

BIO SPECTRA

100 Majestic Way, Bangor, PA 18013 / www.biospectra.us

Effective Date:	21-Oct-2021	21-Oct-2024	: Date of Next Review
Prepared By:	Amy Hosein	20-003627 v. 3.1	: Supersedes
QA/QC Approval:	Carissa McCollan	Amy Yencho	: Management Approval
Reason for Revision:	See Revision History in ensur.		

CERTIFICATE OF ANALYSIS

L-CYSTEAMINE HCL (2-MEA)

BIO EXCIPIENT GRADE / NEW CODE CSMH-3250-10

(HISTORICAL CODE CH3250-K006.55)

LOT: CSMH-0121-00012

$C_2H_7N_1S \cdot HCl$ * F.W. 113.61 g/mol. * CAS# 156-57-0

Manufacturing Date: 4/27/21 Retest Date: 10/31/21

Manufacturing Site: 100 Majestic Way, Bangor PA, 18013

Packaging Date: 4/28/21 Packaging Site: 100 Majestic Way, Bangor PA, 18013

ANALYSIS	SPECIFICATION	TEST RESULT
Appearance and Color	White or colorless crystals or powder, may contain lumps	White or colorless crystals or powder, may contain lumps
Appearance of Solution	Colorless, clear solution	Colorless, clear solution
Argentometric Titration	30.6 - 31.8%	31.1%
Assay (HPLC Weight %)	98.0 – 102.0%	100.1%
Bioburden	≤ 100 CFU/g	<100CFU/g
Endotoxin	≤ 50 EU/g	≤40EU/g
HPLC Minor Component 1 (Area %)	Cystamine ≤2.0%	≤1.2%
Heavy Metals	≤ 20 mg/kg (ppm)	≤20mg/kg (ppm)
Identification (IR)	Conforms to reference standard	Conforms to reference standard
Loss on Drying	≤ 1.0%	≤0.1%
	Aluminum (Al)	<0.80ppm
	Arsenic (As)	<0.03ppm
	Barium (Ba)	<1.4ppm
	Bismuth (Bi)	<0.40ppm
Trace Metal Analysis (ICP)	Calcium (Ca)	<1.5ppm
	Cadmium (Cd)	<0.004ppm
	Cobalt (Co)	<0.01ppm
	Chromium (Cr)	0.12ppm
	Copper (Cu)	0.11ppm
	Iron (Fe)	0.71ppm

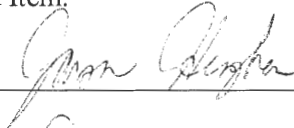
The information contained herein is the property of BioSpectra. The recipient is responsible for its safe-keeping, and the prevention of unauthorized appropriation, use, disclosure and copying.

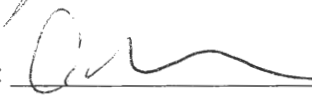
ANALYSIS	SPECIFICATION	TEST RESULT	
Mercury (Hg)	≤ 1 ppm	0.49ppm	
Potassium (K)	≤ 50 ppm	<4.0ppm	
Lithium (Li)	≤ 5 ppm	<0.50ppm	
Magnesium (Mg)	≤ 5 ppm	<0.40ppm	
Manganese (Mn)	≤ 1 ppm	<0.05ppm	
Molybdenum (Mo)	≤ 5 ppm	<0.10ppm	
Trace Metal Analysis (ICP)	Sodium (Na)	≤ 50 ppm	5.1ppm
	Nickel (Ni)	≤ 1 ppm	0.049ppm
	Lead (Pb)	≤ 1 ppm	0.029ppm
	Antimony (Sb)	≤ 1 ppm	<0.18ppm
	Selenium (Se)	≤ 1 ppm	<0.10ppm
	Strontium (Sr)	≤ 5 ppm	<0.40ppm
	Vanadium (V)	≤ 1 ppm	<0.02ppm
	Zinc (Zn)	≤ 1 ppm	<0.40ppm
	Purity (HPLC Area %)	≥ 98.0%	98.8%
	Purity (Cysteamine (HPLC))	≥ 92.0%	98.8%
≤ 8.0% related substances		≤ 1.2%	
Ethanol		≤ 5000 ppm	≤ 2500ppm
Residual Solvents	Isopropyl Alcohol (IPA)	≤ 5000 ppm	≤ 2500ppm
	Tert-Butylmethyl Ether	≤ 5000 ppm	≤ 2500ppm
Solubility	Clear and colorless	Clear and colorless	

COUNTRY OF ORIGIN: U.S.A.

TEST METHOD REFERENCE: DCN: 20-003580

INTENDED USE: Material represented by this Certificate of Analysis is suitable for use as an excipient. It is manufactured in accordance with the ICH Q7 Good Manufacturing Practice Guide. The material represented by this Certificate of Analysis is not suitable to be used as an Active Pharmaceutical Ingredient, Drug Product or Household Item.

Prepared by:  Date: 10/21/21 Job Title: QA Specialist

Reviewed by:  Date: 10/21/21 Job Title: QA Manager