

**MP Biomedicals, LLC**

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Certificate of Analysis

Product Description: Choline Chloride, cell culture reagent

Catalog Number: 194639

Lot: 8291K

Formula: $C_5H_{14}NOCl$

CAS #: 67-48-1

Physical Description: White Crystalline Powder

Formula Weight: 139.63

Storage: Room Temperature, desiccate

Test	Specification	Result
Identity Test	Passes	Passes
Purity	$\geq 99\%$	100.1%
pH	Neutral to Litmus	Passes
Water	$\leq 0.5\%$	0.3%
Solubility (10% aq soln)	Clear, Colorless Solution	Clear, Colorless Solution

Residual Solvent: Passes USP Requirement

USP Identification Test: Passes USP ID B

Infrared Spectrum: Passes USP Test

1,4-Dioxane: #10 ppm

Heavy Metals: #10 ppm

Residue on Ignition: 0.00%

Total Amines: #10 ppm

Chromatographic Purity: Passes USP Test

Arsenic: #2 ppm

Lead: #0.3 ppm

Total Aerobic Count: #1000 cfu/g

Organic Volatile Impurities: Passes USP Test

Yeast & Mold: #100 cfu/g

Total Coliform: #10 cfu/g

E. coli: Negative/10 g

Salmonella: Negative/25 g

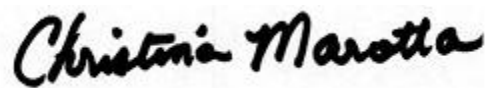
Staphylococcus: Negative/10 g

Sulphite Reducing Clostridia: Negative/g

Listeria monocytogenes: Negative/g

Enterobacter (Sakazaki): Negative/10 g

Bacillus cereus Spores: Negative/g

A handwritten signature in black ink that reads "Christina Marotta". The signature is written in a cursive, flowing style.

09/23/2010 - Christina Marotta

MP Biomedicals, LLC.

Technical Director

This is an electronically generated document

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<http://www.mpbio.com>

Online Ordering, MSDSs, certificates of analysis and data sheets now available on our web site

Technical Service: 1-800-279-5490 (440-337-1200) Customer Service: 1-800-854-0530 (440-337-1200)