

### Certified Reference Material Data

This certificate is designed in accordance with ISO Guide 31:2015

Batch Number: **B339**

#### General

<b>Safety:</b>	This product is non-hazardous.
<b>Storage:</b>	2-8°C. Do not freeze.
<b>Catalogue Number:</b>	CSCG100, CS2CG100, CS4CG100, CSCG500 CS50CG100, JPN-CSCG100, JPN-CS4CG100
<b>Production Date:</b>	9 August 2023
<b>Expiration Date:</b>	20 December 2023
<b>Volume:</b>	0.943 ml +/- 43 ul
<b>Suspension media:</b>	Buffered saline solution.
<b>Sterilisation method:</b>	Gamma Irradiation.

#### Counts

(Method Ref: CG-014)

	Mean (i)	St.Dev.(ii)	Expanded Uncertainty(iii)
<b>Cryptosporidium count:</b>	<b>100</b>	<b>2.4</b>	<b>5.4</b>
<b>Giardia count:</b>	<b>98</b>	<b>1.8</b>	<b>4.0</b>
<b>DAPI staining:</b>			
<b>Cryptosporidium % +ve</b>	<b>100</b>	<b>%</b>	
<b>Giardia % +ve</b>	<b>96</b>	<b>%</b>	

The Mean CFU quantification (i) and associated SD (ii) are traceable to counts using flow cytometry

#### Stock specifics\*

<b>Organism:</b>	<i>Cryptosporidium parvum</i>
<b>Strain:</b>	Iowa
<b>Source:</b>	Bovine
<b>Shed date:</b>	14 July 2023
<b>Purification method:</b>	Discontinuous sucrose and cesium chloride centrifugation gradients.

#### Stock specifics\*

<b>Organism:</b>	<i>Giardia lamblia</i>
<b>Strain:</b>	H3
<b>Source:</b>	Gerbil
<b>Shed date:</b>	17 July 2023
<b>Purification method:</b>	Sucrose and Percoll density gradient centrifugation

#### Certified Values and Uncertainties

##### Enumeration Method

A) CG-014

The count values have been obtained by taking a randomised significant sample of each batch and enumerating cysts and oocysts by flow cytometric analysis.

B) Stability Ref: Exp #1421

Stability testing has been conducted on batch CS-CG100-38 of ColorSeed™ at 5 months and 5 days.

ColorSeed™ with an assigned property value in terms of its known count value is used as a quality control reference material. This CRM has been produced by flow cytometry and is traceable to natural numbers.

i) The certified value represents the unweighted mean counts from a statistically relevant number of samples covering the entire product batch.

The characterization uncertainty  $\mu$  (characterization) represents the dispersion of measurement values, calculated as standard deviation.

ii) The Standard Deviation is a measure of variability within the batch.

iii) Combined standard uncertainty,  $\mu$ (CRM), is calculated as the square root of the sum of squares of the individual contributions (characterization, homogeneity, stability), according to:

$$\mu(\text{CRM}) = \sqrt{\mu^2_{\text{char}} + \mu^2_{\text{homogeneity}} + \mu^2_{\text{stability}}}$$

The Expanded Uncertainty, U(CRM) is reported at the 95% Confidence Level with a coverage factor k=2: U(CRM) =  $\mu$ (CRM) \* k.

\* Organism identification is not certified.



Accredited for compliance with ISO 17034  
Accredited Reference Material Producer

NATA is a signatory to the ILAC Mutual Recognition Arrangement  
for the mutual recognition of the equivalence of reference materials certificates

Accreditation No: 20685  
Site No: 24813

Issue: 5  
Date: 30/9/2021  
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**Storage and Handling:**

Store ColorSeed™ at 2-8°C.

**Description:**

ColorSeed™ contains precise known counts of non viable *Cryptosporidium* and *Giardia* labelled with a red fluorescent dye in 1.2ml of clear liquid.

**Intended Use:**

ColorSeed™ is a biological certified reference material containing a precise number of non-viable *Cryptosporidium* and *Giardia*. It is designed for use as an internal quantitative quality control sample.

Instructions for Use (refer to the corresponding Product Insert for more details)

**Seeding the sample (use one tube of ColorSeed™)**

1. Remove and keep the tube cap
2. Add 2 mL of 0.05% (v/v) Tween 20 to the tube
3. Replace cap and vortex for 20 seconds
4. Remove and keep cap and pour tube contents into sample
5. Add 3 mL of reagent grade water to the empty tube
6. Replace cap and vortex for 20 seconds
7. Remove and keep cap and pour tube contents into sample
8. Repeat steps 5, 6 and 7 once more

**Sample Analysis**

9. Analyze the sample as per the laboratory Standard Operating Procedure.
10. Record the number of red fluorescent *Cryptosporidium* and *Giardia* detected.
11. Separately record the number of green-only fluorescent *Cryptosporidium* and *Giardia* detected.
12. Calculate the ColorSeed™ *Cryptosporidium* and *Giardia* recovery using the following formulae:-

$$\text{Cryptosporidium Recovery (\%)} = \frac{\text{red Cryptosporidium detected} \times 100}{\text{number of Cryptosporidium in ColorSeed™ as per C of A}}$$

$$\text{Giardia Recovery (\%)} = \frac{\text{red Giardia detected} \times 100}{\text{number of Giardia in ColorSeed™ as per C of A}}$$

\* Certificate of Analysis

13. Calculate the number of naturally occurring *Cryptosporidium* and *Giardia* in the original sample using the following formulae:-

$$\text{Cryptosporidium} = \frac{\text{green-only Cryptosporidium detected}}{\text{Colorseed™ Cryptosporidium recovery (from step 12)}}$$

$$\text{Giardia} = \frac{\text{green-only Giardia detected}}{\text{Colorseed™ Giardia recovery (from step 12)}}$$

**Safety information:**

ColorSeed™ is not classed as a Dangerous Good or hazardous material. It has been gamma irradiated and the *Cryptosporidium* and *Giardia* are non viable.

Please refer to the Safety Data Sheet (available online [www.biopoint.com.au](http://www.biopoint.com.au))

**References:**

- [1] ISO Guide 30 Reference materials - Selected terms and definitions
- [2] ISO Guide 31 Reference materials - Contents of certificates labels and accompanying documentation
- [3] ISO17034 General requirements for the Competence of Reference material Producers
- [4] ISO Guide 35 Reference materials - Guidance for characterisation and assessment of homogeneity and stability
- [5] AS ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories

**Approved Quality Signatory:**

Lucy Millican  
Quality Manager

17 August 2023



**Manufactured by:**

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