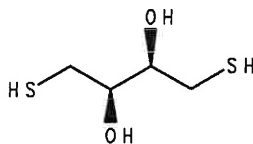
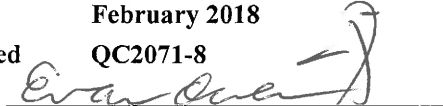
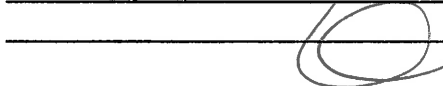


CERTIFICATE OF ANALYSIS cGMP DITHIOTHREITOL



	<u>SPECIFICATION</u>	<u>ACTUAL</u>
Catalogue Number	1370	
CAS Registry Number	3483-12-3	
Lot Number		46122
Batch Number		46048
Molecular Formula	C ₄ H ₁₀ O ₂ S ₂	
Molecular Weight	154.25 g.mol ⁻¹	
Melting Point	42 ± 2°C (Corr.)	41-42°C
I.R.	Consistent with assigned structure	Conforms
Titration ex -SH (iodometric)	≥ 99.0%	100.1%
T.L.C.	One Spot	Conforms
UV Assays		
(1) 1% Solution		
A ₂₈₀	< 0.067	0.018
A ₃₀₅	< 0.050	0.010
(2) 0.02 M Solution		
A ₂₈₃	< 0.040	0.019
(3) 1 M Neutral Solution		
A ₄₀₀	< 0.062	0.006
A ₄₀₅	< 0.062	0.006
OD 700-500 nm	≤ 0.035	0.004
Loss on Drying	< 0.50%	0.10%
Appearance	White crystals	Conforms
10% Solution in Water	Clear and colorless	Conforms
% Oxidized DTT	< 0.50%	0.33%
Residual Solvents		
Toluene	< 890 ppm	141 ppm
Hexane	< 290 ppm	72 ppm
Methanol	< 3000 ppm	< 60 ppm
THF	< 720 ppm	< 72 ppm
Water Insolubles Material Content		
Relative Residue (ppm)	Report only	124 ppm
Appearance of Residue	Report only	Off-white residue
Storage	2-8°C under Nitrogen	
Manufacturer	BioVectra Inc.	
Manufacturing Location	17 Hillstrom Ave., Charlottetown, PE, Canada	
Date of Manufacture	February 23, 2016	
Retest/Expiration Date	February 2018	
QC Method & Version followed	QC2071-8	
Analyst Certification		Date <u>Mar 13/16</u>
QA Review and Approval		Date <u>Mar 16/16</u>
COA1370-9 August 27, 2014		

CERTIFICATE OF COMPLIANCE

cGMP DTT

Catalogue Number: 1370

Batch Number: 46048

Lot Number: 46122

Date of Manufacture: Feb 23, 2016

Date of Packaging: Feb 23, 2016

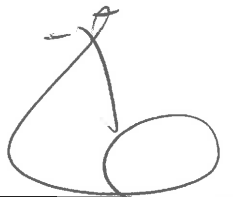
Bulk Quantity Released: 204.1kg

Retest Date of Finished Product: Feb/2018

The above batch has been manufactured in accordance with current Good Manufacturing Practices (cGMPs) and approved Master Batch Production Records, Test Instructions, and Specifications.

All manufacturing, packaging and testing documents for the above batch have been reviewed and approved by the Quality Assurance Department of BioVectra Inc., Charlottetown, Prince Edward Island.

Certified by:



Signature

Rehan Babar, QA Associate
Print Name & Title

Mar 16, 2016

Date

COC1370-1
March 12, 2010

BSE/TSE DECLARATION

cGMP DITHIOTHREITOL (DTT)

CATALOGUE NUMBER: 1370

BATCH NUMBER: 46048

LOT NUMBER: 46122

DATE MANUFACTURED: Feb 23, 2016

COUNTRY OF MANUFACTURE: Canada

This certifies that the production of cGMP Dithiothreitol (DTT) is made using a synthetic process where all the raw materials and reagents used in synthesis are not of animal origin or derived from genetically modified organisms (GMOs).

Quality Assurance (Signature)



Date

Mar 16, 2016

COO1370-1
August 14, 2014