP	NMT 0.20%	0.08%
RESIDUE ON IGNITION	USP	NMT 0.10%	0.04%
ASSAY (DRIED BASIS)	USP	99.0 - 101.0%	100.2%
TOTAL COUNT (CFU)	USP	NMT 1,000/g	NMT 1,000/g
YEASTS AND MOLDS (CFU)	USP	NMT 100/g	NMT 100/g
COLIFORM	BIOKYOWA	NEG/g	NEG/g

We hereby certify that the commodity described above meets the requirements of residual solvents in those pharmacopoeias. Made in USA by fermentation using a non-pathogenic microbe and without animal origin raw materials. Intended use for our product is as raw material or ingredient for further processing. Our product is not intended for API usage.

ANALYSIS APPROVED BY / DATE: Gabe Seabaugh *Jul-18-2022*

ORIGINAL

Quality Assurance

31010-00/01