

Certificate of Analysis

Product Name: **Choline L-Bitartrate**
 CAS #: **87-67-2**
 Molecular Formula: **C₉H₁₉NO₇**
 Molecular Weight: **253.25**
 Source: **Synthesized from Tartaric Acid, ethylene oxide, and trimethylamine**
 Carrier: **None**
 Country of Origin: **China**
 Batch Number: **Varies**
 Manufacture Date: **Varies**
 Retest Date: **Varies**

Test Results Obtained by PureBulk

ITEMS	SPECIFICATIONS	RESULTS
Choline Bitartrate (HPLC)	≥99%	99.36%
Choline (HPLC)	Report Only	40.69%
Tartaric Acid (HPLC)	Report Only	58.67%
Loss on Drying (USP<731>)	≤0.5%	0.484%
Aerobic Plate Count	≤1000 cfu/g	<20 cfu/g
Coliforms	≤100 cfu/g	<20 cfu/g
<i>E. Coli</i>	Negative	Absent
<i>Staph aureus</i>	Negative	Absent
Yeast & Mold	≤100 cfu/g	<20 cfu/g
<i>Salmonella</i>	Negative	Absent
<i>Pseudo. aeruginosa</i>	Negative	Absent
Conclusion (PureBulk):	This product conforms to standards	

The following information is an indirect translation of information provided from the Manufacturer's Certificate of Analysis, and should not be used solely as an instrument for strict quality control.

ITEMS	SPECIFICATIONS	RESULTS
Appearance	White Hygroscopic Crystal	Conforms
Identification A&B	Passes USP Test	Conforms
pH (1 in 10)	3.0~4.0	3.46
Specific Rotation	+17.5°~+18.5°	+17.69°
Residue on Ignition	≤0.1%	0.01%
Heavy Metals	≤10 ppm	Conforms
Lead	≤0.3 ppm	Conforms
Arsenic	≤1 ppm	Conforms
Cadmium	≤0.2 ppm	Conforms
Mercury	≤0.1 ppm	Conforms
Residual Solvents	Meet the Requirements	Conforms
1,4-Dioxane	≤10 ppm	Conforms
Total Amines	≤10 ppm	Conforms
Chromatographic Purity	Report Only	Report Only
Individual Impurity	≤0.3%	Conforms
Total Impurities	≤2.0%	Conforms
Bulk Density	0.60~0.80 g/ml	0.73 g/ml
Tapped Density	Report Only	0.86 g/ml
Particle Size	Through 20 Mesh	100%
	Through 40 Mesh	24.04%
	Through 60 Mesh	3.69%
	Through 80 Mesh	1.23%
	Through 100 Mesh	1.09%
Solubility	122 g/100ml, water (25°C)	Conforms
Conclusion (Manufacturer):	This product conforms to USP 40 standards	

Additional Information: Non-Allergen || Melamine Free || Gluten-Free || No Pesticides || BSE/TSE Free || GRAS - Yes || Vegetarian/Vegan || Sewer sludge used - No || Sugar Free

Composition: Choline L-Bitartrate 99-100.5%
Water ≤0.5%
Residue on Ignition ≤0.1%

GMO Statement: Non-GMO

Sterilization Method: Non-EtO || Non-Irradiation || Non-Ionization

Storage Conditions: **Keep in sealed container under 25°C.**
Keep away from strong light, heat and moisture.

Purebulk.Inc verifies that the information contained herein is true and correct to the best of our knowledge.

Verified By: Ann Foote / Nicole Rammage / Candace Gibson

(This document was produced electronically and is valid without signature.)