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CERTIFICATE OF ANALYSIS

Ectoine | Batch PHY20260715

Product Name	Ectoine	**Document No.**	PHY-COA-ECTOINE-PHY20260715
CAS Number	96702-03-3	**Version**	1.3
INCI Name	Ectoine	**Issue Date**	06 Oct 2026
Physical Form	Powder	**Batch No.**	PHY20260715
Date of Manufacture	15 Jul 2026	**Test Date**	16 Jul 2026
Retest Date	14 Jul 2028	**Document Status**	Issued

ANALYTICAL RESULTS

TEST ITEM	SPECIFICATION	RESULT	TEST METHOD
Appearance	White or off-white crystalline powder	**Conforms**	Visual
Identification (IR)	Infrared absorption spectrum consistent with the reference standard	**Conforms**	IR
Odor	Odorless	**Conforms**	Supplier QC
Assay (HPLC)	≥ 98.0%	99.78%	HPLC
Purity (by HPLC, % area)	≥ 99.0%	99.9%	HPLC
2% Solution Transmittance	≥ 98.0%	99.8%	Supplier QC
pH (2% Solution)	6.0 – 8.0	7.83	Supplier QC
5% Solution Conductivity	≤ 5.0 µS/cm	4.25 µS/cm	Supplier QC
Optical Rotation	+139.0° to +145.0°	+139.8°	Supplier QC
Residue on Ignition	≤ 0.10%	0.04%	Supplier QC
Loss on Drying	≤ 1.0%	0.45%	Supplier QC
Arsenic (As)	≤ 2 ppm	**Conforms**	Supplier QC
Lead (Pb)	≤ 0.5 ppm	**Conforms**	Supplier QC
Cadmium (Cd)	≤ 5 ppm	**Not detected**	Supplier QC
Mercury (Hg)	≤ 1 ppm	**Conforms**	Supplier QC
Total Microbial Count	≤ 750 CFU/g	**Conforms**	Supplier QC
Molds & Yeasts	≤ 100 CFU/g	**Conforms**	Supplier QC
Thermotolerant Coliforms	Not detectable	**Not detected**	Supplier QC
Staphylococcus aureus	Not detectable	**Not detected**	Supplier QC
Pseudomonas aeruginosa	Not detectable	**Not detected**	Supplier QC

Conclusion The results listed above conform to the stated specifications.

Storage and shelf life Store at room temperature, sealed and away from light. For this unopened batch, the retest date is 14 Jul 2028.

Quality statement The results apply only to the batch identified above. This certificate was reviewed and issued by PHYTVA Quality Assurance based on the manufacturer's batch quality-control records. Customers are responsible for confirming suitability for their intended formulation and applicable market requirements.

REVIEWED AND RELEASED BY	APPROVAL DATE	APPROVAL STATUS
PHYTVA Quality Assurance	**06 Oct 2026**	**Approved**

This certificate is electronically issued and is valid without a handwritten signature.
Source batch record personnel: Tao Wang, Quality Assurance Officer; Pei Chen.