

BIO SPECTRA

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

Effective Date:	8-Aug-2022	8-Aug-2025	: Date of Next Review
Prepared By:	Amr Hosein	BSI-COA-0135 v.11.0	: Supersedes
QA/QC Approval:	Brett Brink	Carissa McCollian	: Management Approval
Reason for Revision:	See Revision History in MasterControl.		

CERTIFICATE OF ANALYSIS

TRIS HYDROCHLORIDE

BIO EXCIPIENT GRADE / NEW CODE THCL-3250-25

(HISTORICAL CODE TH3250-K025)

LOT: THCL-0123-00213

 $\text{NH}_2\text{C}(\text{CH}_2\text{OH})_3\cdot\text{HCl}$ * F.W. 157.60 g/mol * CAS# 1185-53-1

Manufacturing Date: 06/21/23 Expiration Date: 06/30/26

Manufacturing Site: 1474 Rockdale Lane, Stroudsburg, PA 18360

Packaging Date: 07/07/23 Packaging Site: 100 Majestic Way, Bangor PA, 18013

ANALYSIS	SPECIFICATION	TEST RESULT	
	260 nm	≤ 0.06 a.u.	0.01 a.u.
Absorbance (1M)	280 nm	≤ 0.06 a.u.	0.01 a.u.
	400 nm	≤ 0.01 a.u.	< 0.01 a.u.
Appearance	Passes Test	Passes Test	
Assay, Dried	≥ 99.0%	99.6%	
Bioburden	≤ 100 CFU/g	< 100 CFU/g	
Endotoxin	≤ 2.5 EU/g	< 1.9 EU/g	
Identification	(IR) Passes Test	Passes Test	
	(Chloride) Passes Test	Passes Test	
Loss on Drying @ 105°C	≤ 0.5%	0.2%	
Melting Range	147 - 152 °C	151 - 152 °C	
pH	(1% Aqueous Solution) 4.0 - 5.0	4.8	
	(0.5M) @ 25°C 3.5 - 5.0	4.2	
	Arsenic (As) ≤ 10 ppm	< 0.45 ppm	
	Calcium (Ca) ≤ 10 ppm	< 0.60 ppm	
Trace Elements	Copper (Cu) ≤ 10 ppm	< 0.15 ppm	
	Iron (Fe) ≤ 10 ppm	< 0.30 ppm	
	Lead (Pb) ≤ 10 ppm	< 0.30 ppm	
	Magnesium (Mg) ≤ 10 ppm	< 0.60 ppm	
Water	≤ 2.0%	0.4%	

COUNTRY OF ORIGIN: U.S.A.

TEST METHOD REFERENCE: DCN: BSI-ATM-0002

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.

RESIDUAL SOLVENTS: Based on the manufacturing process and the controlled handling, storage and analysis of this product, this product complies with the requirements and specifications listed in the current USP method <467> Tables 1, 2, 3, or 4.

ANIMAL ORIGIN: Tris Hydrochloride manufactured at BioSpectra is not derived from and does not come in contact with animal parts, products and/or byproducts.

Prepared by: M. Shafer Date: 07/27/23 Job Title: QA Mater. Disp. Tech. III

Reviewed by: Jason Singh Date: 7/27/23 Job Title: QA Mater. Disp. Supervisor